Simpson Road Landowners Group
Inc.C/O: Helen Mihailidi
7501 Keele Street, Suite 200
Vaughan, ON
L4K 1Y2

July 30, 2025
Reference: 20-717

Attention: Simpson Road Landowners Group

Reference: West Rainbow Creek Channel Re-Alignment - Simpson Road Extension, Town of Caledon
Conceptual Flood Hazard Assessment and Natural Channel Design

Dear Simpson Road Landowners Group,

Greck and Associates Limited (Greck) is pleased to provide this technical letter report in support of the proposed endeavor to develop within the Town of Caledon's Phase 2 Simpson Industrial Secondary Plan Area. Specifically, our work examines the technical feasibility and design requirements to extend the existing Equity Prestige Business Park SWM Pond (hereafter referred to as the Equity SWM Pond) outlet and convey flows through a new open channel system parallel to the proposed Simpson Road Extension. This solution builds on the already approved road extension and channel system accepted as part of the current Secondary Plan but offers a more refined solution offering improved development opportunities while adhering to all regulatory requirements. This report focuses primarily on technical flood and erosion hazard conveyance and protection, including elements of stormwater management and fluvial geomorphology and ecology (fish habitat).

The West Rainbow Creek channel realignment now includes a revised location for the Equity Park outfall, shifted easterly to better accommodate the proposed Simpson Road Extension. The reconfigured stormwater management pond outfall — complete with an emergency spillway — will discharge into a new 120m long, 4.2m x 1.5m concrete box culvert. This culvert will convey flow underground before daylighting into a new 33-metre-wide open channel.

The open channel will run parallel to the proposed Simpson Road alignment and will ultimately discharge beneath Mayfield Road via a new 6.0m x 1.5m concrete box culvert. The channel will include two shared crossings for four (4) landowners with each crossing having a single 3.6m x 1.5m box culvert.

Hydrologic and hydraulic analysis was undertaken through refinement of Toronto and Region Conservation Authority's (TRCA) Visual Otthymo (VO) model as well as the

creation of a new HEC-RAS, and PCSWMM model. Together, these models were used to design the new Equity SWM Pond outlet extension, natural channel, and quantify potential drainage and flood hazard impacts downstream. Results found that replacing the existing channel with a new engineered 33m wide natural channel at a low gradient slope of 0.1% will result in an average ~0.9% decrease to the regulatory storm flows downstream. This reduced channel grade not only improves flood and erosion hazards by attenuating and slowing channelized return flows it also provides improved fish habitat.

The methodology and preliminary results of this design have been conceptually reviewed and accepted in concept through ongoing discussions with the Town of Caledon, the Toronto Region Conservation Authority, and the Landowners Group. These stakeholders have provided comments and outlined specific requirements that must be addressed to obtain final approvals and building permits. While some of these requirements have been incorporated into the current concept design, a detailed design phase will follow, during which all remaining requirements will be fully addressed.

1.0 BACKGROUND

The subject properties that form Phase 2 of the South Simpson Industrial Secondary Plan Area (hereafter referred to as the Phase 2 Area) and the Simpson Road Landowners Group are within the headwaters of the Rainbow Creek tributary. The Phase 2 Area includes several landowners that are contemplating industrial development to utilize the new/future access from Simpson Road in lieu of Coleraine Drive. As part of the Phase 2 Area, Simpson Road is to be extended southerly to Mayfield Road. This new extension and intersection are required to provide necessary access to the industrial properties to improve traffic conditions on Coleraine Drive to the west. The Phase 2 Area is within the Toronto and Region Conservation Authority (TRCA) Humber River watershed. Previous phases of the Secondary Plan Area located immediately north of the subject properties, are now fully developed and drain to the Equity SWM Pond, See **Figure 1**.

The Equity SWM Pond currently outlets directly into Rainbow Creek. The existing channel is noted to have limited ecological value and functions more as an ephemeral channel (ditch), conveying primarily wet weather flow. The ecological significance of the feature has been further characterised by environmental consultants; see ecology study submitted under separate cover.

The Equity SWM Pond outfall is the origin of the existing open channel drainage feature which flows southeasterly through several properties towards Mayfield Road where flows are conveyed by an existing 1300mm diameter culvert under Mayfield Road. Design drawings for the Equity SWM Pond are appended. Note that this 1300mm diameter culvert is slated to be replaced with a 6.0m x 1.5m concrete box culvert as part of Region

Road Expansion works for Mayfield Road. The construction date of this replacement is unknown.

The 100 Pillsworth Road Industrial Building which is located east of the subject properties has been developed and is serviced by its own SWM pond located at the northeast corner of Mayfield Road and Rainbow Creek intersection. The Pillsworth SWM Pond currently discharges to a storm sewer on Mayfield Road; this storm sewer discharges downstream of Mayfield Road. The Pillsworth Pond will require a 20.5m wide emergency spill way onto the future Simpson Road extension as well as a 900mm diameter concrete by-pass pipe that outlets into a future channel. This pond facility will service 100 Pillsworth as well as the future Simpson Road Extension. Design drawings for the Pillsworth SWM Pond are appended.

As part of the initial Phase 2 Simpson Industrial Secondary Plan submission, detailed design drawings prepared by Wood (dated September 14, 2021) were prepared and approved. These drawings illustrated the proposed Simpson Road Extension, along with a 45m wide natural channel realignment for the headwater reach of Rainbow Creek. While only minor modifications are anticipated to Wood's Simpson Road design, the channel realignment design is to be replaced by the updated design presented in this letter report and by other consultant report provided under separate cover. Wood Drawings have been appended for reference.

#	Address	Owner	Area (ha)	Area (m²)
1	PT LT 1 CON 6 ALBION	Arion Services Ltd.	4.0 ha	40,111.9 m²
2	12155 Coleraine Drive	Triple X Inc.	4.2 ha	41,551.8 m²
3	PT LT 1 CON 6 ALBION	Coleraine Properties Inc.	4.0 ha	39,746.4 m²
4	0 Coleraine Drive	2781823 Ontario Inc.	3.8 ha	38,278.1 m²
5	8602 Mayfield Road	Anatolia Investment Corp.	1.9 ha	19,410.5 m²
6	12197 Coleraine Drive	2840928 Ontario Inc.	1.1 ha	11,326.6 m²
7	10265 Coleraine Drive	Morresi Holdings Limited	0.2 ha	2,235.4 m²
8	12045 Coleraine Drive	Morpo Holdings Ltd.	0.2 ha	2,360.0 m²
9	12029 Mayfield Road	11446835 Canada Inc.	0.5 ha	4,721.9 m²
10	8576 Mayfield Road	2833720 Ontario Inc.	2.3 ha	23,229.0 m²
11	0 Coleraine Drive	2744801 Ontario Inc.	0.2 ha	2,008.7 m²
12	8522 Mayfield Road	-VESPA ENGINEERS LTD. -THE CORPORATION OF THE TOWN OF CALEDON	1.2 ha	11,526.0 m²
A	88 Simpson Road	- 88 SIMPSON ROAD LTD. - THE CORPORATION OF THE TOWN OF CALEDON - 5008545 ONTARIO INC	3.2 ha	31,515.9 m²
B	100 Pillsworth Road	- ANATOLIA REAL ESTATE CORP. - THE REGIONAL MUNICIPALITY OF PEEL	12.8 ha	127,742.0 m²
	Total Area		39.6 ha	395,764.2 m²

Participating Landowners

Non-Participating Landowners

Pending Participation

Adjacent Landowners Not Within Block Plan Area

COLERAINE DR.

PARR BLVD.

SIMPSON RD.

MAYFIELD RD.

Equity Prestige Business Park SWM Pond

Existing Channel

Previously Constructed Commercial Development and SWM Pond at 100 Pillsworth Road

LEGEND

- Surroudning Parcel Fabric
- Block Plan Area
- Lot Subdivision
- Phase 2 Secondary Plan Area

FIGURE 1: Ownership Map with Greck Labels for Contextual Reference

Notes:

- Parcel fabric, Block plan Area and lot subdivision are approximate and subject to confirmation by a survey.
- Areas are approximate and subject to confirmation by a survey.
- Phase 2 Secondary Plan Area is sourced from Schedule C-5 from the South Simpson Industrial Secondary Plan (Town of Caledon OP).
- Air Photo is from First Base Solutions, dated 2022.

DRAWN / REVISED	
31 JUL 2023	First Draft

OWNERSHIP MAP

NORTHEAST CORNER OF COLERAINE DR. AND MAYFIELD RD.
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

SCALE
0 20 50 100m

WESTON CONSULTING

File Number: 10846
Date: 2023-07-31
Drawn By: ADB
Planner: SS
CAD: 10846_Ownership Map_2023-07-31.dgn

Drawing
OM

2.0 NATURAL CHANNEL DESIGN BY WOOD

As part of the Phase 2 Simpson Industrial Secondary Plan, detailed design drawings were prepared by Wood, dated September 14, 2021. These drawings illustrated the proposed Simpson Road extension along with a proposed channel re-alignment for the headwater drainage feature known as Rainbow Creek. The design proposed channel modifications that included a 45m wide by 1m deep corridor with a 2m wide bank full/low flow channel, see **Figure 2**.

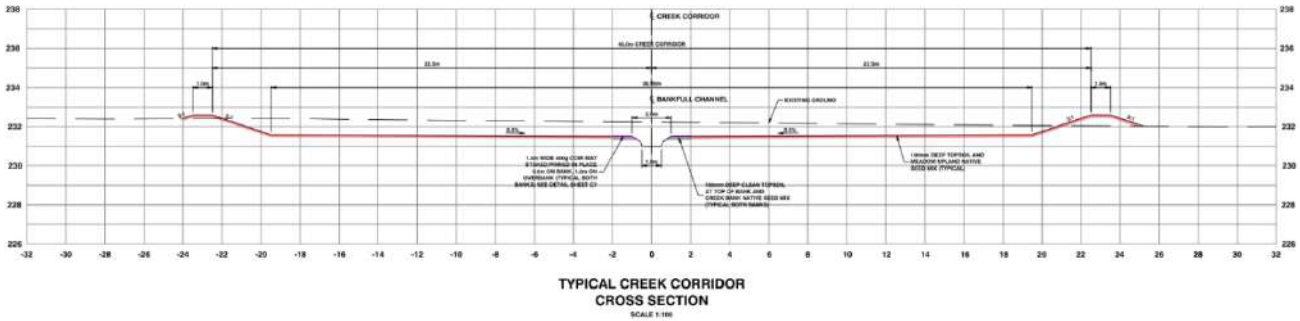


Figure 2 – Typical Creek Corridor Cross Section (Wood, Drawing C4, 2021)

A fluvial geomorphological report was prepared by AquaLogic Consulting, revised March 5, 2015, and February 11, 2019. As per this report it can be concluded that the valley width is attributed to both meander amplitude and flood storage requirements. We understand that no technical flood analysis or reporting was prepared however, through conversations with TRCA, it is understood that flood storage requirements were assessed using 1D hydraulics and achieving a cross-sectional cut and fill balance under conditions with no driveway crossings. A copy of the Wood Hec-RAS channel design was provided to Greck. It is presumed to be the only current hydraulic modelling for the area. In this model, the Regulatory floodplain is the regional storm event.

The proposed channel was to be 560m long, 1m deep, and 45m wide, requiring 2.52ha of land along the southeast side of Simpson Road. The channel would originate from the Equity Prestige Business Park SWMF flowing downstream to Mayfield Road, see **Figure 3**.

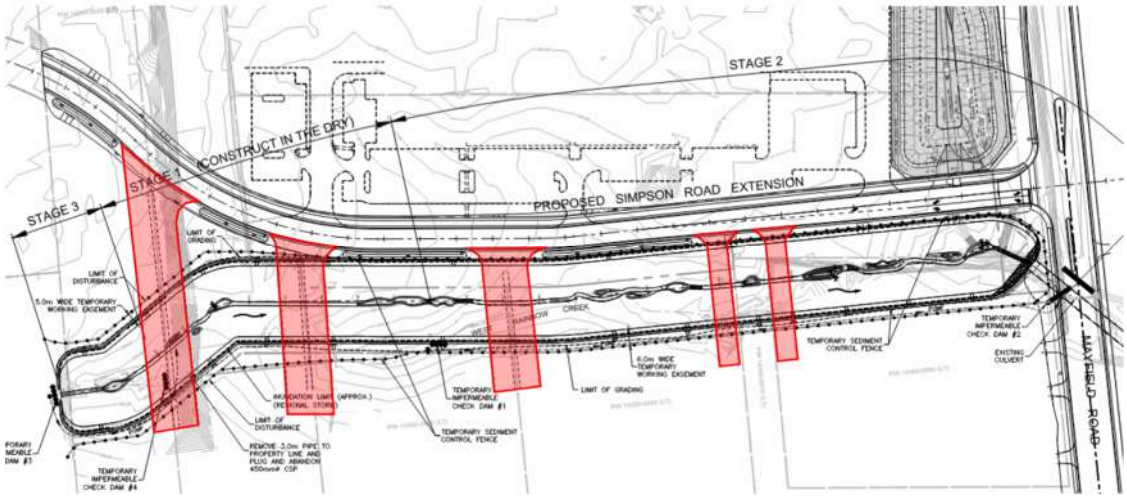


FIGURE 3 – PROPOSED 45M WIDE CHANNEL (WOOD, DRAWING C1, 2021)

Per this design, five (5) (red) driveway locations were proposed; three (3) 25m wide driveway crossings and two (2) 11m wide driveway crossing along the channel. The 25m driveway includes two 12.5m wide industrial driveways which is the maximum width as per the Town Zoning By-Law. An additional 3m on both sides for 3:1 side slopes into a 1m deep valley and 3m for property setbacks would also need to be included for a total driveway structure width of 34m. The 11m driveway would also need an additional 3m on both sides for 3:1 side slopes into a 1m deep valley and 3m for property setbacks. The total driveway structure would be 20m wide.

Based on a 560m open channel system, roughly 25% or 142m of channel would need to be filled to accommodate the industrial crossings shown. Each crossing would require a box culvert to convey flows without overtopping onto Simpson Road.

The ecological, hydrological, and hydraulic impacts of these crossings were not quantified, assessed and reported in the Wood design or Secondary Plan.

3.0 PROPOSED NATURAL CHANNEL DESIGN BY GRECK

On behalf of the Landowners Group, a new pond outfall and natural channel design has been proposed. The new design better utilizes available land while respecting the needs for industrial access and regulatory requirements for flood and erosion hazard, fluvial geomorphology and ecology. The redesign will consist of shifting and extending the Equity SWM Pond outlet, a reduced open channel width and a reduced number of driveway crossings (from five (5) to two (2)), see Conceptual Natural Channel System drawing appended.

The proposed flood hazard (stormwater) conveyance and natural channel system can be broken down into five (5) parts to service all return storm events up to 100-year and Regional Events including considerations for fish passage, geomorphology and erosion.

- Part 1 – Equity SWM Pond Retrofits and New Outlet Extension.

    - A new storm sewer outfall will be retrofitted to the existing pond infrastructure including a new 120m – 4.2m x 1.5m box culvert at 1.7% that will extend from the main pond cell to the new open channel downstream. This outfall will receive both the existing pond outflows via re-direction of the existing 750mm diameter PVC pipe from the existing 1.2m x 1.8m manhole box outlet structure and act as an emergency outfall for the pond via a new concrete riser.

    - The proposed pond emergency inlet riser will feature an oversized grate set at the maximum active storage elevation (233.75m) and capable of receiving the uncontrolled 100-year and Regional events. The inlet will feature a high-capacity grate will reduce inlet losses and will be capable of passing 100% design flow even if 50% blocked/clogged.

    - The 37m wide emergency spillway will be shifted approximately 36m to the east requiring re-grading of the pond banks and access pathway. The emergency spillway finished grades will remain the same acting as a secondary emergency outfall should the pond emergency inlet riser fail.

- Part 2 – Proposed Secondary Emergency Overland Spill Easement
    - A 60m wide emergency easement will be provided that includes grading requirements to safely convey major overland spill from the pond in the unlikely event that the primary pond outlet and pond emergency outlet is blocked. The easement will specify that the confirmed overland spill area should have covenants in place to restrict buildings.

- Part 3 – 380m Length Natural channel at 0.1% slope

    - A 33m wide natural two-tiered trapezoidal channel is to be provided to support fish passage, floodplain attenuation, and conveyance with natural plantings and erosion control. The channel will adopt 4:1 side slopes where possible along the Simpson Road R.O.W and 2:1 to 3:1 side slopes in other areas to support the baseflow channel and floodplain, see typical section on the Conceptual Natural Channel System drawing appended.

    - This portion of the channel is intentionally at a low gradient to slow stormwater and promote attenuation to maximize flow reduction while ensuring there is sufficient conveyance within the 33m wide valley.

- This section of channel will sustain slow moving water exhibiting characteristics similar to a wetland, optimal for fish habitat and passage.

- See West Rainbow Creek Fluvial Geomorphology Assessment and Channel Realignment Guidance by SLR, Dated July 2025

- Part 4 – 45m Length of Cascade Pools at 4% slope

  - In an effort maximize attenuation it is necessary to have a low gradient system and the longer this low gradient section (Part 3), the more attenuation can occur. As a result, to tie together / connect the upstream 0.1% slope channel and meet the fixed Mayfield Road culvert invert, a short steep channel form is required.

  - 6 cascade pools with 0.3m drops over a length of 45m is proposed to make up the grade elevation difference at the downstream end of the channel, close to Mayfield Road.

  - Part 4 will maintain a two-tiered channel section like Part 3.

  - The cascade pools will facilitate fish passage.

  - See West Rainbow Creek Fluvial Geomorphology Assessment and Channel Realignment Guidance by SLR, dated July 2025 for further details.

- Part 5 – 16m Length Natural channel at 0.1% slope
  - Part 4 will maintain a two-tiered channel section like Part 3 and 4.

  - This portion of the natural channel is located in the existing channel system which is the natural low point for the area that ties the channel to the Mayfield Road Culvert

  - As per the Wood's design, this area will receive overland flow from Simpson Road and by-pass flows from the Pillsworth SWM Pond. Erosion control measures such as appropriately sized riprap will be installed at the channel slopes to dissipate energy and long-term erosional forces from these localize storm outlet discharge points

  - This section has been designed to match grade and drain to the proposed 6.0m x 1.5m proposed box culvert crossing Mayfield Road. This box culvert will have an inlet invert of 227.79m and a proposed channel invert of

228.19m immediately upstream of the culvert per the Wood drawings dated September 2021 and appended for reference.

It should be noted that the Equity SWM Pond outlet extension and the natural channel described above will be owned and maintained by the Town of Caledon. Easements will be required on private property as discussed to ensure no buildings are placed within the easement for long-term maintenance of the pond outfall and emergency overland spillway should both the pond outfall and emergency inlet become incapacitated.

4.0 HYDROLOGIC MODELLING

An updated hydrology model was prepared to assess the new proposed channel system. TRCA's most recent hydrologic modelling was provided to Greck. The modelling was created using Visual Otthymo (VO) prepared by Civica, dated 2018. To access the impacts of a new natural channel system, including channel routing and attenuation, Greck re-ran four (4) modelling scenarios with the Regional and 100-year uncontrolled flows (6h AES) under the future land use scenario within the existing TRCA model:

- Scenario 1: Future Conditions – Original Civica Model (route channel)
- Scenario 2: Future Conditions – Civica Model with Greck Edits (route channel)
- Scenario 3: Future Conditions – Proposed Natural Channel by Wood (560m of modified route channel)
- Scenario 4: Future Conditions – Proposed Natural Channel by Greck (540m of modified route channel)

As per the Humber River Hydrology Update Report (Civica, April 2018), STANDHYD 7419 represents catchment 24.11 which corresponds to the Equity Prestige Business Park area. STANDHYD 7417 represents catchment 24.10 which corresponds to the Phase 2 Simpson Industrial area, an area west of Coleraine Drive and an area south of Mayfield Road, north of Countryside Drive. See **Figure 4** below for the geographic reference.

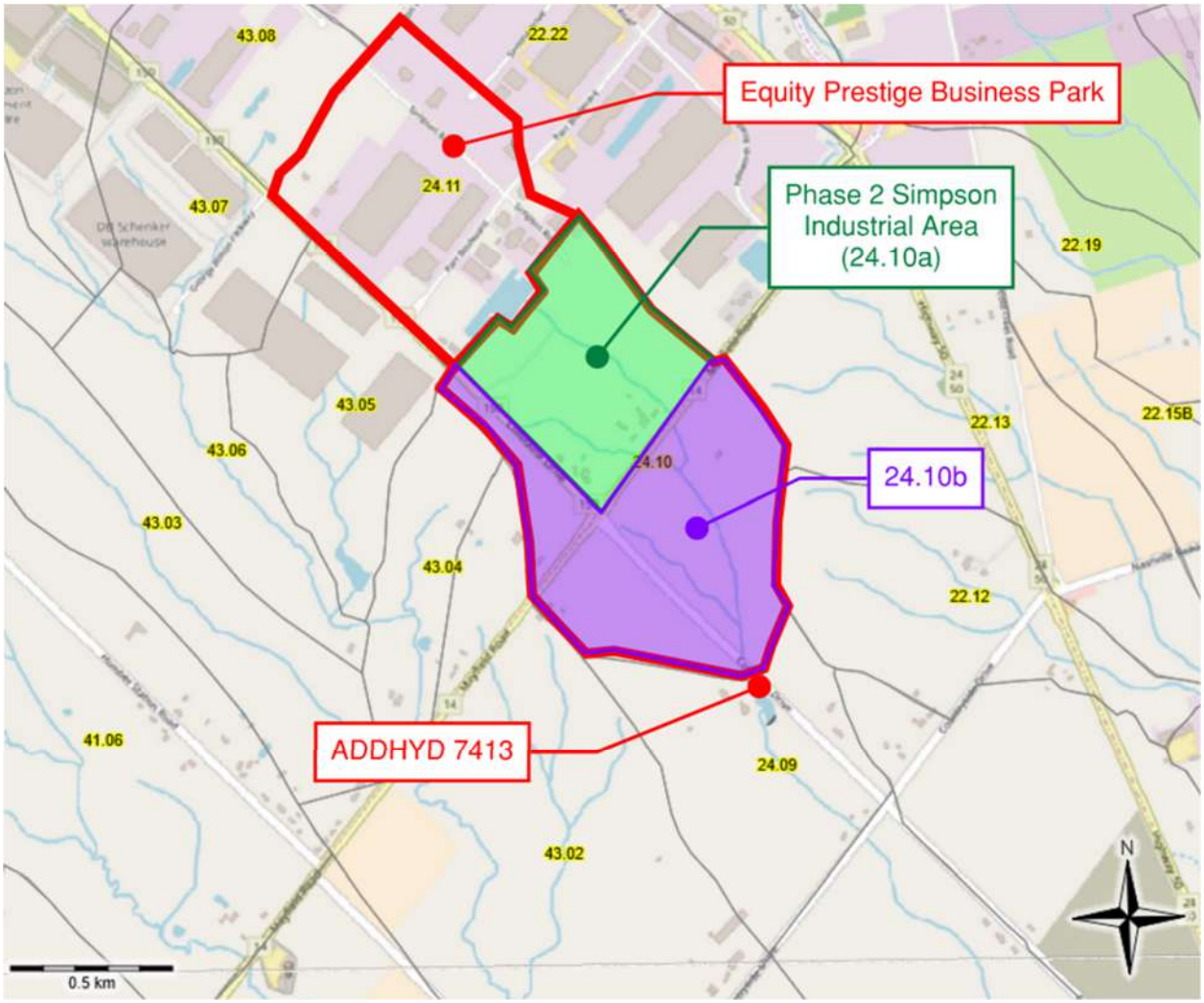


FIGURE 4: HYDROLOGIC MODELLING STUDY CATCHMENT - ADDHYD #7413

Note that catchment 24.10 includes some areas surrounding the Phase 2 Simpson Industrial area that drain external to the subject area. As such, catchment 24.10 was separated into two catchments, 24.10a which represents the Phase 2 Simpson Industrial area and 24.10b which represents the outside surrounding areas. All catchment parameters were maintained for catchment 24.10a and 24.10b except for the area. The Future Regional-CNIII wo Pond scenario catchments and route channels were reconfigured to more accurately model the hydrology of the study area. Note that the overall route channel geometry and slope were maintained as per the Civica 2018 model however, the route channel lengths were updated to match existing conditions. See **Figure 5** below for updated scenario schematic.

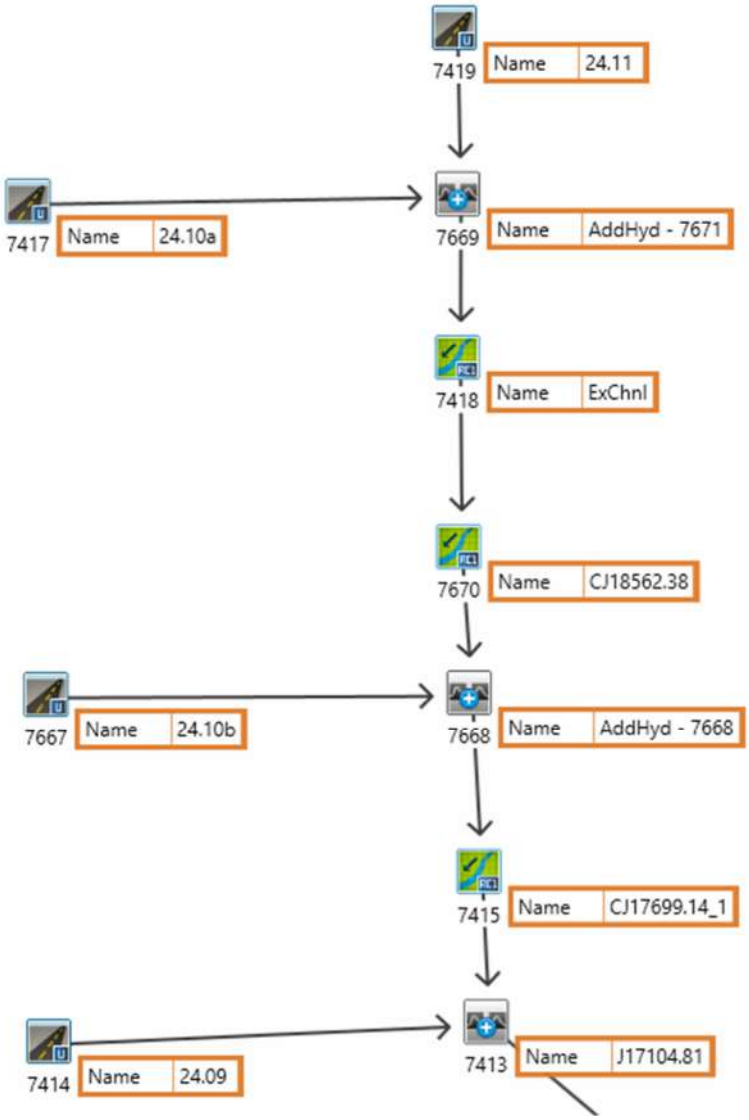


FIGURE 5: RECONFIGURED HYDROLOGY SCHEMATIC OF STUDY CATCHMENT - ADDHYD #7413

To model the Wood channel, RouteChannel 7418 was changed to have a channel length of 560m, channel slope of 0.6% and a 45m wide channel geometry as per the Simpson Road Extension Phase 3 drawings.

In the Greck Channel scenario, the Equity SWM Pond outlet extension, 0.1% slope channel, cascade pool system and connection section upstream of Mayfield Road were modelled.

The following results presented in **Table 1** were obtained at ADDHYD #7413 in the VO modelling (the flow location that receives all routed flows and drainage catchments).

TABLE 1 - DOWNSTREAM FLOW COMPARISON FOR ALTERNATIVE FLOW ROUTING - ADDHYD #7413

Scenario	Regulatory (Regional) Flow (m^3/s)
1 – Future Conditions – Original [Existing Channel]	25.316
2 – Future Conditions - Greck [Existing Channel]	23.837
3 – Proposed Channel - Wood	24.464
4 – Proposed Channel - Greck	23.539

The result of this comparison demonstrates that the redesigned 33m wide channel will result in a downstream peak flow decrease for the Regulatory event by 1.25% (between scenarios 2 and 4). This is primarily because most of the redesigned channel runs at a lower slope and therefore lower velocity promoting improved attenuation.

To further assess the impacts of attenuation between the redesigned proposed natural channel and culvert system, flow results were compared to the rest of the reach and greater watershed system downstream, see **Figure 6** which shows the downstream catchment and flow nodes. **Table 2** presents a comparison of flows at the indicated flow nodes. Note that the previously approved Wood channel design causes an increase in flows downstream.

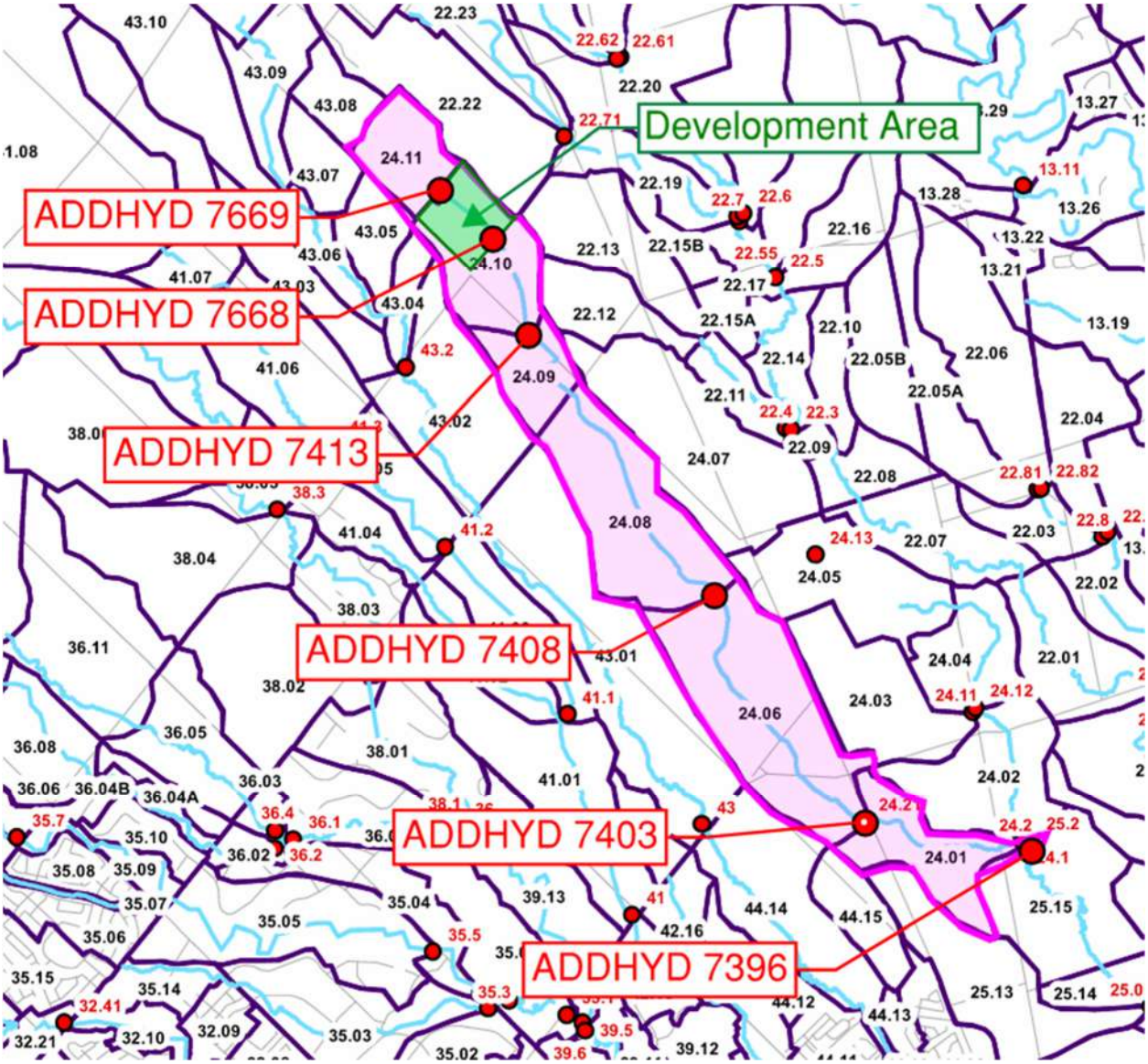


Figure 6 - Impacted Sub-watershed and Relevant Flow Nodes

TABLE 2 – NEW CHANNEL - DOWNSTREAM FLOOD HAZARD IMPACT COMPARISON (REGULATORY – REGIONAL EVENT)

ADDYD	Existing - Greck	Channel - Wood		Channel - Greck	
	Flow (m^3/s)	Flow (m^3/s)	% Difference from Existing	Flow (m^3/s)	% Difference from Existing
7669	12.718	12.718	0.00%	12.718	0.00%
7668	19.018	19.857	4.41%	18.675	-1.80%
7413	23.837	24.464	2.63%	23.539	-1.25%
7408	36.505	36.759	0.70%	36.271	-0.64%
7403	54.219	54.607	0.72%	54.025	-0.36%
7396	57.557	57.634	0.13%	57.403	-0.27%

With new Greck channel, the Regulatory flows decrease by on average 0.9% up to 7km downstream where the subject reach at confluences with another similarly sized tributary at Huntington Road and Rutherford Road (NASHYD 7396).

Hydrologic modeling results from the VO model for the downstream flows are included in the attachments.

5.0 HYDRAULIC MODELLING – REDESIGNED NATURAL CHANNEL

The proposed Equity SWM Pond outlet extension was modelled using PCSWMM software to appropriately size the outlet conduit. The redesigned two-tiered trapezoidal natural channel was modelled using CivilGEO GeoHEC-RAS software to have capacity to convey the uncontrolled Regional flows from the Equity Prestige Business Park and Phase 2 Simpson Industrial lands. GeoHEC-RAS utilizes the United States Army Corps of Engineers, HEC-RAS software. This version utilizes the 6.3.1 engine of HEC-RAS.

The proposed Equity SWM Pond outlet extension is modelled with a conduit to represent the 4.2m x 1.5m box culvert with a slope of 1.7%. The uncontrolled 100-year flow from STANDHYD 7419 (24.11) was input as baseline flow as well as controlled flows from two properties that may outlet to the pond outlet. Note, the 100-year flows dominates for all catchment upstream of Mayfield Road (The subject property).

The PCSWMM model included the following input parameters:

TABLE 3 – PCSWMM MODELLING INPUT PARAMETERS FOR EQUITY SWM POND OUTLET EXTENSION

Input Parameter	Value	Justification
Average Flow	10.41m^3/s (10.20 + 0.20)	- 100-year uncontrolled peak flow of 10.20m^3/s from STANDHYD 7419 (24.11) - Controlled outflow rates as per Humber River unit flow rates from two industrial properties = 0.20m^3/s *See calculations *Regional peak flow of 7.52m^3/s (Spillway based on 100 Year Uncontrolled)
Conduit Size	4.2m x 1.5m	Width x Height
Conduit Length	120m	Length of Equity SWM Pond outlet extension based on preliminary layout
Inlet Elevation	232.00m	Beginning of conduit is at the pond emergency inlet structure

Outlet Elevation	230.02m	Conduit to daylight at 12155 Coleraine Drive
Roughness	0.013	Typical value for concrete pipe (PCSWMM Support)
Entry Loss Coefficient	0.3	Minimum loss coefficient as per Minor Loss Coefficients for Storm Drain Modelling with SWMM by William H Frost (2006)
Exit Loss Coefficient	0.5	Transition loss for discharge into a free-flowing channel as per Minor Loss Coefficients for Storm Drain Modelling with SWMM by William H Frost (2006)
Average Loss Coefficient	0.3	Minor Loss Coefficients for Storm Drain Modelling with SWMM by William H Frost (2006)
Outfall Boundary Condition	231.79m	Fixed Stage, Regulatory flood elevation from hydraulic model for two-tired trapezoidal channel.

Figure 7 illustrates the model profile under regulatory peak flow conditions (100 year, 6hr AES). Note, no flooding occurs and the 4.2m x 1.5 conduit has sufficient capacity to convey the design flows. PCSWMM modeling results of the Equity SWM Pond extension are included in the attachments.

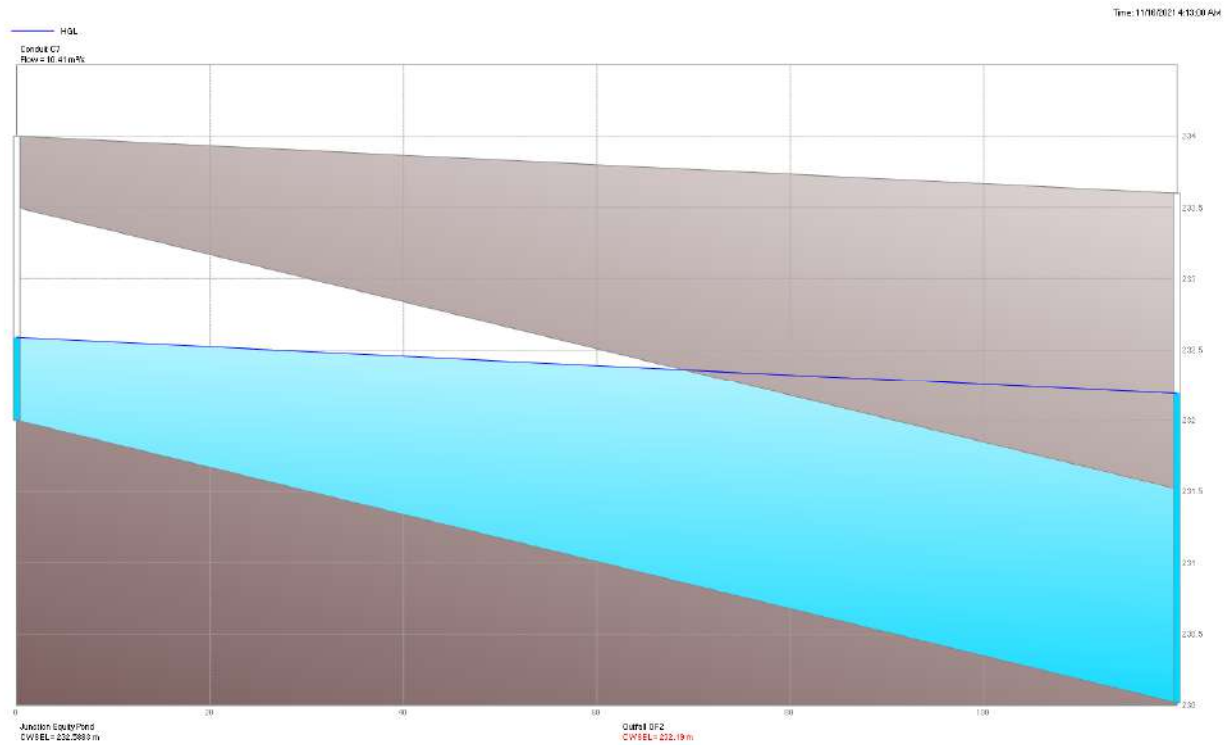


FIGURE 7 – PROPOSED CULVERT PROFILE UNDER REGULATORY PEAK FLOW CONDITIONS

The downstream boundary condition in the PCSWMM model is extracted from the proposed channel hydraulic modelling results. The HEC-RAS model includes a natural channel sufficient in size and slope to convey the Regional Storm Event. The natural channel runs from 12155 Coleraine Drive in the southerly direction to Mayfield Road. It should be noted that based on Wood's drawings and Mayfield Road expansion work drawings, a 6m x 1.8m concrete box culvert is proposed under future widened Mayfield Road. Currently, there is a 1.3m diameter CSP. The HEC-RAS model considers ultimate build out conditions with the new Mayfield Culvert.

The proposed new natural channel is a two-tiered trapezoidal channel with a low flow and high flow channel with floodplain:

- The low flow channel will have a bottom width of 1.0m and a depth of 0.45m with 2:1 side slopes capable of conveying a flow roughly half of the bankfull discharge (0.58 m^3/s; SLR, 2025).
- The high flow channel will have a top width of 14.1m and a depth of 0.82m with 2.5:1 side slopes capable of conveying greater flows.
- The greater floodplain will have a top width of 33m and a depth of 1.03m with 4:1 to 2.5:1 side slopes.

The low flow channel was assigned a 0.035 Mannings roughness. All other portions of the natural channel are to be heavily vegetated and were assigned a roughness coefficient of 0.08. Hard surfaces were assigned a roughness coefficient of 0.013. The downstream boundary condition is set to a known water surface elevation based on the provided TRCA hydraulic modelling for the Wood channel design.

In addition to strategic riparian plantings and channel bedding, the design of a two-tiered channel with low flow channel and reduced gradient will promote fish refuge and passage.

The ADDHYD 7669 flows were used as the upstream flow input for the natural channel through the subject property. It should be recognized that 100-year uncontrolled flows dominate the Regional storm at this location however, during the 100-year event, the Equity SWM Pond is considered to be functional. Therefore, Regional storm flows were used to assess flood hazard and support the proposed channel design.

Hydraulic modeling result tables are appended. See **Figure 8** showing a typical cross section of the two-tiered channel and Regional return event.

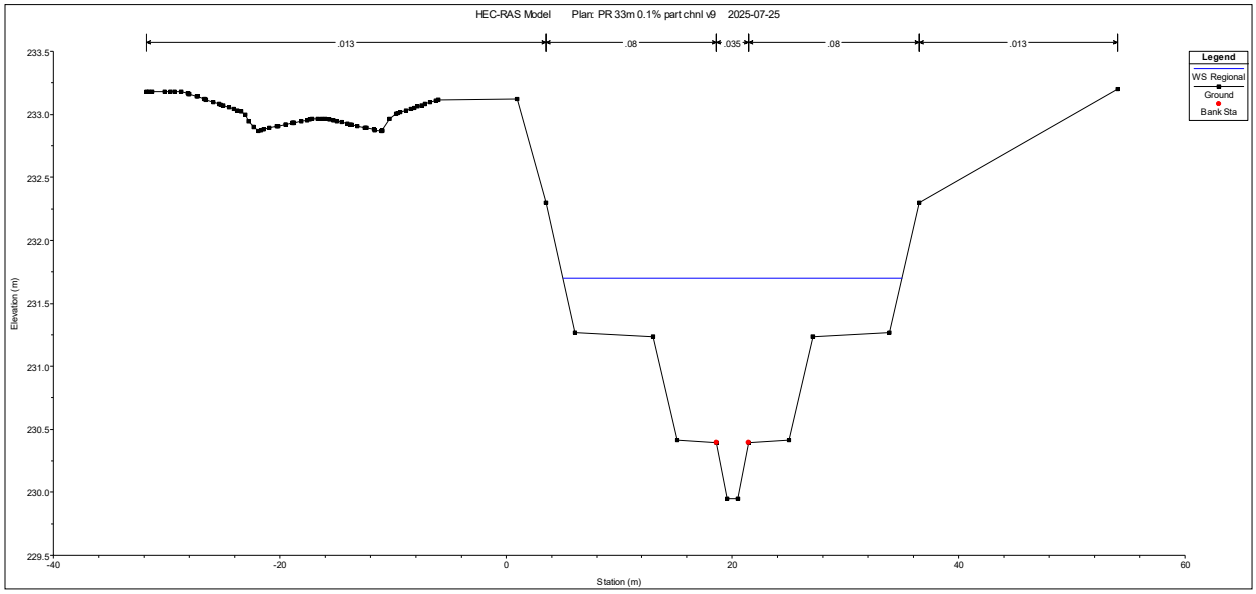


FIGURE 8 – TYPICAL CROSS SECTION OF THE NATURAL CHANNEL

As described previously, the natural channel planform is comprised of multiple parts or sections, the upper low gradient channel, cascade pools and connection to the proposed Mayfield Road culvert. The low gradient natural channel will have a slope of 0.1%, the cascade pools will have an average slope of 3.1% and the portion upstream of Mayfield Road will have a slope of 0.1% to connect with the Mayfield crossing inlet.

Figure 9 shows the channel profile for the Regional Event.

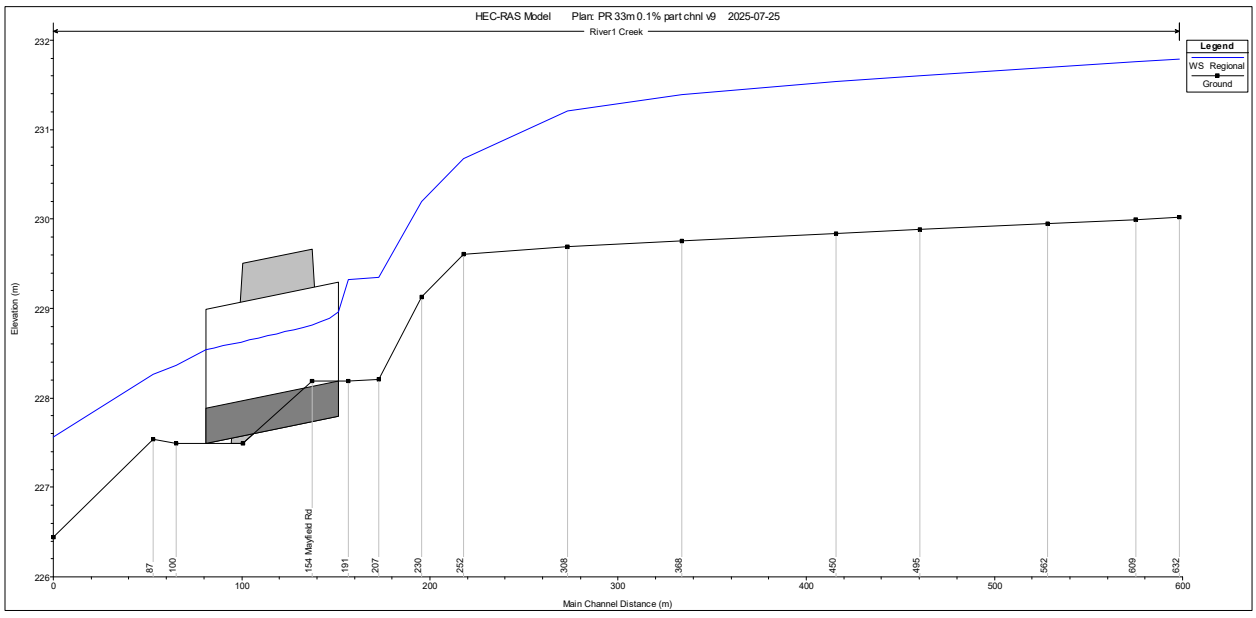


FIGURE 9 – NATURAL CHANNEL PROFILE AND REGIONAL WATER SURFACE ELEVATION

5.1 DRIVEWAY CROSSINGS

A second hydraulic model scenario was created to size two culvert crossings, see drawing C1 at the end of this memo for locations of the two crossings. Each driveway crossing is proposed to have a width of 12.0m to support driveway and shoulder space. As a result, each driveway crossing will require a 3.6m x 1.5m (W x H) concrete box culvert to provide conveyance for the Regional flows. The culverts will have a slope of 0.1%, as per the proposed channel inverts. To improve inlet losses, the culverts should have flared wingwalls and beveled edges.

Figure 10 shows a cross section of one of the crossings with the box culvert. Note that the driveway crossing design will be coordinated with the transportation/traffic engineer during the detailed design stage.

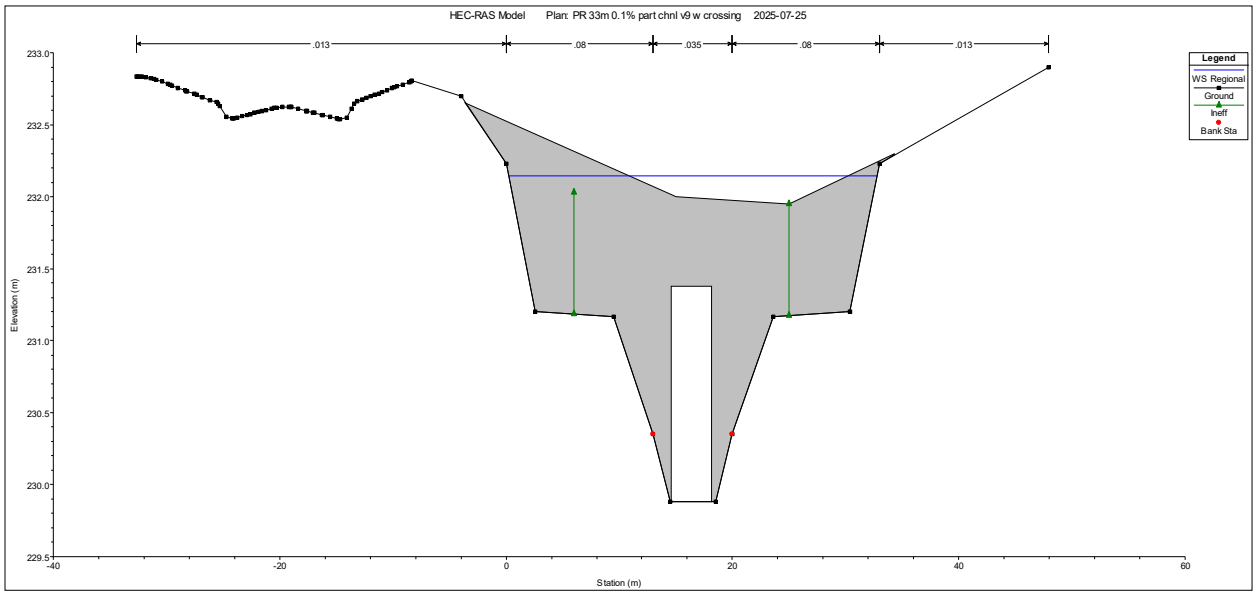


FIGURE 10 – CROSS SECTION OF DRIVEWAY CROSSING

Figure 11 shows a profile of the water surface elevation for the Regional event with proposed crossings.

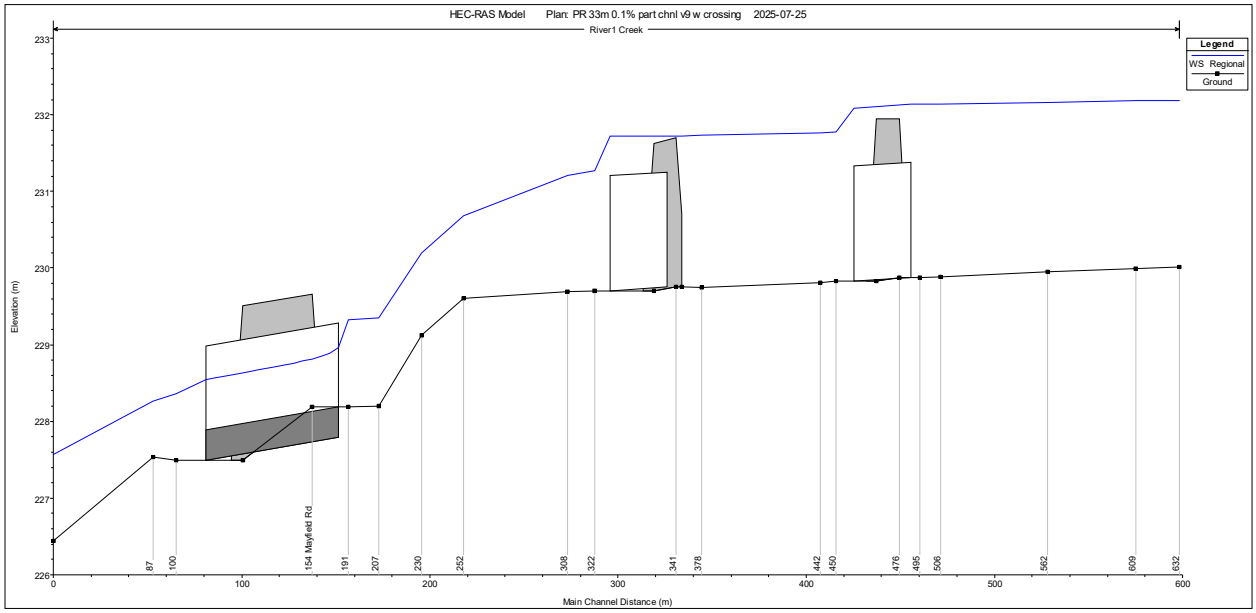


FIGURE 11 – WATER SURFACE ELEVATION PROFILE OF NATURAL CHANNEL WITH DRIVEWAY CROSSINGS

Full HEC-RAS modelling results can be found in the letter attachments.

5.2 PROPOSED SECONDARY EMERGENCY OVERLAND SPILL EASEMENT

The primary emergency outfall for the pond will become the new proposed outfall culvert and inlet riser. The secondary emergency outlet for the pond will become the shifted pond spillway weir and overland spill easement to receive the pond spillway flows in the unlikely event that the Equity SWM Pond emergency inlet structure is fully blocked, and the proposed outlet extension is incapacitated under uncontrolled flow conditions.

To size the easement area, a third hydraulic scenario in HEC-RAS was created. The proposed grades to contain the spill and direct major drainage to the open channel can be found on the Conceptual Culvert Conveyance System Drawing (Drawing C101).

The emergency flow path is sized to convey 100-year Uncontrolled flows from the Equity Prestige Business Park plus uncontrolled 100-year flows from the two properties in which the easement covers. The total flow that can be safely conveyed in the easement is 11.80m^3/s. This is slightly greater than the pond outfall because it conservatively considered that no SWM is be provided by the two contributing properties.

The emergency spill path will have a channel slope of 0.5% and width of 60m. **Figure 12** below shows a typical cross section of the spill path. The pond outlet extension will be located at the crown of the emergency spill path.

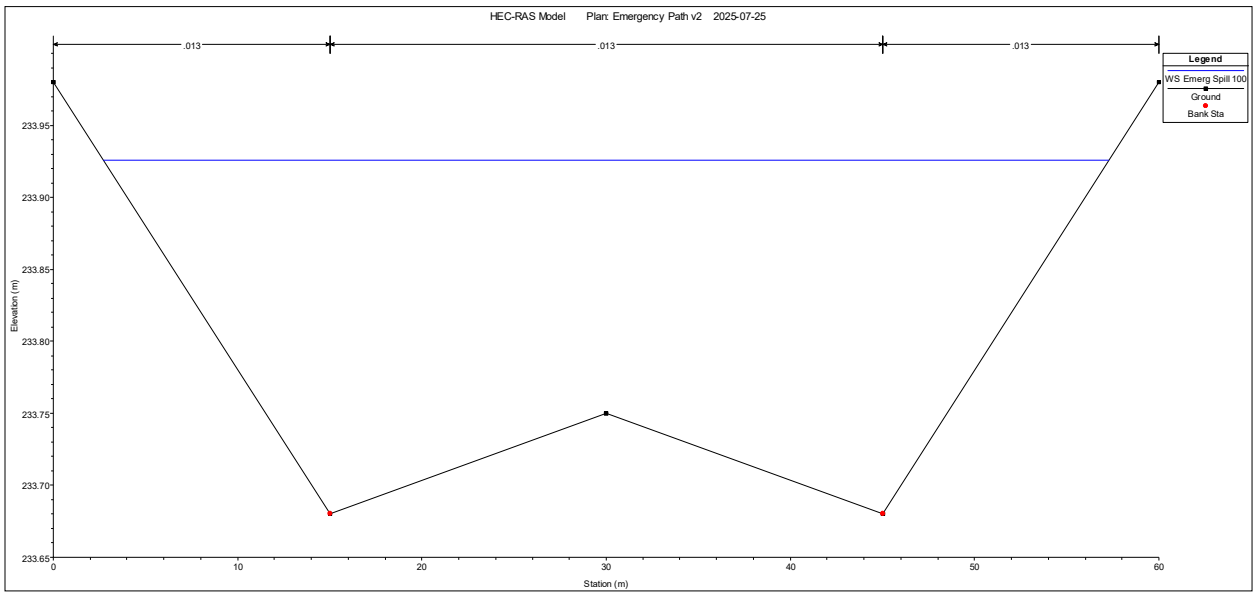


FIGURE 12: EMERGENCY SPILL PATH CROSS SECTION

The 100-year flow depth of the emergency spill path is 0.25m with a peak velocity of 1.40m/s. This equates to a depth velocity product of 0.35m^2/s. In accordance with MNRF Technical Guidelines, **Figure 13** illustrates risk thresholds for typical flood risk related to people and vehicles.

Table 4 Flood Risk Criteria

Risk Level	Low	Medium	High *
Depth	≤ 0.3 m	> 0.3 m and ≤ 0.8 m	> 0.8 m
Velocity	≤ 1.7 m/s	≤ 1.7 m/s	> 1.7 m/s
Depth-Velocity Product	≤ 0.37 m^2/s	≤ 0.37 m^2/s	> 0.37 m^2/s

* Exceedance of any one of the criteria results in high risk.

FIGURE 13: TABLE 4 FROM FLOODPLAIN SPILL ASSESSMENT PREPARED BY MATRIX

For areas classified as low risk, ingress and egress are feasible for pedestrian and vehicular traffic. For medium risk areas, ingress and egress are feasible for pedestrian traffic and emergency vehicles but not private vehicles. For high-risk areas, ingress and egress are not feasible for pedestrian nor vehicular traffic.

The emergency spill path hydraulic modelling results are appended.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This study has successfully examined the technical feasibility and design requirements to extend the existing Equity Prestige Business Park SWM Pond outlet and convey flood flows through a new open channel system parallel to the proposed Simpson Road Extension. This solution builds on the already approved road extension and channel

system accepted as part of the current Secondary Plan but offers a more refined solution offering improved development opportunities while adhering to all regulatory objectives. The following key design features have been considered as part of this exercise to achieve project objectives:

- A new extended Equity Park outfall consisting of a 4.2m x 1.5m buried concrete box culvert, shifted easterly to better accommodate the proposed Simpson Road Extension.
- A new additional emergency pond outfall via a concrete riser connected directly to the new storm outfall
- An emergency overland spill easement designed to safely contain pond spill and protect develop via an easement
- A new 33-metre-wide two-tiered trapezoidal open channel offering improved attenuation that contains the regional storm event and reduces downstream flooding while provide fish passage and habitat
- Two new shared crossings for four (4) landowners each requiring a single 3.6m x 1.5m box culvert

Subject to continued approval of the conceptual methodology, results, and designs presented in this study and related works by others, detailed construction design plans will be prepared. A final, updated design brief will also be provided, incorporating the analysis outlined in this letter.

We trust this report offers sufficient information to assess the feasibility of a new culvert conveyance system with respect to the Simpson Road Secondary Plan.

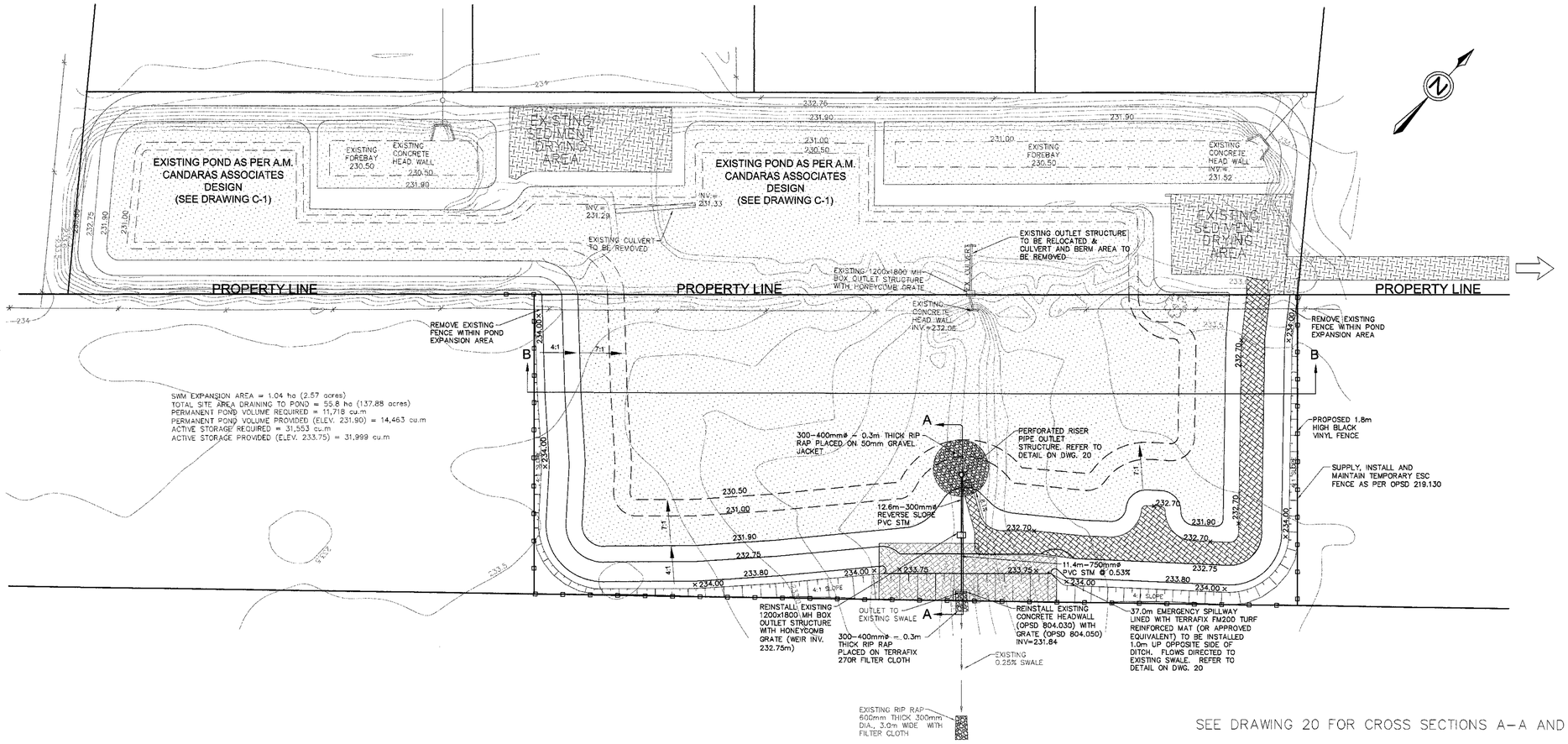
Sincerely,
GRECK AND ASSOCIATES LIMITED

Eric Greck, P.Eng.
President

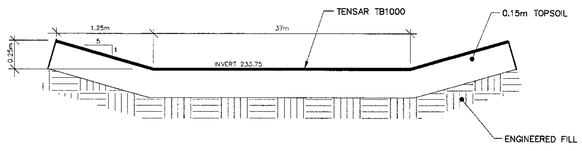
Jennifer Chan, P.Eng.
Water Resources Engineer

Attachments

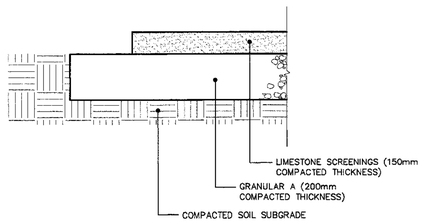
- Equity Prestige Business Park Stormwater Management Pond Design Drawings by Pitura Husson Limited dated August 14, 2008
- 100 Pillsowrth Stormwater Management Pond Design Drawings by MTE, dated March 16, 2021
- Simpson Road Extension Phase 3 Design Drawings by Wood, dated September 2021
- Hydrologic Modelling Results for Alternative Flow Routing
- Hydrologic Modelling Results for Downstream Flows
- Equity SWM Pond Outlet Modelling Results
- Hydraulic Modeling Results for Redesigned Natural channel
- Hydraulic Modelling Results for Redesigned Natural channel with Driveway Crossings
- Hydraulic Modelling Results for Emergency Flow Path
- Plan and Profile Drawing C1 of Natural channel System
    - Equity Prestige Business Park Stormwater Management Pond Outlet Extension Detail



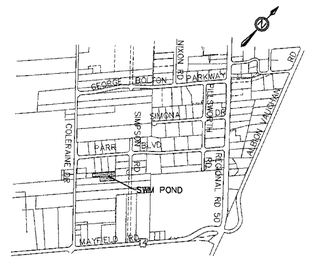
SEE DRAWING 20 FOR CROSS SECTIONS A-A AND B-B



EMERGENCY OVERFLOW ROUTE - SECTION
N.T.S.



LIMESTONE MAINTENANCE ACCESS ROAD
N.T.S.



KEYPLAN
N.T.S.

GENERAL NOTES

LEGEND

- MAINTENANCE ACCESS ROAD WITH LIMESTONE SCREENINGS
- PERMANENT POOL AREA
- 4:1 SLOPE
- ESC FENCE AS PER OPSD 219.130

NO.	BY	DATE	REVISION	ODNEL CHECKED	TOWN APPR'D
12.	DWS	08/07/31	SIXTH SUBMISSION		
11.	DWS	08/06/24	FIFTH SUBMISSION		
10.	DWS	08/05/14	ISSUED FOR CONSTRUCTION		
9.		08/04/04	FOURTH SUBMISSION		
8.		08/02/15	ISSUED FOR TENDER		
7.	GKR	08/02/01	UPDATED OVERFLOW SPILLWAY WIDTH		
6.	DPH	08/01/29	AS PER TRCA COMMENTS		
5.	DPH	07/12/17	THIRD SUBMISSION		
4.	DPH	07/09/14	ISSUED FOR MATERIAL ORDERING		

APPROVED FOR CONSTRUCTION

THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.

DATE :_____ APPROVED BY:_____

C. CAMPBELL, C.E.T.
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

BENCH MARK:

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE BM 758056 HAVING AN ELEVATION OF 251.263.

LICENSED PROFESSIONAL ENGINEER
M.T. COLERIDGE
100011229
PROVINCE OF ONTARIO

PROJECT NAME

GWL INDUSTRIAL SUBDIVISION

CONSULTANT

Pitura Husson Limited
1725 16th Avenue - Suite 103
Richmond Hill, Ontario, L4B 4C6
Tel:(905) 709-5825 Fax:(905) 709-5850
Email: general@piturahusson.com

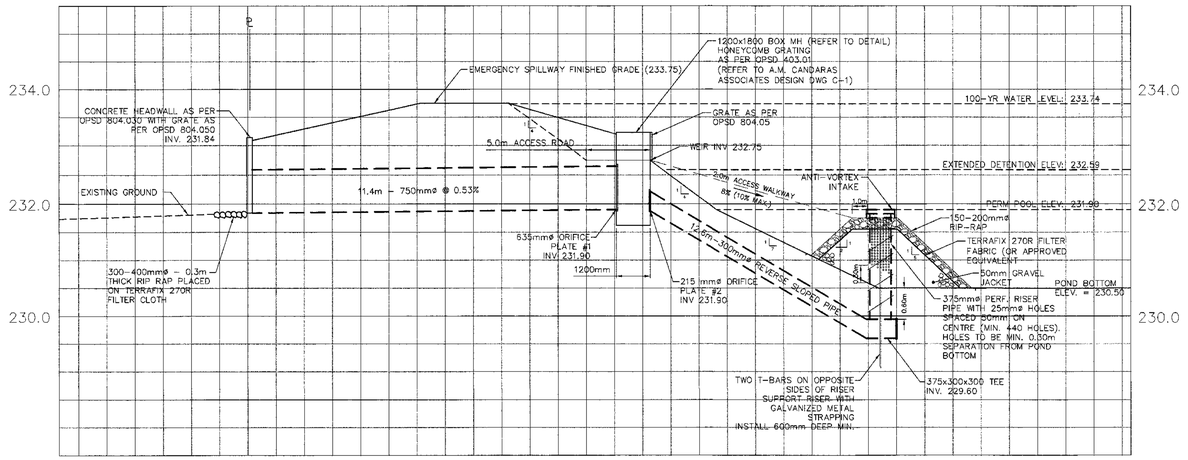
REGION OF PEEL

THE CORPORATION OF THE
TOWN OF CALEDON

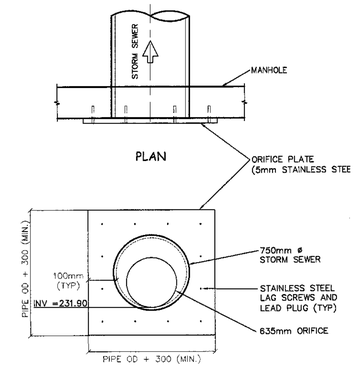
POND DESIGN

HORIZ. 1:500	VERT.	PROJECT No. 27305
DESIGNED BY: MTC/SAK	DRAWN BY: SAK	DRAWING No. 12
MUNICIPAL NO: SPA 07-048	REGION NO: C02.304	

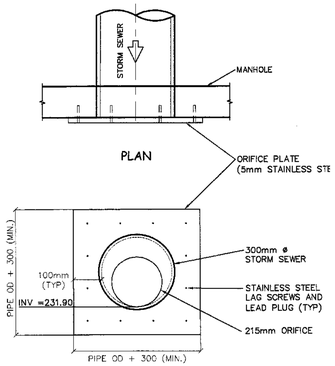
File: P:\27\305-Caledon GWL\5th-Sub-Subdivision\swm\305-swm-pond expansion.dwg - Last Revised: Wed, Jun 25 2008 - 1:26pm



SECTION A-A
N.T.S.



CONTROL MH ORIFICE PLATE #1
N.T.S.



CONTROL MH ORIFICE PLATE #2
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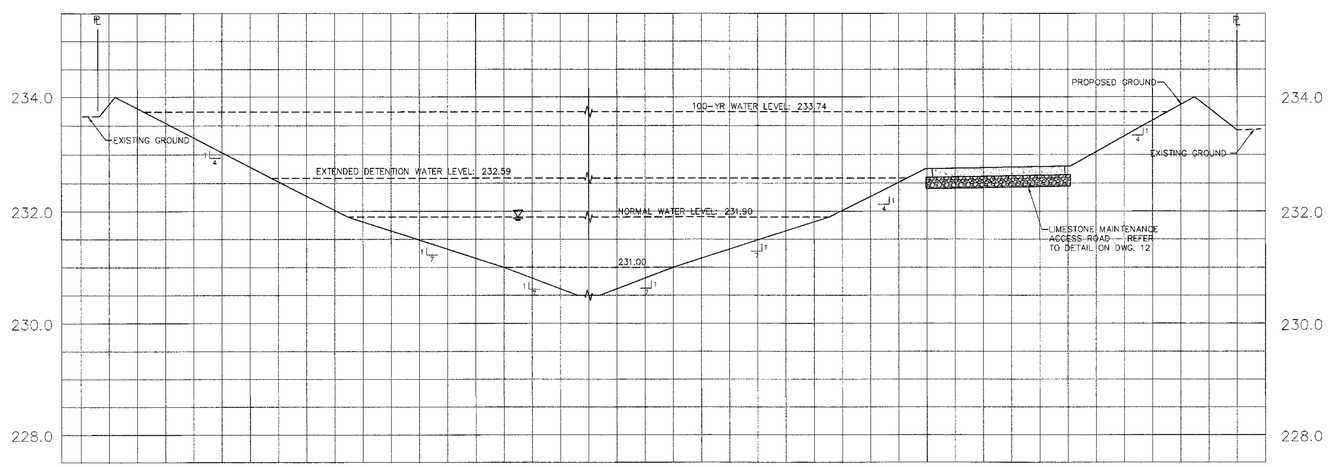
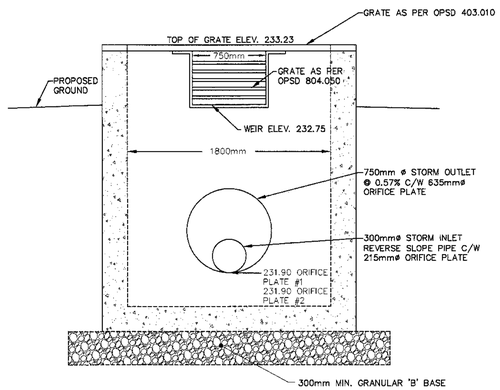
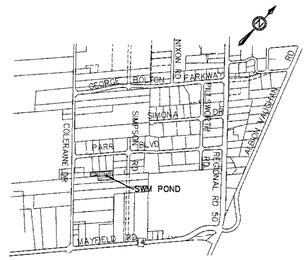


SECTION B-B
N.T.S.



PRECAST CONCRETE DITCH INLET CATCHBASIN
N.T.S.



KEYPLAN
N.T.S.

GENERAL NOTES

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
10.	DWS	08/07/31	SIXTH SUBMISSION		
9.	DWS	08/05/14	ISSUED FOR CONSTRUCTION		
8.	DWS	08/04/28	ISSUED FOR POND CONSTRUCTION		
7.		08/02/15	ISSUED FOR TENDER		
6.	DPH	08/01/29	AS PER TRCA COMMENTS		
5.	DPH	07/12/17	THIRD SUBMISSION		
4.	DPH	07/09/14	ISSUED FOR MATERIAL ORDERING		
3.	DPH	07/08/02	SECOND SUBMISSION		
2.	DPH	07/06/11	ISSUED FOR TENDER		
1.	DPH	07/06/01	FIRST SUBMISSION		

APPROVED FOR CONSTRUCTION

THIS APPROVAL CONSTITUTES A GENERAL REVIEW AND DOES NOT CERTIFY DIMENSIONAL ACCURACY.

THIS APPROVAL IS SUBJECT TO THE FURTHER CERTIFICATION OF THE "AS CONSTRUCTED" WORKS BY A REGISTERED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO.

DATE :_____ APPROVED BY:_____
G. CAMPBELL C.E.T.
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

BENCH MARK:

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE BM 758056 HAVING AN ELEVATION OF 251.263.

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PROJECT NAME

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Tel:(905) 709-5825 Fax:(905) 709-5850
Email: general@piturahusson.com

REGION OF PEEL

THE CORPORATION OF THE
TOWN OF CALEDON

POND DETAILS

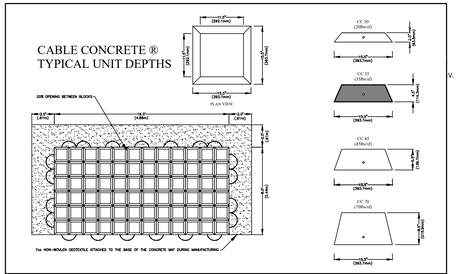
HORIZ. 1:500	VERT.	PROJECT No. 27305
DESIGNED BY: MTC/SAK	DRAWN BY: SAK	DRAWNING No. 20
MUNICIPAL NO: SPA 07-048	REGION NO: C02.304	

File: P:\27\305-Caledon GWL\5th-Sub-Subdivision\pwm\305-swm-pond expansion.dwg - Revised by <SARAH> : Thu, Jul 31, 2008 - 3:18pm

TOTAL POND BLOCK AREA	1.12ha

DESCRIPTION	PROVIDED STORAGE	REQUIRED STORAGE
PERMANENT POOL EL.227.15–229.00	3,680m^3	3,550m^3
EROSION CONTROL EL.229.00–229.75	3,800m^3	3,582m^3
2YR. W.L. EL.229.00–229.95	4,850m^3	4,850m^3
5YR. W.L. EL.229.00–230.15	5,850m^3	5,638m^3
10YR. W.L. EL.229.00–230.25	6,350m^3	6,198m^3
25YR. W.L. EL.229.00–230.40	7,150m^3	7,105m^3
50YR. W.L. EL.229.00–230.55	7,900m^3	7,739m^3
100YR. W.L. EL.229.00–230.85	10,550m^3	8,628m^3

CABLE CONCRETE ® TYPICAL UNIT DEPTHS



IECS — INTERNATIONAL EROSION CONTROL SYSTEMS
22233 Hoskins Line, Rodney, ON, N0L 2C0 — Phone: 800-821-7462 — Fax:866-496-1990 — www.iecs.com

CABLE CONCRETE ® TYPICAL UNIT DEPTHS

DRAWN BY: D. J — CHECKED BY: L.A — SCALE: N.T.S — DATE: 10/21/13 — SHEET 1 OF 1

STORM MANHOLES, DICBs, HEADWALLS

NAME	ELEVATION	SIZE	SPECIFICATION
CTL.MH–9	T/G = 231.35 SW INV IN = 229.43 NE INV OUT = 229.40 SE INV OUT = 228.65	3600x2400mm	
10	T/G = 231.35 SW INV IN = 229.15 NW INV IN = 229.04 SE INV OUT = 229.02	3000x3000mm	
CTL.MH–11	T/G = 231.35 N INV IN = 227.02 N INV IN = 229.00 N INV IN = 229.27 NE INV IN = 229.30 NW INV IN = 229.31 S INV OUT = 228.76	1800mm	OPSD 701.012
12	T/G = 230.70 N INV IN = 228.68 SE INV OUT = 228.60	1500mm	OPSD 701.011
13 (TO BE MODIFIED AND COORDINATED AT THE TIME OF MAYFIELD ROAD WIDENING WORKS)	T/G = 231.02 NW INV IN = 228.52 SW INV OUT = 228.47	1800mm	OPSD 701.012
14 (TO BE MODIFIED AND COORDINATED AT THE TIME OF MAYFIELD ROAD WIDENING WORKS)	T/G = 230.85 NE INV IN = 228.37 S INV OUT = 228.32	1800mm	OPSD 701.012
15 (TO BE CONSTRUCTED AND COORDINATED AT THE TIME OF MAYFIELD ROAD WIDENING WORKS)	T/G = 230.70 N INV = 228.24 NE INV = 228.30 S INV = 228.16	1800mm	OPSD 701.012
[redacted] 16	T/G = 229.60 NE INV = 227.28 S INV = 227.23	1200mm	OPSD 701.010

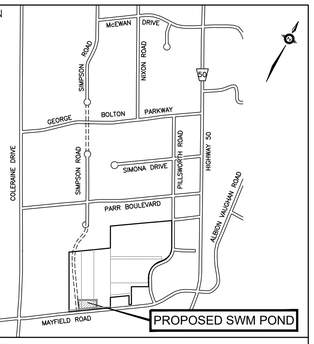
STORM MANHOLES, DICBs, HEADWALLS

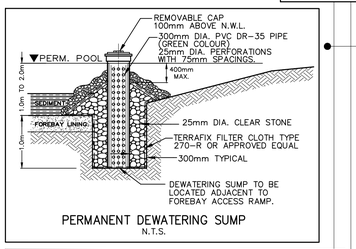
NAME	ELEVATION	SIZE	SPECIFICATION
HW–1	T/G = 230.80 NW INV IN = 229.00		OPSD 804.020 OPSD 804.050 (MODIFIED GRATING)
HW–2	T/G = 229.60 N INV IN = 228.35		OPSD 804.040 GRATING AS PER OPSD 804.050
TEMP. HW–3	T/G = 229.58 N INV IN = 228.27		OPSD 804.030 GRATING AS PER OPSD 804.050
HW–4 (TO BE CONSTRUCTED AND COORDINATED AT THE TIME OF MAYFIELD ROAD WIDENING WORKS)	T/G = 229.51 N INV IN = 228.12		OPSD 804.030 GRATING AS PER OPSD 804.050
DICB 1	T/G = 229.85 S INV OUT = 229.40	1200x600mm	OPSD 705.040
DICB 2	T/G = 230.00 S INV OUT = 229.40	1200x600mm	OPSD 705.040
DICB 3	T/G = 230.30 S INV OUT = 229.40	1200x600mm	OPSD 705.040
OGS–DCB–1	T/G = 230.49 NE INV OUT = 228.76		
[redacted]	T/G = 230.48 SW INV OUT = 228.80		

LIST OF DRAWINGS

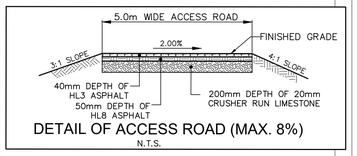
SWM–1A SIMPSON ROAD SWM POND (INTERIM)
SWM–1B SIMPSON ROAD SWM POND (ULTIMATE)
SWM–2A SWM POND SECTIONS (SEC–1A TO SEC–3A)
SWM–2B SWM POND SECTIONS (SEC–1B TO SEC–6B)
SWM–3 CONTROL FLOW STRUCTURE DETAIL
SWM–4 MANHOLES 9, 10 AND 16 DETAILS
SWM–5 STORM OUTFALL DETAIL

KEY PLAN N.T.S.

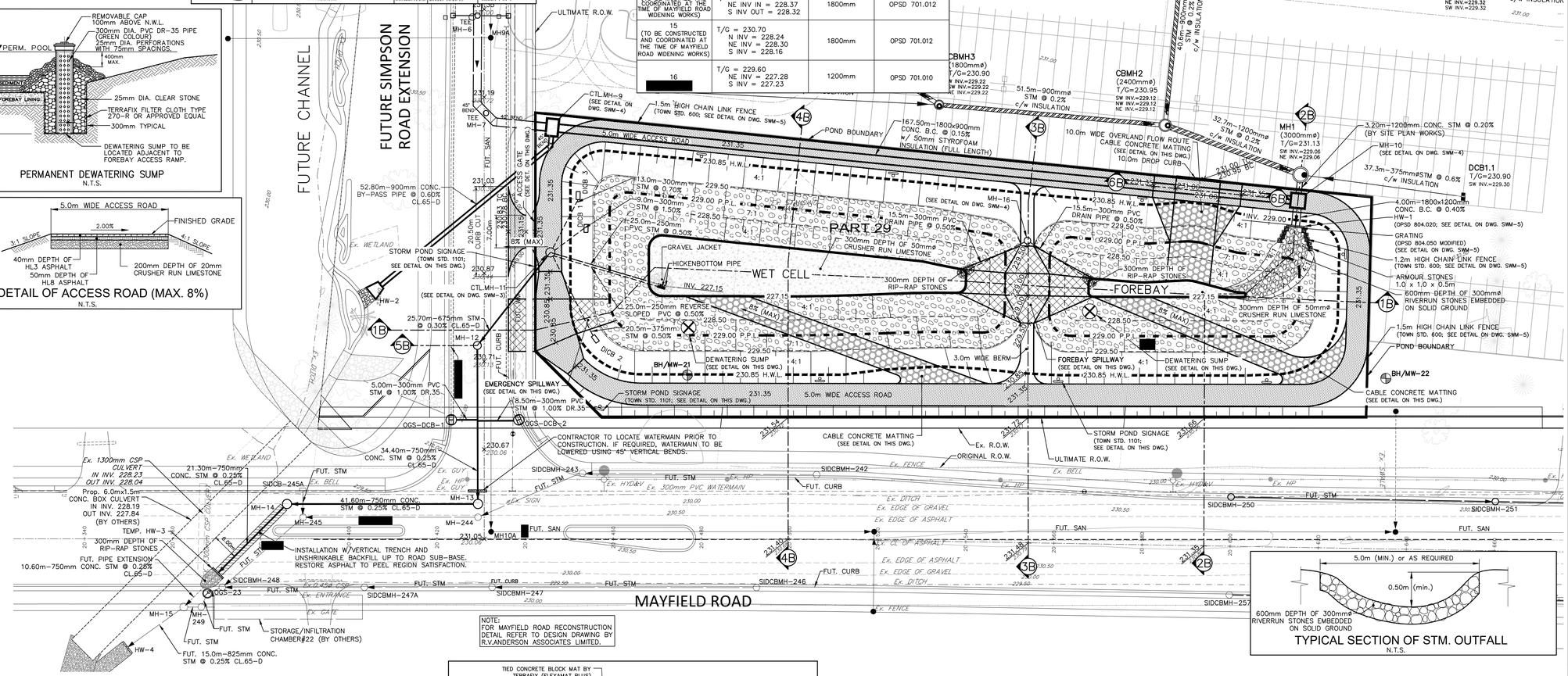




PERMANENT DEWATERING SUMP
N.T.S.



DETAIL OF ACCESS ROAD (MAX. 8%)
N.T.S.



TYPICAL SECTION OF STM. OUTFALL
N.T.S.

NOTES

1. THE LOCATION OF ALL UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON CONTRACT DRAWINGS, AND WHERE SHOWN THE ACCURACY OF THE LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY EXACT LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITIES OF DAMAGE.
2. ALL AREAS DISTURBED DURING CONSTRUCTION OF SEWERS AND WATERMAINS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE TOWN OF CALEDON .

LEGEND

- 230.07 (231.05) — DENOTES PROPOSED ELEVATION / DENOTES EXISTING ELEVATION
- 231.0 — DENOTES EXISTING CONTOUR ELEVATION
- DENOTES 100 YR. WATER LEVEL
- DENOTES PERMANENT POOL LEVEL
- DENOTES PROPOSED POND CONTOUR LINE
- DENOTES 300mm OF ON–SITE CLAYEY/SILT MATERIAL, FREE OF ORGANICS, COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD) ON TOP OF BENTOFIX GEOSYNTHETIC CLAY LINER (BY TERRAFIX)
- DENOTES 300mm OF 50mm CRUSHER RUN LIMESTONE
- DENOTES TIED CONCRETE BLOCK MAT BY TERRAFIX (FLEXAMAT) SEE DETAIL ON THIS DWG.
- DENOTES CABLE CONCRETE MATTING SEE DETAIL ON THIS DWG.
- DENOTES ASPHALT ACCESS ROAD SEE DETAIL ON THIS DWG.
- DENOTES DEWATERING SUMP SEE DETAIL ON THIS DWG.
- DENOTES STORM POND SIGNAGE AS PER TOWN STD. 1101; SEE DETAIL ON THIS DWG.

NO.	BY	DATE	REVISION	CONCL. CHECKED	TOWN APPRVD
1.		21/06/25	WEEPER SYSTEM REMOVED		

NO.	DATE	ISSUED FOR
1.	20/07/06	ISSUED FOR SPA
2.	20/08/18	ISSUED FOR SPA
3.	20/10/07	ISSUED FOR SPA
4.	20/12/21	ISSUED FOR SPA
5.	21/04/06	ISSUED FOR SPA
6.	21/05/05	ISSUED FOR FINAL SUBMISSION

BENCH MARK:

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE RELATED TO CITY OF BRAMPTON CONTROL MONUNENT No. 010840151 HAVING A POSTED ELEVATION OF 229.82 METRES.

PROFESSIONAL ENGINEER — F. TCHOURKINE — JUN. 25, 2021 — PROVINCE OF ONTARIO

Town of Caledon
APPROVED AS NOTED

This approval constitutes a general review and does not certify dimensional accuracy.

This approval is subject to further certification of the "as recorded" works by a Professional Engineer of the Province of Ontario.

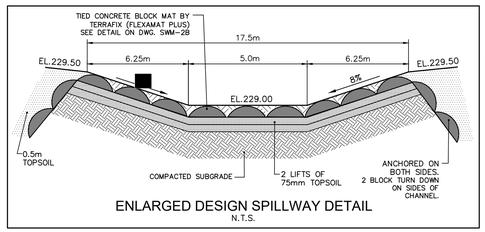
Date: _____
Approved By: _____
Print Name: _____

GENERAL NOTES – STORM SEWERS

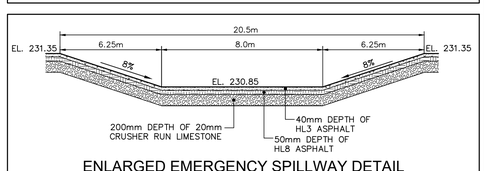
A. STORM SEWER TO BE PROVIDED ON ALL ROADS WITH CURB AND GUTTER.
B. PLACE ALL CATCH BASIN LATERALS AT 2% GRADE UNLESS OTHERWISE NOTED. PIPE SIZE MINIMUM 250mm DIA. SINGLE, 300mm DIA. DOUBLE.
C. STORM SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD 802.030 FOR RIGID PIPE OR OPSD 802.010 WITH GRANULAR 'A' FOR FLEXIBLE PIPE UNLESS APPROVED OTHERWISE BY THE GENERAL MANAGER OF FINANCE & INFRASTRUCTURE SERVICES.
D. MAINTENANCE HOLE TOPS (FRAMES) AND CATCHBASIN (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED.
E. STORM SEWER TO BE LOCATED OFFSET 1.5m SOUTH OR WEST OF CENTERLINE UNLESS OTHERWISE SPECIFIED.
F. ALL CONNECTIONS TO THE STORM MAIN SHALL BE MADE WITH A STORM MANHOLE OR APPROVED FACTORY TEE CONNECTION AS PER OPSD 708.01 OR 708.03.
G. PIPE MATERIAL TO BE REINFORCED CONCRETE WITH A STRENGTH OF 50 N/m/mm CERTIFIED TO C.S.A. STANDARD A247.2–1982, CLASS 50–D (PREVIOUSLY C.S.A. STANDARD A257.2–1974 CLASS II) OR PVC CERTIFIED TO C.S.A. STANDARDS 182.2 AND 182.4 MAX. PVC PIPE DIA. IS 600mm BIG O BOSS 2000 POLYETHYLENE PIPE WITH GASKETED BELL AND SPIGOT JOINTS CERTIFIED C.S.A. B182.6 FOR STORM SEWERS UP TO 900mm DIA. WHERE ONLY CONNECTION STD CATCHBASINS ARE CONSIDERED.
H. STORM SEWER TO BE MINIMUM 300mm DIA. WITH JOINTS CONFORMING TO C.S.A. STANDARD A 257.3
I. ALL PIPE BEDDING MUST CONFORM TO OPSD MAXIMUM COVER TABLE. NO FLEXIBLE PIPE SEWERS WILL BE INSTALLED WITH A DEPTH COVER GREATER THAN 6m UNLESS SPECIFICALLY APPROVED BY THE DIRECTOR OF PUBLIC WORKS AND ENGINEERING.
J. ALL PIPE HANDLING INSTRUCTIONS MUST BE IN STRICT COMPLIANCE WITH MANUFACTURERS INSTALLATION GUIDES AND THE OCPA OR UNIBELL GUIDELINES.

GENERAL NOTES – ROADWORKS

A. SINGLE – STAGE CURB & GUTTER TO COMPLY WITH OPSD 600.040
B. TWO – STAGE CURB & GUTTER TO COMPLY WITH OPSD 600.070
C. SIDEWALKS TO COMPLY WITH OPSD–310.010 AND ARE TO BE 1.5 METRES WIDE ON A 150mm COMPACTED GRANULAR "A" BASE. MINIMUM THICKNESS AS FOLLOWS: – NORMAL THICKNESS 125mm. – RESIDENTIAL DRIVEWAY 150mm – COMMERCIAL/INDUSTRIAL DRIVEWAY 200mm (REINFORCEMENT AS PER OPSS IF REQUIRED)
D. NATIVE SUBGRADE SHALL HAVE A CROSSFALL OF 3% AND THE MATERIAL SHALL BE APPROVED BY A SOILS CONSULTANT AND IS SUBJECT TO APPROVAL BY THE GENERAL MANAGER OF FINANCE & INFRASTRUCTURE SERVICES.
E. THE ROAD BASE SHALL INCORPORATE 100mm DIAMETER SUBDRAIN WITH FACTORY INSTALLED FILTER FABRIC AS PER TOWN OF CALEDON STANDARD No. 218.
F. ALL CURB RADII TO BE MINIMUM OF 10.0 METRES RESIDENTIAL AND 15.0 METRES INDUSTRIAL AT THE EDGE OF ASPHALT.
G. NATIVE SUBGRADE TO BE COMPACTED TO MINIMUM 95 % STANDARD PROCTOR MAXIMUM DRY DENSITY AND SHALL BE PROOF ROLLED.
H. GRADE AND CROSS FALL ADJUSTMENT OF MAINTENANCE HOLE AND CATCH BASIN FRAMES WILL BE MADE USING PRODUCTS SPECIFICALLY MANUFACTURED FOR THAT PURPOSE AS PER OPSD 704.010.
I. NON–COMPRESSIBLE BACK FILL WILL BE USED DURING REBUILDING, ADJUSTING, OR ANY OTHER APPLICABLE CATCH BASIN OR MAINTENANCE HOLE WORKS.
J. CURB AND SIDEWALK CONCRETE SHALL BE 32MPa AT 28 DAYS WITH 7% +/– 1.5% ENTRAINED AIR AND NOT LESS THAN 355 kg/m3 OF CEMENT.(PER OPSS 315 AND 353)

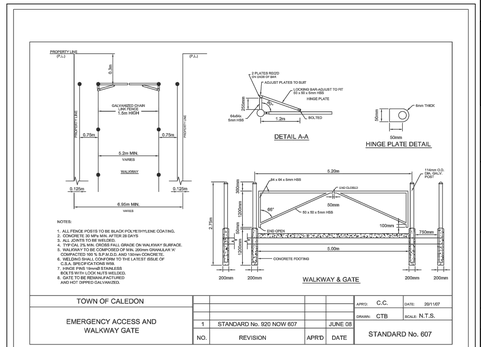


ENLARGED DESIGN SPILLWAY DETAIL
N.T.S.



ENLARGED EMERGENCY SPILLWAY DETAIL
N.T.S.

TOWN OF CALEDON						
STORM POND SIGNAGE				APVD.	B.B.	DATE: AUGUST 17
				DRAWN	B.M.	SCALE: N.T.S.
	NO.	REVISION	APVD	DATE	STANDARD No. 1101	



NOTES:
1. ALL STEEL POSTS TO BE BLACK POLYESTER COATING.
2. CONCRETE 35 MPA MIN. AFTER 28 DAYS.
3. ALL JOINTS TO BE WELDED.
4. GATE TO BE INSTALLED FLUSH WITH GROUND ON WALKWAY SURFACE.
5. WALKWAY TO BE CONFIGURED OF MIN. 200mm GRANULAR 'A' COMPACTED TO 100 % S.P.M.D.D. AND 150mm CONCRETE.
6. CONCRETE TO BE IN ACCORDANCE TO THE LATEST ISSUE OF C.S.A. SPECIFICATIONS 1994.
7. HINGE PINS 10mmØ STAINLESS.
8. ALL STEEL TO BE HOT DIPPED GALVANIZED.
9. GATE TO BE REGINALIFIED STEEL AND HOT DIPPED GALVANIZED.

TOWN OF CALEDON						
EMERGENCY ACCESS AND WALKWAY GATE				APVD.	C.C.	DATE: 29/1/07
				DRAWN	CTB	SCALE: N.T.S.
	1	STANDARD No. 920 NOW 607	JUNE 05			
	NO.	REVISION	APVD	DATE	STANDARD No. 607	

ANATOLIA CAPITAL CORPORATION

SCHAEFFERS CONSULTING ENGINEERS
SCHAEFFER & ASSOCIATES LTD.
6 Ronrose Drive, Concord, Ontario L4K 4B3
Tel: (905) 738-6100
Fax: (905) 738-6875
E-mail: design@schaeffers.com

Region of Peel — Working for you.

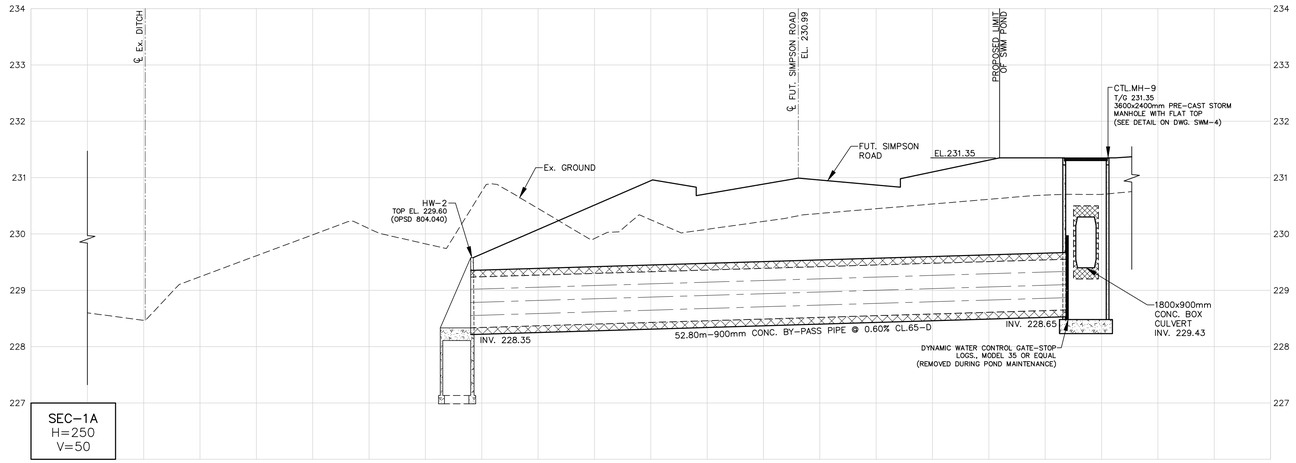
TOWN OF CALEDON

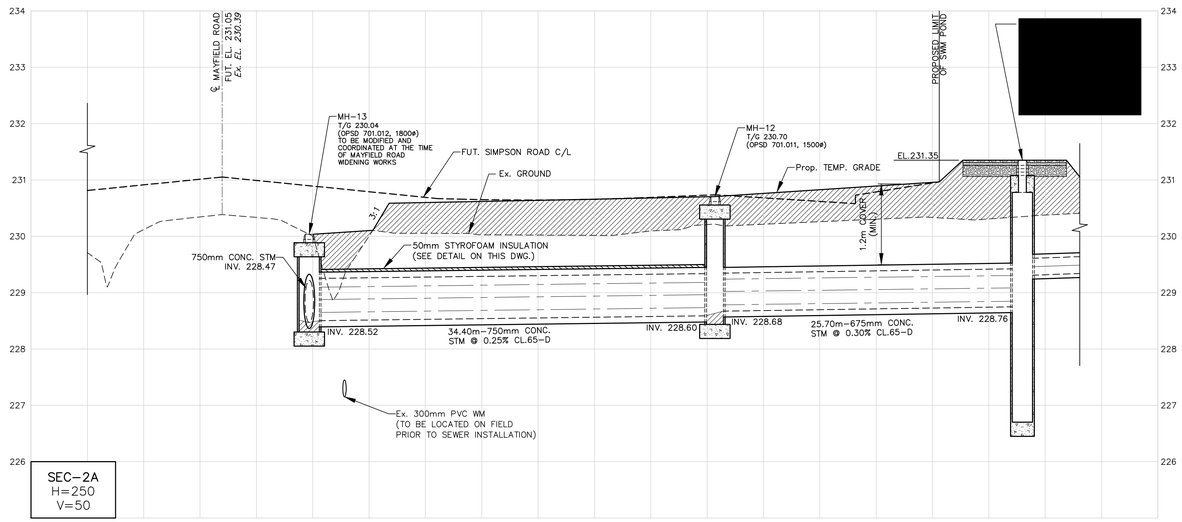
SIMPSON ROAD SWM POND (ULTIMATE)

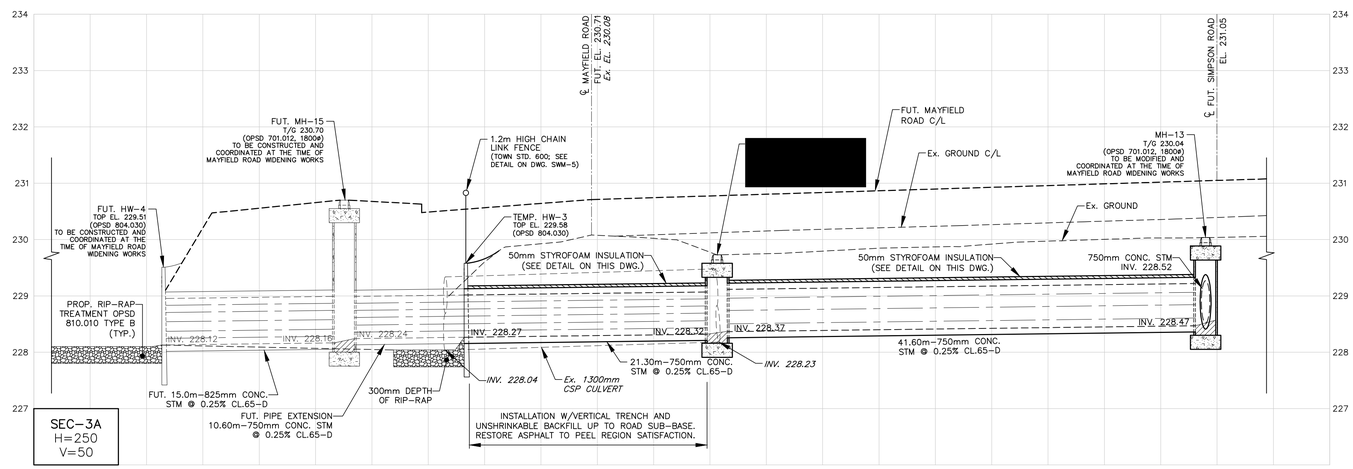
CITY FILE: XXX

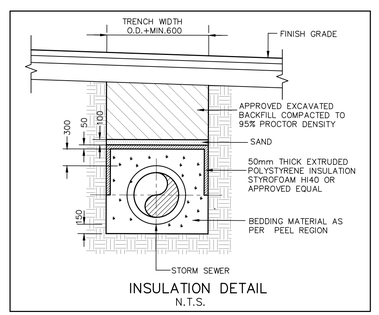
SCALE: 1:500	PROJECT No. 2019-4841
DESIGNED BY: F.T. — DRAWN BY: AM	
CHECKED BY: P.S. — DATE: OCT. 2019	DRAWING No. SWM–1B

F:\4841\4841-SWM\4841-SWM-1D (Ultimate).dwg, 6/25/2021 1:06:11 PM, mzemlyanoy









INSULATION DETAIL
N.T.S.

NO.	BY	DATE	REVISION	CONCL. CHECKED	TOWN APPR'D
1.		21/06/25	WEEPER SYSTEM REMOVED		

NO.	DATE	ISSUED FOR
1.	20/07/06	ISSUED FOR SPA
2.	20/08/18	ISSUED FOR SPA
3.	20/10/07	ISSUED FOR SPA
4.	20/12/21	ISSUED FOR SPA
5.	21/04/06	ISSUED FOR SPA
6.	21/05/05	ISSUED FOR FINAL SUBMISSION

BENCH MARK:

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE RELATED TO CITY OF BRAMPTON CONTROL MONUNENT No. 010840151 HAVING A POSTED ELEVATION OF 229.82 METRES.

PROFESSIONAL ENGINEER
F. TCHOURKINE
JUN. 25, 2021
PROVINCE OF ONTARIO

Town of Caledon
APPROVED
AS NOTED

This approval constitutes a general review and does not certify dimensional accuracy.

This approval is subject to further certification of the "as recorded" works by a Professional Engineer of the Province of Ontario.

Date:

Approved By:

Print Name:

ANATOLIA CAPITAL CORPORATION

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CONSULTING ENGINEERS
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E-mail: design@schaeffers.com

Region of Peel
Working for you

TOWN OF CALEDON

SWM POND SECTIONS
SEC-1A TO SEC-3A

CITY FILE: XXX

SCALE: AS SHOWN		PROJECT No.	2019-4841
DESIGNED BY: F.T.	DRAWN BY: AM	DRAWING No.	SWM-2A
CHECKED BY: P.S.	DATE: OCT. 2019		

TOWN OF CALEDON

SIMPSON ROAD EXTENSION
PHASE 3

FROM 282m SOUTH OF PARR BOULEVARD TO MAYFIELD ROAD
CONTRACT- 14-093

REGION OF PEEL

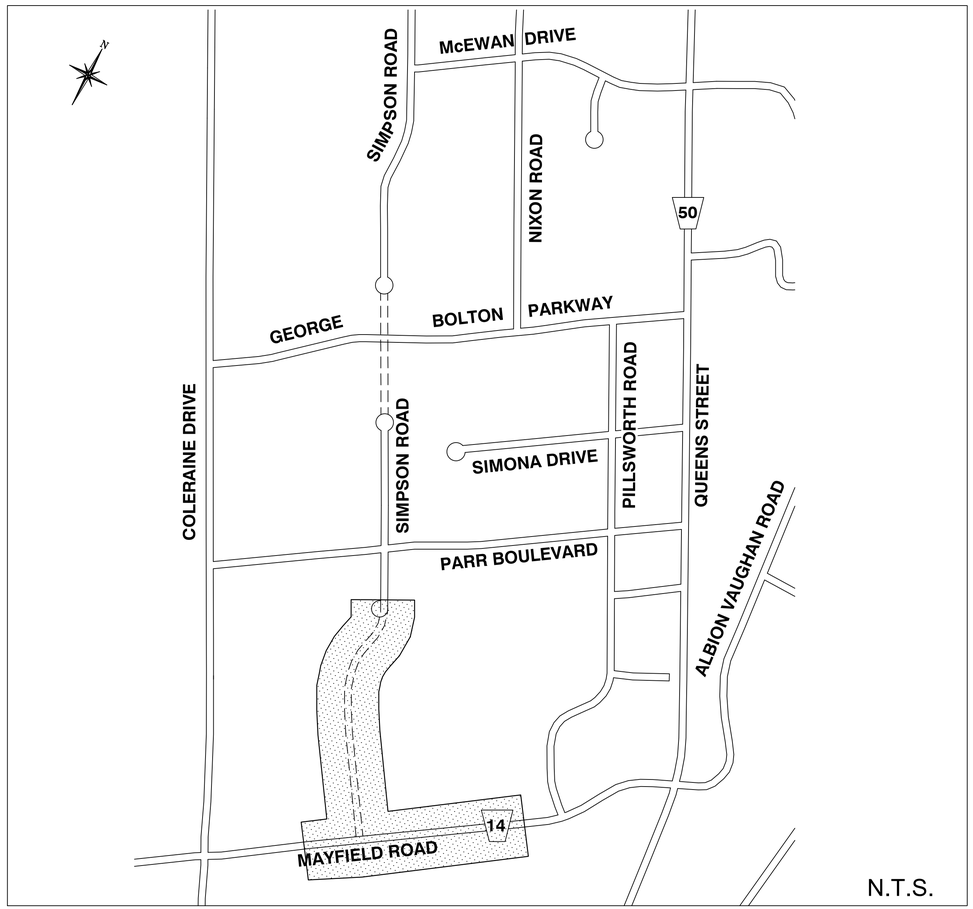
COMMISSIONER OF PUBLIC WORKS

wood.

3450 HARVESTER ROAD
BURLINGTON, ON
L7N 3W5

INFRASTRUCTURE

561m OF ROAD
459m OF STORM SEWER
833m OF SANITARY SEWER
583m OF WATERMAIN
17 MANHOLES
14 CATCHBASINS
16 STREETLIGHTS



N.T.S.

DRAWING INDEX

1	LEGEND
2	GENERAL NOTES
3	EROSION & SEDIMENT CONTROL PLAN
4	GENERAL PLAN ABOVE GROUND
5	GENERAL PLAN BELOW GROUND
6	ALIGNMENT
7-8	REMOVALS
9-12	NEW CONSTRUCTION
13-14	PAVEMENT MARKINGS AND SIGNS
15	TYPICAL SECTIONS AND DETAILS
16	WATER DISTRIBUTION
17	SANITARY AREA DRAINAGE PLAN
18	STORM AREA DRAINAGE PLAN
C1-C7	CHANNEL LAYOUT
E01-E05	ELECTRICAL
L1-L4	LANDSCAPING

Issued for Client Review – 100% Detailed Design

LEGEND

1. EXISTING

GENERAL:

- BOUNDARY LINE
- BRIDGES
- CENTERLINE AND (OR) BASELINE
- CNR RAILWAY
- EASEMENT LINE
- DIRECTION OF GRADING
- LOT — LOT LINE
- MISCELLANEOUS
- PARKING
- LINE PAINTING REMOVAL
- ROAD
- RIGHT OF WAY
- LAKE SHORELINE
- TOP OR BOTTOM SLOPE, BERM
- STREAMS
- WATERSHED SUB-BOUNDARY
- SWAMP AREA, MARSH
- TRANS CANADA GAS PIPELINE
- LANE & PAVEMENT MARKINGS
- WATERSHED AREA

SITE & ROAD:

- BUILDINGS
- EX. BASE
- EX. CENTERLINE AND (OR) BASELINE
- EX. CURB
- EX. DITCH, SWALE
- X — EX. FENCE
- EX. GABION BASKETS
- EX. GUIDERAIL OR POST & WIRE
- EX. LINE PAINTING
- EX. EDGE OF PAVEMENT
- EX. EDGE OF SHOULDER
- EX. SIDEWALK

SEWER:

- EX. CULVERT
- SAN — EX. SANITARY MAIN
- EX. SANITARY SERVICE
- EX. STORM MAIN / SUBDRAIN
- EX. STORM SERVICE

UTILITIES:

- U/B — EX. BELL
- EX. CONDUIT (TRAFFIC LIGHTS ETC.)
- CTV — EX. CABLE TV
- G — EX. GAS MAIN
- U/H — EX. HYDRO
- EX. SPRINKLER SYSTEM
- W — EX. WATER MAIN
- WS — EX. WATER SERVICE

2. PROPOSED

SITE & ROAD:

- BASE PLAN
- CURB
- > — DITCH LINE
- X — FENCE
- GABION BASKETS
- GUIDERAIL OR POST & WIRE
- LINE PAINTING
- PAVEMENT EDGE
- SHOULDER EDGE
- SIDEWALK

SEWER:

- CULVERTS
- SANITARY DRAINAGE AREA
- SANITARY MAIN
- SANITARY SERVICE
- STORM DRAINAGE AREA
- STORM MAIN / SUBDRAIN
- STORM SERVICE

UTILITIES:

- BELL
- CONDUIT (TRAFFIC LIGHTS ETC.)
- CABLE TV
- GAS MAIN
- HYDRO
- SPRINKLER SYSTEM
- WATER MAIN
- WS — WATER SERVICE

3. DRAINAGE PLANS

SANITARY:

- SANITARY DRAINAGE DIVIDE
- SUBCATCHMENT BOUNDARY
- LOCAL BOUNDARY
- ZONING BOUNDARY

STORM:

- EX. WATERSHED BOUNDARY - 5 YEAR STORM
- EX. WATERSHED BOUNDARY - 100 YEAR STORM
- FUTURE WATERSHED BOUNDARY - 5 YR STORM
- FUTURE WATERSHED BOUNDARY - 100 YR STORM
- EXISTING SUBCATCHMENT - 5 YEAR
- EXISTING SUBCATCHMENT - 100 YEAR
- FUTURE SUBCATCHMENT - 5 YEAR
- FUTURE SUBCATCHMENT - 100 YEAR
- LOCAL BOUNDARY

SYMBOLS	DESCRIPTION
C.M. , S.I.B. , S.S.I.B.	CONCRETE MONUMENT, STANDARD IRON BAR, SHORT STANDARD IRON BAR
I.B. , STK , P.K.	IRON BAR, STAKE, NAIL
R.I.B. , I.P.	ROUND IRON BAR, IRON PIPE
C.C.	CUT CROSS
B.M., G.B.M.	BENCH MARK, GEODETIC BENCH MARK
G.S.M. #	GEODETIC SURVEY MONUMENT (2nd Order)
P.I.	POINT OF INTERSECTION
B.H.#	BORE HOLE
R.C.S.	RAILWAY CROSSING SIGN
S.B.	SIGNAL BOX
	RAILWAY TRACKS
H.P. , B.P.	HYDRO POLE, BELL POLE
G.W.	GUY WIRE
G.S. , B.S. , M.S.	GAS SIGN, BELL SIGN, MONUMENT SIGN
B.B. , H.B. , CTV.B.	BELL BOX, HYDRO BOX, CABLE TV BOX
POLE (DESCRIPTION)	MISC. POLE (ie. Clothline)
SIGN	SIGN POST (SPECIFY)
U.MH.	UTILITY MANHOLE (OTHER)
S.S. , T.S.	STOP SIGN, TRAFFIC SIGN
POST	POSTS
P.M.	SINGLE PARKING METER
P.M.	DOUBLE PARKING METER
L.P. , T.L.	LIGHT POLE, TRAFFIC LIGHT
H.MH.	HYDRO MANHOLE
E.MH.	ELECTRICAL MANHOLE (TRAFFIC LIGHTS)
B.MH.	BELL MANHOLE
	TELEPHONE BOOTH
HYD.	FIRE HYDRANT
V #	WATER VALVE
	CURB STOP
	WATERMAIN CROSS, TEE
	WATERMAIN CAP, REDUCER
	FIRE HYDRANT (IN PROFILE)
G.V.	GAS VALVE
	EXISTING GROUND POINT
	VAULT
	GABION BASKET, STONE
	RIP RAP
	ROCK
WELL	WELL
SAN.MH.	SANITARY MANHOLE
STM.MH.	STORM MANHOLE
C.B.MH.	CATCH BASIN MANHOLE
C.B.	SINGLE CATCH BASIN
D.C.B., D.C.B.MH.	DOUBLE CATCH BASIN, DOUBLE CATCH BASIN MANHOLE
D.I.C.B.	DITCH INLET CATCH BASIN
	CULVERT
	SWAMP, MARSH
	TREE LINE, HEDGE
	DECIDUOUS, CONIFEROUS TREE ; STUMP (TREE SIZES WILL BE IN 100mm INCREMENTS)
	DECIDUOUS AND CONIFEROUS SHRUBS
	HATCHING FOR OBJECTS TO BE REMOVED (SCALE OF HATCHING TO BE IN PROPORTION TO THE ITEM TO BE REMOVED)

BLOCK SYMBOLS

BLOCK	BLOCK NAME	
C.M.	CM	
S.I.B.	SIB	
S.S.I.B.	SSIB	
I.B.	IB	
STK	STK	
P.K.	PK	
C.C.	CC	
R.I.B.	RIB	
I.P.	IP	
B.M.	BM	
G.B.M.	GBM	
P.I.	PI	
R.C.S.	RCS	
S.B.	SB	
S.S.	SS	
T.S.	TS	
SIGN	SIGN	
POST	POST	
P.M.	PM1	
P.M.	PM2	
	EG	
	N	
H.P.	HP	
G.W.	GW	
L.P.	LP	
T.L.	TL	
POLE	POLE	
B.P.	BP	
B.S.	BS	
G.S.	GS	
M.S.	MS	
EX.SAN.MH.	SANMH	
EX.STM. MH.	STMMH	
EX. C.B.MH.	CBMH	
EX. D.C.B.MH.	DCBMH	
EX. C.B.	CB	
EX. D.C.B.	DCB	
EX. D.I.C.B.	DICB	
	CULV	
	TREELINE	
	HEDGE	
B.MH.	BMH	
B.B.	BB	
	PHONE	
H.MH.	HMH	
E.MH.	EMH	
H.B.	HB	
U.MH.	UMH	
CTV.B.	CTVB	
	DSHRUB	
	CSHRUB	
	HYD	
	WV	
	CS	
	PHYD	
	PWV	
	PCS	
	CAP	
	CROSS	
	TEE	
	REDUCER	
G.V.	GV	
	VAULT	
	RIPRAP	
	SWAMP	
	ROCK	
WELL	WELL	

PROP. FIRE HYDRANT STA. 0+035.4
FLANGE ELEV. 227.52
HYD-PROF

BLOCKS WITH ATTRIBUTES

BLOCK	BLOCK NAME	
PROP.STM. MH.#	PSTMMH	
PROP.C.B.#	PCBMH	
PROP.D.C.B. MH.#	PDCBMH	
PROP.C.B.#	PCB	
PROP.D.C.B.#	PDCB	
PROP. D.I.C.B.#	PDICB	
PROP.SAN. MH.#	PSANMH	
QUANTITY .1	D1	
QUANTITY .2	D2	
QUANTITY .3	D3	
QUANTITY .4	D4	
QUANTITY .5	D5	
QUANTITY .6	D6	
QUANTITY .7	D7	
QUANTITY .8	D8	
QUANTITY .9	D9	
QUANTITY 1.0	D10	
QUANTITY 1.1	D11	
QUANTITY 1.2	D12	
QUANTITY 1.3	D13	
QUANTITY 1.4	D14	
QUANTITY SIZE	D15	
QUANTITY 1	C1	
QUANTITY 2	C2	
QUANTITY 3	C3	
QUANTITY 4	C4	
QUANTITY 5	C5	
QUANTITY 6	C6	
QUANTITY 7	C7	
QUANTITY 8	C8	
QUANTITY 9	C9	
QUANTITY 1.0	C10	
QUANTITY 1.1	C11	
QUANTITY 1.2	C12	
QUANTITY 1.3	C13	
QUANTITY 1.4	C14	
QUANTITY SIZE	C15	
QUANTITY 1	STUMP1	
QUANTITY 2	STUMP2	
QUANTITY 3	STUMP3	
QUANTITY 4	STUMP4	
QUANTITY 5	STUMP5	
QUANTITY 6	STUMP6	
QUANTITY 7	STUMP7	
QUANTITY 8	STUMP8	
QUANTITY 9	STUMP9	
QUANTITY 10	STUMP10	
QUANTITY 11	STUMP11	
QUANTITY 12	STUMP12	
QUANTITY 13	STUMP13	
QUANTITY 14	STUMP14	
QUANTITY SIZE	STUMP15	
G.S.M. # #	GSM	
B.H.#	BH	

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	[redacted]	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

[redacted]

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

OF THE
TOWN OF CALEDON

LEGEND

SCALE: **N.T.S.**		PROJECT No. **TP113126**
DESIGNED BY: **F.W.**	DRAWN BY: **N.H.**	DRAWNING No. **1**
CHECKED BY: **D.S.**	DATE: **NOV. 2020**	

REGION OF PEEL GENERAL NOTES

GENERAL:

1. THE APPLICANT, APPLICANTS REPRESENTATIVE, CONSULTANT, CONTRACTOR AND SUB CONTRACTORS ARE RESPONSIBLE TO ENSURE THAT THEIR DESIGN MATERIALS AND CONSTRUCTION PRACTICES CONFORM TO THE LATEST REGION OF PEEL STANDARDS, SPECIFICATIONS, MATERIALS AND DESIGN CRITERIA, POSTED ON REGION OF PEEL'S WEBSITE (www.peelregion.ca/pw/standards). IN THE ABSENCE OF REGION SPECIFICATIONS, THE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS (OPSS) SHALL APPLY.
2. ALL WORKS SHALL BE COMPLETED IN ACCORDANCE WITH THE "OCCUPATIONAL HEALTH AND SAFETY ACT". THE GENERAL CONTRACTOR SHALL BE DEEMED THE CONSTRUCTOR AS DEFINED IN THE ACT.
3. THE CONTRACTOR AT THEIR EXPENSE SHALL VERIFY THE LOCATION, DIMENSION AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES IN THE FIELD.
4. PRIOR TO EXCAVATION OR BORING CONTRACTOR AT THEIR EXPENSE SHALL EXPOSE AND VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND SERVICES TO BE CROSSED AND MUST NOTIFY THE DESIGN ENGINEER AND THE AGENCY FIELD INSPECTOR AND/OR PROJECT MANAGER IMMEDIATELY, IN WRITING, OF ANY CONFLICTS OR DISCREPANCIES. CONTRACTOR SHALL BE RESPONSIBLE FOR EXPOSING THE EXISTING UTILITIES FAR ENOUGH IN ADVANCE OF CONSTRUCTION TO MAKE NECESSARY DESIGN MODIFICATIONS FOR REVIEW AND APPROVAL, IF REQUIRED, WITHOUT DELAYING THE WORK.
5. THE CONTRACTOR, AT THEIR EXPENSE AND TO THE SATISFACTION OF THE REGION OF PEEL, SHALL BE RESPONSIBLE FOR THE RESTORATION AND THE REPAIR OF THE EXISTING UTILITIES AND ALL AREAS BEYOND THE PLAN OF SUBDIVISION DISTURBED DURING CONSTRUCTION.
6. THE SUPPORT OF ALL UTILITIES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
7. ALL BACKFILL FOR SEWERS, WATERMAINS AND UTILITIES ON THE ROAD ALLOWANCE MUST BE MECHANICALLY COMPACTED.
8. ALL BOREHOLES SHOWN ON DRAWING ARE FOR INFORMATION ONLY. REFER TO GEOTECHNICAL REPORT.
9. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.

WATERMAINS:

1. THE REGION OF PEEL SHALL CONDUCT THE OPERATION OF EXISTING VALVES AND HYDRANTS IF REQUIRED.
2. CONTRACTOR MUST USE BATTER BOARD OR ROD-AND-LEVEL METHOD FOR WATERMAIN INSTALLATION.
3. ALL WATERMAINS SHALL HAVE 1.70m MINIMUM COVER FOR URBAN ROAD DESIGN AND 2.1m MINIMUM COVER FOR RURAL ROAD DESIGN.
4. ALL WATERMAINS SHALL MAINTAIN A MINIMUM 1.5m CLEARANCE FROM ALL MANHOLES AND CATCH BASINS, WHERE APPLICABLE.
5. FOR WATERMAINS CROSSING OVER OR UNDER SEWERS A MINIMUM 0.5m VERTICAL CLEARANCE SHALL BE PROVIDED.
6. FOR WATERMAIN CROSSING A SANITARY SEWER, WATERMAIN JOINTS ARE TO BE OFFSET A MINIMUM OF 2.5m HORIZONTALLY FROM THE CENTERLINE OF THE SANITARY SEWER.
7. WATERMAIN BEDDING SHOULD BE PER DWG 1-5-1.
8. WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED PLANS, COPY OF GRADE SHEET MUST BE SUPPLIED TO THE REGION OF PEEL INSPECTOR PRIOR TO COMMENCEMENT OF WORK.
9. ANY JOINT DEFLECTION SHALL NOT EXCEED 50% OF MANUFACTURERS SPECIFICATIONS. PIPE BARREL DEFLECTION IS PROHIBITED.
10. FIRE HYDRANTS SHALL BE INSTALLED AS PER REGION STD. DWG. 1-6-1 OR 1-6-2 WITH FLANGE SET BETWEEN 50mm AND 150mm ABOVE FINISHED GRADE.
11. ALL HYDRANTS SHALL HAVE 1.2m MINIMUM HORIZONTAL CLEARANCE FROM ALL OTHER UTILITIES AND STRUCTURES MEASURED FROM THE NEAREST POINT OF THE STRUCTURE.
12. MECHANICAL RESTRAINERS ARE REQUIRED FOR ALL FITTINGS, VALVES, DEAD ENDS, CAPS AND HYDRANTS ON ALL PVC WATERMAINS; MINIMUM RESTRAINED PIPE LENGTH AS PER REGION'S STANDARD DRAWING 1-5-9.
13. STAINLESS STEEL NUTS AND BOLTS ARE TO BE USED ON ALL METALLIC FITTINGS AND JOINT RESTRAINTS.
14. ALL METALLIC VALVES, FITTINGS, THROUGH WALL METAL PIPING AND JOINT RESTRAINTS TO BE C/W DENSO PASTE, DENSO MASTIC & DENSO TAPE OR APPROVED EQUAL APPLIED TO MANUFACTURERS RECOMMENDATIONS.
15. WHERE PLASTIC PIPE IS USED, INSTALL A 12 GAUGE TWU STRANDED COPPER, LIGHT COLOURED, PLASTIC COATED TRACER WIRE ATTACHED TO THE PIPE WITH APPROVED WIRE SPLICE. THE WIRE SHOULD BE BROUGHT TO THE SURFACE AT EACH SERVICE & VALVE BOX AND HYDRANT VALVES.
16. 50mm DIAMETER WATERMAIN SHALL BE TYPE K SOFT COPPER. WATERMAIN INSTALLATION IN CULDE-SACS AS PER REGION STD. DWG. 1-7-4.
17. A PHYSICAL SEPARATION MUST BE MAINTAINED AT ALL CONNECTION POINTS OF NEW WATERMAIN TO THE EXISTING SYSTEM UNTIL BACTERIOLOGICAL TESTS HAVE PASSED, AS PER STD. DWG. 1-7-7 AND 1-7-8.
18. PROVISION FOR FLUSHING OF NEW WATERMAINS PRIOR TO TESTING MUST BE PROVIDED WITH AT LEAST 50mm OUTLET ON WATERMAINS SMALLER THAN 300mm IN DIAMETER, AND MINIMUM 100mm OUTLET ON WATERMAINS 300mm AND LARGER. COPPER WATERMAINS ARE TO HAVE FLUSHING POINTS AT THE END, THE SAME SIZE AS THE WATERMAIN, AS PER STD. DWG. 1-7-7 AND 1-7-8.
19. ALL SERVICE CONNECTIONS TO PVC PIPES ARE TO BE MADE USING APPROVED WIDE BAND SERVICE SADDLE, DIRECT TAPPING IS NOT ALLOWED.
20. ALL WATER SEVICES SHALL BE MINIMUM 25mm DIA NOMINAL COPPER PIPE SIZE OR 32mm DIA POLYETHYLENE PIPE. IN GENERAL, NON METALLIC SERVICES SHALL BE ONE SIZE LARGER THAN THE NOMINAL COPPER PIPE SIZE AS PER LATEST APPROVED REGIONAL PRODUCT LIST AND SIZES C/W TRACER WIRE.
21. THE MINIMUM LATERAL DISTANCE BETWEEN WATER SERVICES AND OTHER UTILITIES SHALL BE 1.2m.
22. ALL RESIDENTIAL WATER SERVICE BOXES/CURB STOPS SHALL BE INSTALLED WITHIN SODDED AREAS WITH MINIMUM DISTANCE OF 1.0 METRES FROM THE EDGE OF THE DRIVEWAY, BE FLUSH WITH GRADE AND ACCESSIBLE AT ALL TIME.
23. VALVE AND BOXES SHALL BE CAST IRON SLIDING TYPE, COMPLETED WITH VALVE GUIDE PLATES AND INSTALLED AS PER REGION STD. 1-3-8. MAINLINE VALVES TO BE RESTRAINED AS PER REGION STD. 1-3-3A. VALVES SHALL OPEN TO THE LEFT (COUNTER-CLOCKWISE).
24. ALL WATER SERVICES BOXES SHOULD BE "LEAD FREE" AS PER REGION'S MATERIAL SPECIFICATIONS.
25. THE REGION WILL COMPLETE THE NECESSARY WATER TESTING (PRESSURE TEST, FLUSHING, CHLORINATION AND SAMPLING). CONTRACTOR MAY PROCEED WITH HIS OWN PRESSURE TEST AND FLUSHING PRIOR TO REGION'S TESTING.
26. ALL METALLIC WATER PIPES INCLUDING 'K' COPPER WATER SERVICES, INSTALLED OE REPAIRED, SHALL HAVE ZINC ANODE AS PER REGION OF PEEL STANDARD 1-7-1, OPSS 422 AND OPSD 1109.011 AND TO CONFORM TO ASTM B-418 TYPE.
27. ALL WATERMAIN PIPE DELIVERED ON SITE SHALL HAVE MANUFACTURER'S PLUGS AND STORED SO THAT NO DEBRIS ENTERS THE PIPE.
    NO WATERMAIN IS TO BE INSTALLED UNTIL NIGHT PLUG IS ON SITE.
    NIGHT PLUG TO BE USED EVERY TIME WORK IS STOPPED.

WATERMAIN IN FILL AREA:

1. NO WATERMAIN TO BE LAID ON FILL UNTIL THE FIELD DENSITY TEST REPORTS HAVE BEEN SUBMITTED TO AND APPROVED BY THE REGION OF PEEL OR THE CONSULTING ENGINEER.
2. PIPE JOINTS DEFLECTIONS ARE NOT ALLOWED IN FILL AREA.
3. JOINTS SHALL BE MECHANICALLY RESTRAINED THE WHOLE LENGTH.
4. ALL HYDRANTS, TEE BRANCH VALVES AND HORIZONTAL BENDS ARE TO BE MECHANICALLY RESTRAINED WITH TIE RODS.
5. IN EXISTING MUNICIPAL RIGHT-OF-WAY OR EASEMENT, FILL TO BE PLACED TO 600mm MINIMUM ABOVE THE OBVERT OF THE WATERMAIN AND TO 300mm EITHER SIDE, COMPACTED TO MINIMUM 100% STANDARD PROCTOR DENSITY IN 300mm LIFTS; AND THEREAFTER, FOR EVERY 300mm LIFT ALONG THE CENTERLINE, AND 1.5m TO EITHER SIDE, OF WATERMAIN AT MAXIMUM INTERVAL OF 30.0m. TEST RESULTS MUST BE SUBMITTED TO AND APPROVED BY THE CONSULTANT OR AGENCY.

SANITARY SEWERS:

1. ALL SANITARY SEWER BEDDING AS PER STD. 2-3-1.
2. MAINLINE SANITARY SEWER PIPE SIZE SHALL BE MINIMUM 250mm IN DIAMETER INSTALLED AT THE APPROVED DESIGN GRADE. PIPE CLASS AND APPURTENANCES AS PER REGIONS SPECIFICATIONS.
3. ALL SEWERS CONSTRUCTED WITH GRADES 0.5% OR LESS SHALL BE APPROVED BY THE ENGINEER AND THE AGENCY PROJECT MANAGER OR DESIGNATE AND BE INSTALLED WITH LASER AND CHECKED PRIOR TO BACKFILL.
4. MINIMUM SANITARY SEWER PIPE SLOPE FOR LAST LEG SHALL BE 1% AND DESIRABLE SLOPE 2%.
5. ALL MANHOLES SHALL BE AS PER REGION STD. DWG. 2-5-2, 2-5-3, 2-5-4, 2-5-5 AND 2-5-6 AND BENCHING AS PER STD 2-5-20.
6. FRAME AND COVERS SHALL BE AS PER REGION STD. DWG. 2-5-13, 2-6-1 TO 2-6-8.
7. MANHOLE STEPS SHALL BE AS PER REGION STD. DWG. 2-6-9 TO 2-6-11.
8. MANHOLES DEEPER THAN 5.0m MUST BE EQUIPPED WITH SAFETY PLATFORMS, AS PER STD 2-6-13 AND 2-6-14.
9. MANHOLE DROP STRUCTURES SHALL BE AS PER REGION STD. DWG. 2-5-26 AND 2-5-27.
10. SANITARY SERVICE LATERALS SHALL BE MINIMUM 150mm DIAMETER.
    a. SANITARY SERVICE SHALL BE LOWER THAN AND TO THE RIGHT OF THE STORM SERVICE AT THE PROPERTY LINE WHEN FACING THE LOT FROM THE STREET.
    b. CONNECTIONS TO SEWERS SHALL BE MADE WITH MANUFACTURED TEES OR WYES WHERE APPLICABLE APPLICABLE AND SHALL BE COLOUR CODED AS NON-WHITE, AS PER STD. DWG. 2-4-1 TO 2-4-7.

REGIONAL ROAD: (NOT APPLICABLE)

1. CONSTRUCTION AND DETOUR SIGNAGE MUST CONFORM TO "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" AND LATEST REVISION OF THE ONTARIO MINISTRY OF TRANSPORTATION "TRAFFIC CONTROL MANUAL FOR ROADWAY WORK OPERATIONS"
2. ALL TEMPORARY SIGNAGE AND TRAFFIC CONTROL MEASURES SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF ONTARIO TRAFFIC MANUAL, BOOK 7 "TEMPORARY CONDITIONS" AND OPS SPECIFICATIONS AND STANDARD DRAWINGS.
3. PAVEMENT MARKINGS MUST BE IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK 11 "PAVEMENT HAZARD AND DELINEATION MARKINGS".
4. THE CONTRACTOR SHALL NOTIFY IN ADVANCE, AS REQUIRED, THE APPROPRIATE AUTHORITY HAVING JURISDICTION FOR THE ROAD PRIOR TO COMMENCING ANY WORK AND SHALL ACQUIRE AND SATISFY THE REQUIREMENTS OF APPROPRIATE PERMITS (FEES, INSPECTIONS, SIGNAGE, TRAFFIC, MAINTENANCE, DIVERSION, ETC...)
5. REGIONAL ROAD CLOSURE IS NOT PERMITTED AT ANY TIME UNLESS APPROVAL FROM REGIONAL COUNCIL WAS OBTAINED FOR THE WORKS, WHERE A MINIMUM TWO MONTH LEAD TIME IS REQUIRED, AS PER REGIONAL POLICY W30-12.
6. WORK OPERATIONS THAT REQUIRE DIVERTING TRAFFIC TO ONE LANE ARE SUBJECT TO TIME RESTRICTIONS AND ,OR NIGHT TIME OPERATIONS AS SPECIFIED IN ROAD OCCUPANCY PERMIT. THROUGH LANES MUST BE MINIMUM 3.5m, UNLESS OTHERWISE APPROVED.
7. FOR TEMPORARY DELINEATION OF TRAFFIC IN OPPOSITE DIRECTIONS A YELLOW CENTRE LINE ON PAVEMENT MUST PAINTED. TRAFFIC CONTROL BARRELS (CONES) ARE NOT PERMITTED FOR THIS USE ON REGIONAL ROADS.
8. NEW JERSEY BARRIERS (NJB) WITH CRASH ATTENUATION DEVICES MUST BE USED ON LONG TERM PROJECTS AS OPPOSED TO TRAFFIC CONTROL DELINEATORS (BARRELS).
9. ACCESS TO EXISTING ENTRANCES AND SIDE STREETS, INCLUDING PEDESTRIAN ACCESS, SHALL BE MAINTAINED. ACCESS REQUIREMENTS MUST COMPLY WITH REGION OF PEEL CONTROLLED ACCESS BY-LAW.
10. LOCATION OF EXISTING UTILITIES TO BE ESTABLISHED BY THE CONTRACTOR. ALL EXISTING UTILITY ELEVATIONS (SANITARY AND WATERMAIN) INCLUDING CENTRE LINE OF THE ROAD ELEVATIONS HAVE TO BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCING ANY WORK ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE REGION IMMEDIATELY.
11. THE THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE FOR LOCATING, SUPPORTING AND PROTECTING ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES EXISTING AT THE TIME OF CONSTRUCTION IN THE AREA OF HIS WORK, WHETHER SHOWN ON THE PLANS OR NOT, AND FOR ALL REPAIRS AND CONSEQUENCES RESULTING FROM DAMAGE TO SAME.
12. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE TO GIVE 72 HOURS WRITTEN NOTICE TO UTILITY AUTHORITY PRIOR TO CROSSING SUCH UTILITIES FOR THE PURPOSE OF INSPECTION. THIS INSPECTION WILL BE FOR THE DURATION OF CONSTRUCTION WITH THE CONTRACTOR RESPONSIBLE FOR ALL COSTS ARISING FROM SUCH INSPECTIONS.
13. ALL ROAD BASE SHALL BE AS PER REGION OF PEEL STD. DWG. 5-1-1 AND 5-1-2.
14. ASPHALT PRESERVATIVE SEALER SUCH AS RE-CLIMATE OR APPROVED EQUIVALENT SHALL BE APPLIED AFTER THE ONE-YEAR MAINTENANCE PERIOD FOR THE TOP COURSE ASPHALT.
15. ALL EXISTING PAVEMENTS, CURBS, SIDEWALKS AND BOULEVARDS, AND OTHER AREAS DISTURBED BY THE WORK, TO BE REINSTATED EQUAL TO EXISTING AND TO THE SATISFACTION OF APPLICABLE AUTHORITY HAVING JURISDICTION OVER THE ROAD ALLOWANCE. EXISTING PAVEMENT AND CURBS TO BE SAW-CUT TO PROVIDE A SMOOTH JOINT.
16. EROSION CONTROL MEASURES TO BE IMPLEMENTED AS REQUIRED.
17. FOR ROAD PROJECTS THAT WILL NOT BE COMPLETED PRIOR TO THE END OF THE CONSTRUCTION SEASON, THE FOLLOWING WILL NEED TO BE CONSIDERED IN ORDER TO WINTERIZE THE CONSTRUCTION PROJECT TO ENSURE SAFE CONDITIONS DURING WINTER:
    a. WHERE APPLICABLE, CURB AND GUTTER SECTIONS ARE TO BE COMPLETED, THE BASE COURSE ASPHALT SHALL BE IN PLACE
    b. CATCHBASINS AND MAINTENANCE HOLES SET TO EXISTING BASE GRADE
    c. STEEL PLATING NOT PERMITTED
    d. HOT MIX ASPHALT (HMA) ONLY
    e. LANE DELINEATION AND PAVEMENT MARKING COMPLETED
    f. WHERE JERSEY BARRIERS USED, OFFSET NO LESS THAN 4.25m FROM EDGE OF TRAVELLED LANE
    g. ROAD AND BOULEVARD MUST BE FREE OF OBSTRUCTIONS AND ACCOMODATE SAFE SNOW PLOW OPERATION CONSIDERING THAT A WING AND PLOW IS 6m WIDE AND 1.52m SNOW STORAGE MINIMUM REQUIRED
    h. ALL CATCHBASIN GRATES SHALL BE SIDE INLET, OPSD 400.081 (LATEST VERSION) UNLESS OTHERWISE NOTED
    i. WINTER SHUT-DOWN MEETINGS WITH THE REGION OF PEEL ROAD MAINTENANCE STAFF ARE REQUIRED PRIOR TO SEASONAL SHUT-DOWN AND SHALL BE ORGANIZED BY THE CONSULTANT OR PROJECT MANAGER OR DESIGNATE.

TRAFFIC SIGNS AND SIGNALS ON REGIONAL ROADS: (NOT APPLICABLE)

1. ALL REQUIRED TRAFFIC SIGN, WHETHER REGULATORY, WARNING, TEMPORARY OR GUIDE/DIRECTIONAL IN NATURE SHAL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS SPECIFICATIONS AND LEGISLATION CONTAINED IN THE OTM MANUALS, THE HTA AND REGION OF PEEL TRAFFIC BY-LAW.
2. ELECTRICAL WORKS SHALL CONFORM TO THE ONTARIO PROVINCIAL STANDARDS (OPS) DRAWINGS AND REGION OF PEEL STANDARD DRAWINGS AND SPECIFICATIONS.
3. TRAFFIC CONTROLLERS MUST BE INSTALLED AS PER APPROVED LOCATIONS. EQUIPMENT MUST NOT ENCROACH ON PRIVATE PROPERTY WITHOUT PERMISSION TO ENTER, EASEMENT, PERMANENT OR TEMPORARY UNDERTAKINGS.

GENERAL NOTES - ROADWORKS

ROADS

A. SINGLE - STAGE CURB & GUTTER TO COMPLY WITH OPSD 600.040
B. TWO - STAGE CURB & GUTTER TO COMPLY WITH OPSD 600.070
C. SIDEWALKS TO COMPLY WITH OPSD-310.010 AND ARE TO BE 1.5 METRES WIDE ON A 150mm COMPACTED GRANULAR "A" BASE. MINIMUM THICKNESS AS FOLLOWS :
   - NORMAL THICKNESS 125mm.
   - RESIDENTIAL DRIVEWAY 150mm
   - COMMERCIAL/INDUSTRIAL DRIVEWAY 200mm
   (REINFORCEMENT AS PER OPSS IF REQUIRED)
D. NATIVE SUBGRADE SHALL HAVE A CROSSFALL OF 3% AND THE MATERIAL SHALL BE APPROVED BY A SOILS CONSULTANT AND IS SUBJECT TO APPROVAL BY THE GENERAL MANAGER OF FINANCE & INFRASTRUCTURE SERVICES.
E. THE ROAD BASE SHALL INCORPORATE 100mm DIAMETER SUBDRAIN WITH FACTORY INSTALLED FILTER FABRIC AS PER TOWN OF CALEDON STANDARD No. 240.
F. ALL CURB RADII TO BE MINIMUM OF 10.0 METRES RESIDENTIAL AND 15.0 METRES INDUSTRIAL AT THE EDGE OF ASPHALT.
G. NATIVE SUBGRADE TO BE COMPACTED TO MINIMUM 95% STANDARD PROCTOR MAXIMUM DRY DENSITY AND SHALL BE PROOF ROLLED.
H. GRADE AND CROSS FALL ADJUSTMENT OF MAINTENANCE HOLE AND CATCH BASIN FRAMES WILL BE MADE USING PRODUCTS SPECIFICALLY MANUFACTURED FOR THAT PURPOSE AS PER OPSD 704.010.
I. NON-COMPRESSIBLE BACK FILL WILL BE USED DURING REBUILDING, ADJUSTING, OR ANY OTHER APPLICABLE CATCH BASIN OR MAINTENANCE HOLE WORKS.
J. CURB AND SIDEWALK CONCRETE SHALL BE 30MPa AT 28 DAYS WITH 7% +/- 1.5% ENTRAINED AIR AND NOT LESS THAN 355 kg/m3 OF CEMENT.(PER OPSS 315 AND 353)

TOWN OF CALEDON						
GENERAL NOTES ROADWORKS	3	TEXT REVISION		MAY 19	APR'D: C.C.	DATE: DEC 1999
	2	STANDARD No. 125 NOW 102		JUNE 08	DRAWN: BJM	SCALE: NTS
	1	NOTES EDIT		MAR. 08	STANDARD No. 102	
	NO.	REVISION	APR'D	DATE		

GENERAL NOTES - STORM SEWERS

A. STORM SEWER TO BE PROVIDED ON ALL ROADS WITH CURB AND GUTTER.
B. PLACE ALL CATCH BASIN LATERALS AT 2% GRADE UNLESS OTHERWISE NOTED. PIPE SIZE MINIMUM 250mm DIA. SINGLE, 300mm DIA. DOUBLE.
C. STORM SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER OPSD 802.030 FOR RIGID PIPE OR OPSD 802.010 WITH GRANULAR 'A' FOR FLEXIBLE PIPE UNLESS APPROVED OTHERWISE BY THE GENERAL MANAGER OF FINANCE & INFRASTRUCTURE SERVICES.
D. MAINTENANCE HOLE TOPS (FRAMES) AND CATCHBASIN (FRAMES) ARE TO BE SET TO BASE COURSE ASPHALT AND THEN ADJUSTED TO FINAL GRADE WHEN THE TOP LIFT OF ASPHALT IS PLACED.
E. STORM SEWER TO BE LOCATED OFFSET 1.5m SOUTH OR WEST OF CENTRELINE UNLESS OTHERWISE SPECIFIED.
F. ALL CONNECTIONS TO THE STORM MAIN SHALL BE MADE WITH A STORM MANHOLE OR APPROVED FACTORY TEE CONNECTION AS PER OPSD 708.01 OR 708.03.
G. PIPE MATERIAL TO BE REINFORCED CONCRETE WITH A STRENGTH OF 50 N/m/mm CERTIFIED TO C.S.A. STANDARD A247.2-1982, CLASS 50-D (PREVIOUSLY C.S.A. STANDARD A257.2-1974 CLASS II) OR PVC CERTIFIED TO C.S.A. STANDARDS 182.2 AND 182.4 MAX. PVC PIPE DIA. IS 600mm BIG O BOSS 2000 POLYETHYLENE PIPE WITH GASKETED BELL AND SPIGOT JOINTS CERTIFIED C.S.A. B182.6 FOR STORM SEWERS UP TO 900mm DIA. WHERE ONLY CONNECTION STD CATCHBASINS ARE CONSIDERED.
H. STORM SEWER TO BE MINIMUM 300mm DIA. WITH JOINTS CONFORMING TO C.S.A. STANDARD A 257.3
I. ALL PIPE BEDDING MUST CONFORM TO OPSD MAXIMUM COVER TABLE. NO FLEXIBLE PIPE SEWERS WILL BE INSTALLED WITH A DEPTH COVER GREATER THAN 6m UNLESS SPECIFICALLY APPROVED BY THE DIRECTOR OF PUBLIC WORKS AND ENGINEERING.
J. ALL PIPE HANDLING INSTRUCTIONS MUST BE IN STRICT COMPLIANCE WITH MANUFACTURERS INSTALLATION GUIDES AND THE OCPA OR UNIBELL GUIDELINES.

TOWN OF CALEDON						
GENERAL NOTES STORM SEWERS	3	TEXT REVISION		MAY 19	APR'D: C.C.	DATE: MAR 01
	2	STANDARD No. 120 NOW 101		JUNE 08	DRAWN: BJM	SCALE: NTS
	1	NOTES EDIT		MAR. 08	STANDARD No. 101	
	NO.	REVISION	APR'D	DATE		

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1		JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

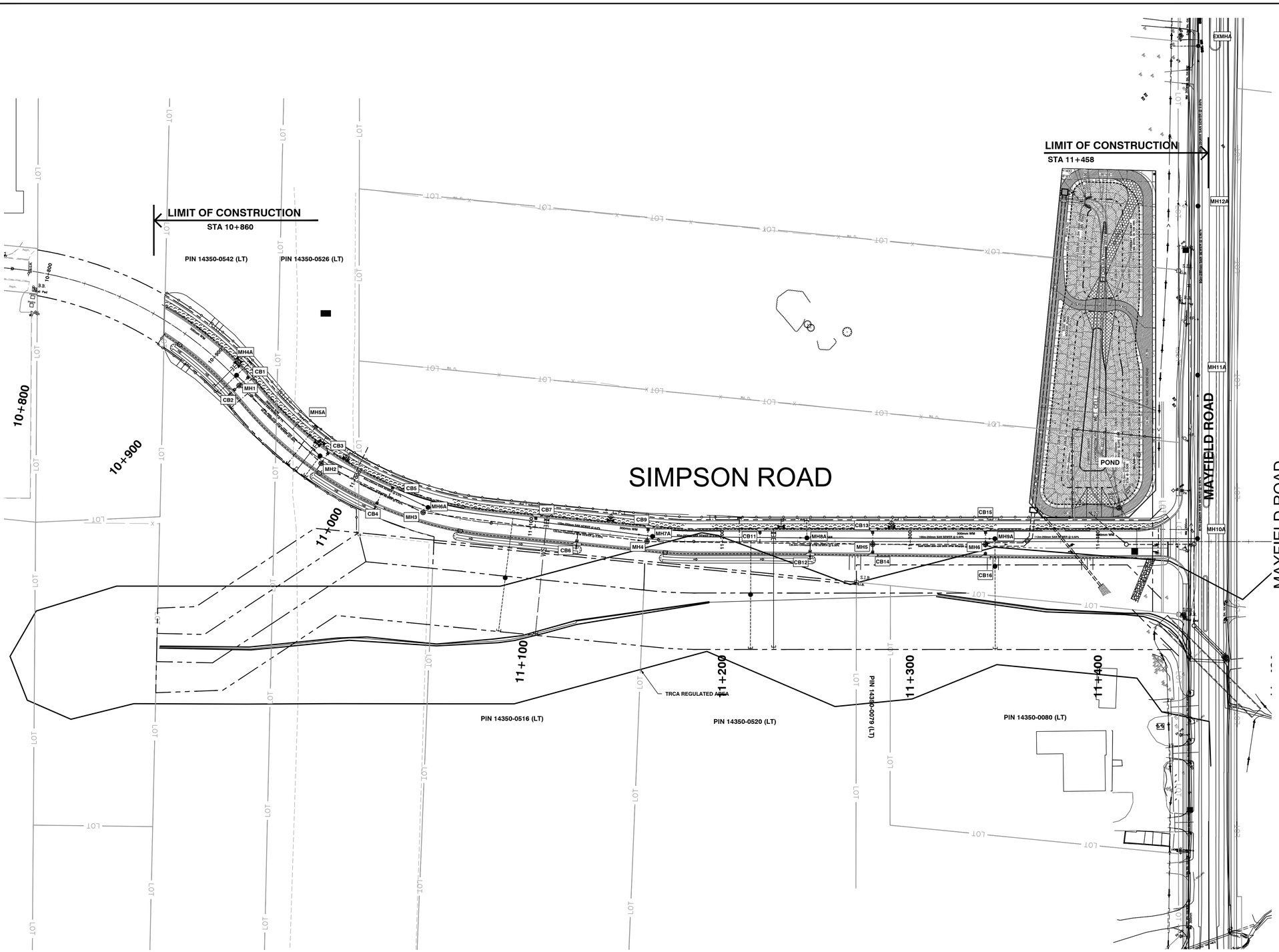
FINANCE AND INFRASTRUCTURE SERVICES

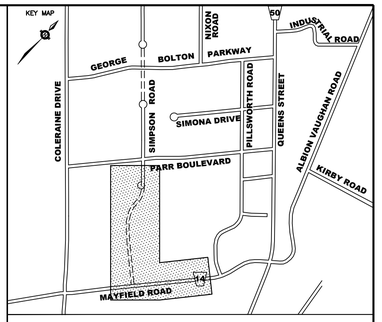
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

GENERAL NOTES

SCALE: N.T.S.		PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: N.H.	
CHECKED BY: D.S.	DATE: NOV. 2020	DRAWNING No. 2





LEGEND

- PROPOSED VALVE
- PROPOSED HYDRANT
- A1 — ADJUST CATCHBASIN/MANHOLE
- CB1 — PROPOSED CATCHBASIN/MANHOLE
- MH1A — PROPOSED SANITARY MANHOLE
- PROPOSED SILT FENCING

NOTE:
REFER TO DWG. C1 FOR EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

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1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

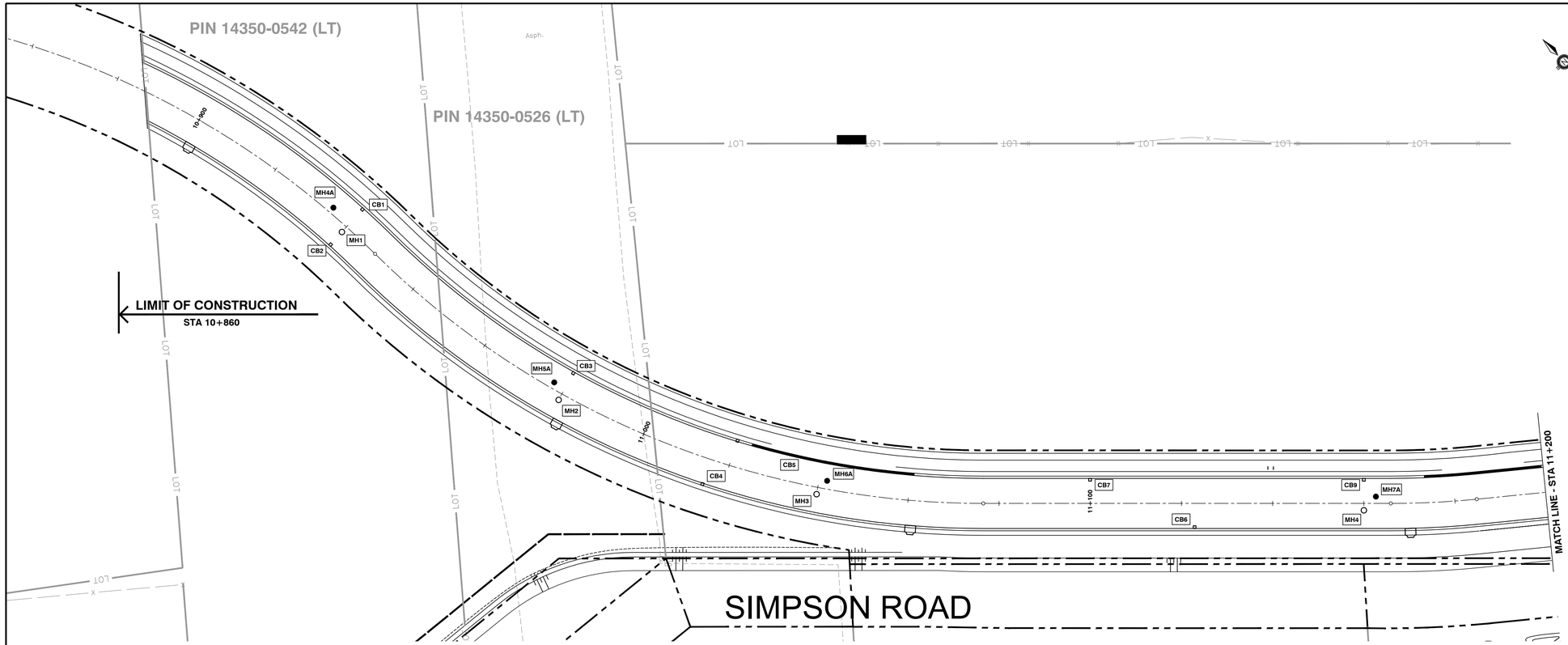
REGION OF PEEL
C02.312

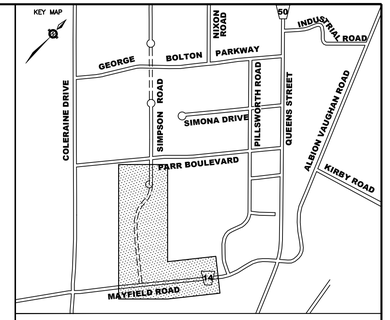
THE CORPORATION OF THE
TOWN OF CALEDON

SIMPSON ROAD EROSION AND SEDIMENT CONTROL

STA. 10+860 TO STA. 11+458

SCALE: **1:1000**		PROJECT No. **TP113126**
DESIGNED BY: **F.W.**	DRAWN BY: **N.H.**	
CHECKED BY: **D.S.**	DATE: **NOV. 2020**	DRAWNING No. **3**





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1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES
DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

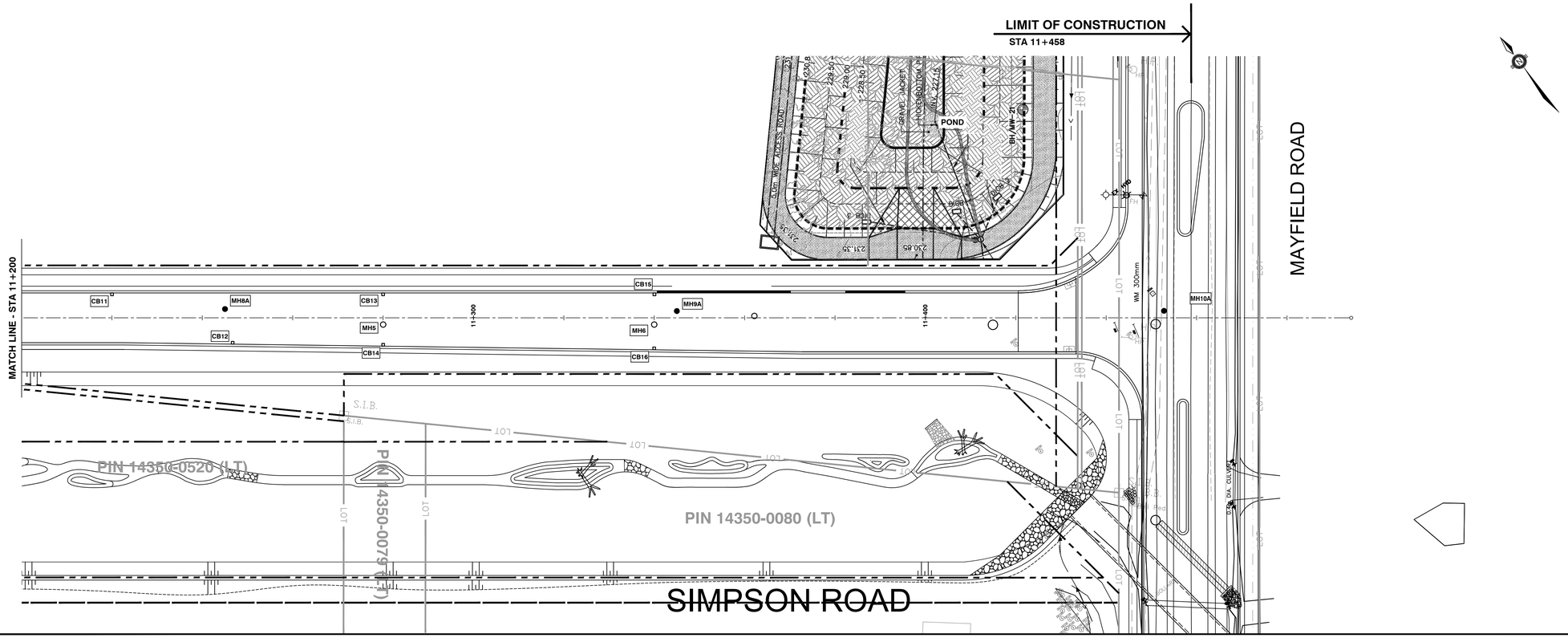
SIMPSON ROAD
GENERAL PLAN
ABOVE GROUND
STA. 10+860 TO STA. 11+458

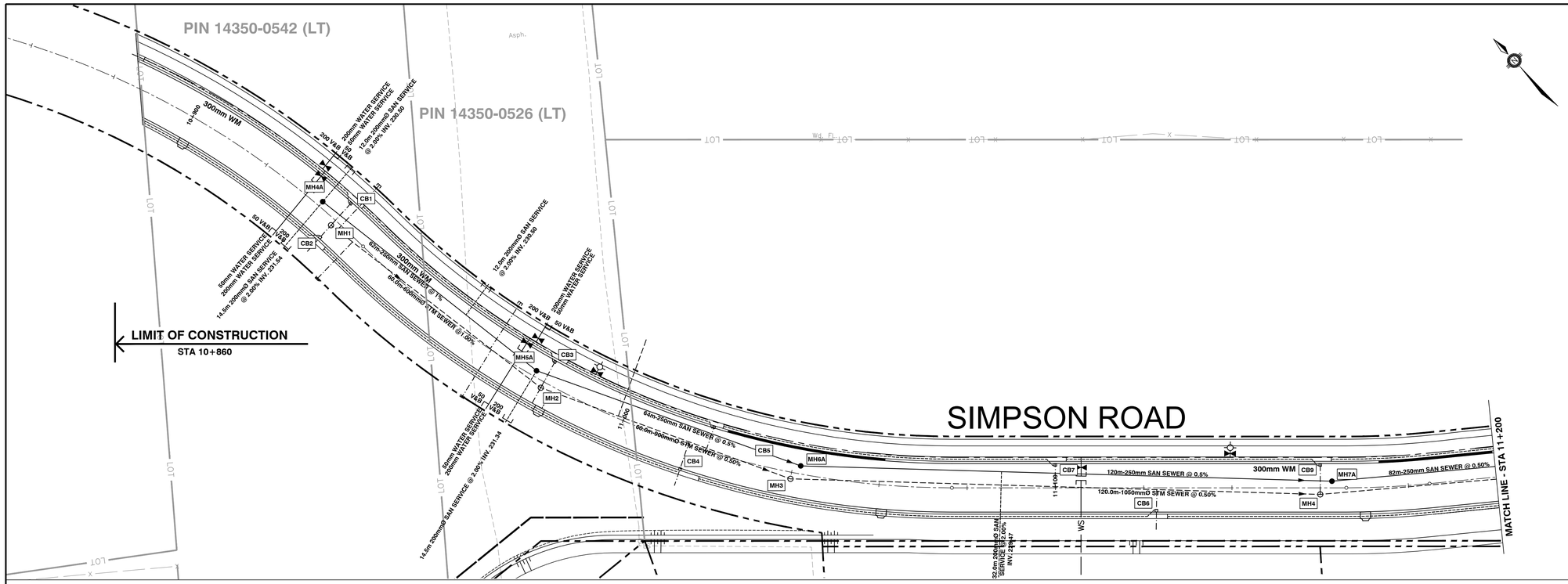
1:500

PROJECT No. **TP113126**

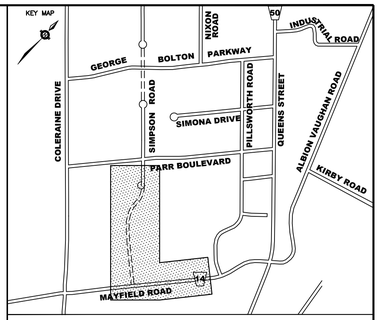
DESIGNED BY: **F.W.**
DRAWN BY: **N.H.**
CHECKED BY: **D.S.**
DATE: **NOV. 2020**

DRAWING No. **4**





KEY MAP



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- PROPOSED HYDRANT
- A1 — ADJUST CATCHBASIN/MANHOLE
- CB1 — PROPOSED CATCHBASIN/MANHOLE
- MH1A — PROPOSED SANITARY MANHOLE

PROJECT STATISTICS	
1. WATERMAIN LENGTH	= 583 m
2. NUMBER OF WATER SERVICES	= 8
3. NUMBER OF HYDRANTS	= 3
4. SANITARY SEWER LENGTH	= 833 m
5. NUMBER OF SANITARY SERVICES	= 8
6. NUMBER OF SANITARY MANHOLES	= 10
7. STORM SEWER LENGTH	= 459 m
8. NUMBER OF STORM MANHOLES	= 7

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

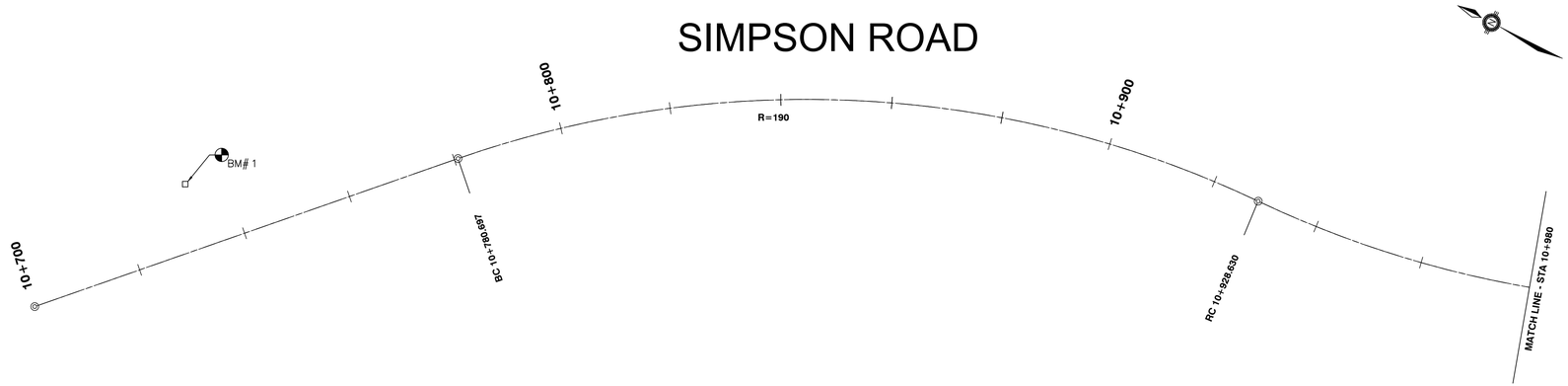
THE CORPORATION OF THE
TOWN OF CALEDON

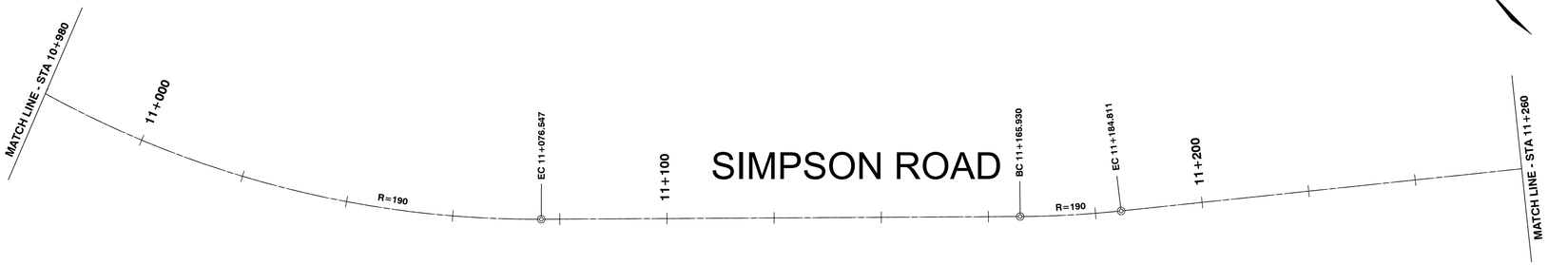
SIMPSON ROAD GENERAL PLAN BELOW GROUND

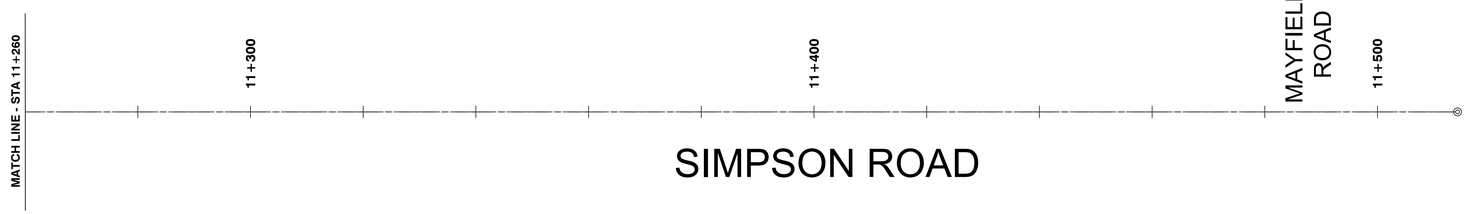
STA. 10+860 TO STA. 11+458

SCALE: 1:1000		PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: N.H.	DRAWING No. 5
CHECKED BY: D.S.	DATE: NOV. 2020	

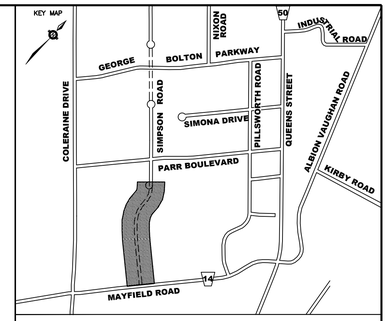
SIMPSON ROAD







SIMPSON ROAD			
	Station	Offset Northing	Easting
Element: Linear			
Start	10+700.000	4855690.992	603840.5596
BC	10+780.697	4855635.118	603898.7843
Tangential Direction:		S 46°10'50.0754" E	
Tangential Length:		80.697	
Element: Circular			
BC	10+780.697	4855635.118	603898.7843
PI	10+858.641	4855581.15	603955.0232
CC		4855498.028	603767.2306
RC	10+928.630	4855503.235	603957.1593
Radius:	190		
Delta:	44°36'36.6313"	Right	
Degree of Curvature (Arc):		30°09'20.4242"	
Length:	147.933		
Tangent:	77.944		
Chord:	144.225		
Middle Ordinate:	14.217		
External:	15.366		
Tangent Direction:		S 46°10'50.0754" E	
Radial Direction:		S 43°49'09.9244" W	
Chord Direction:		S 23°52'31.7598" E	
Radial Direction:		S 88°25'46.5559" W	
Tangent Direction:		S 1°34'13.4441" E	
Element: Circular			
RC	10+928.630	4855503.235	603957.1593
PI	11+006.565	4855425.329	603959.2951
CC		4855508.442	604147.0879
EC	11+076.547	4855371.363	604015.5231
Radius:	190		
Delta:	44°36'19.8917"	Left	
Degree of Curvature (Arc):		30°09'20.4242"	
Length:	147.918		
Tangent:	77.935		
Chord:	144.21		
Middle Ordinate:	14.214		
External:	15.363		
Tangent Direction:		S 1°34'13.4441" E	
Radial Direction:		S 88°25'46.5559" W	
Chord Direction:		S 23°52'23.3900" E	
Radial Direction:		S 43°49'26.6642" W	
Tangent Direction:		S 46°10'33.3358" E	
Element: Linear			
EC	11+076.547	4855371.363	604015.5231
BC	11+165.930	4855309.47	604080.0102
Tangential Direction:		S 46°10'33.3358" E	
Tangential Length:		89.383	
Element: Circular			
BC	11+165.930	4855309.47	604080.0102
PI	11+175.378	4855302.928	604086.8269
CC		4855446.549	604211.575
EC	11+184.811	4855297.094	604094.259
Radius:	190		
Delta:	5°41'37.4647"	Left	
Degree of Curvature (Arc):		30°09'20.4242"	
Length:	18.881		
Tangent:	9.448		
Chord:	18.873		
Middle Ordinate:	0.234		
External:	0.235		
Tangent Direction:		S 46°10'33.3358" E	
Radial Direction:		S 43°49'26.6642" W	
Chord Direction:		S 49°01'22.0680" E	
Radial Direction:		S 38°07'49.1996" W	
Tangent Direction:		S 51°52'10.8005" E	
Element: Linear			
EC	11+184.811	4855297.094	604094.259
PI	11+494.214	4855106.052	604337.6376
Tangential Direction:		S 51°52'10.8005" E	
Tangential Length:		309.403	



NO.	BY	DATE	REVISION	CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

BM#1
HYDROBOX
N=4855676.820
E=603872.469
ELEVATION=233.448

BM#2
I.B.
N=4855107.787
E=604272.211
ELEVATION=233.448

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

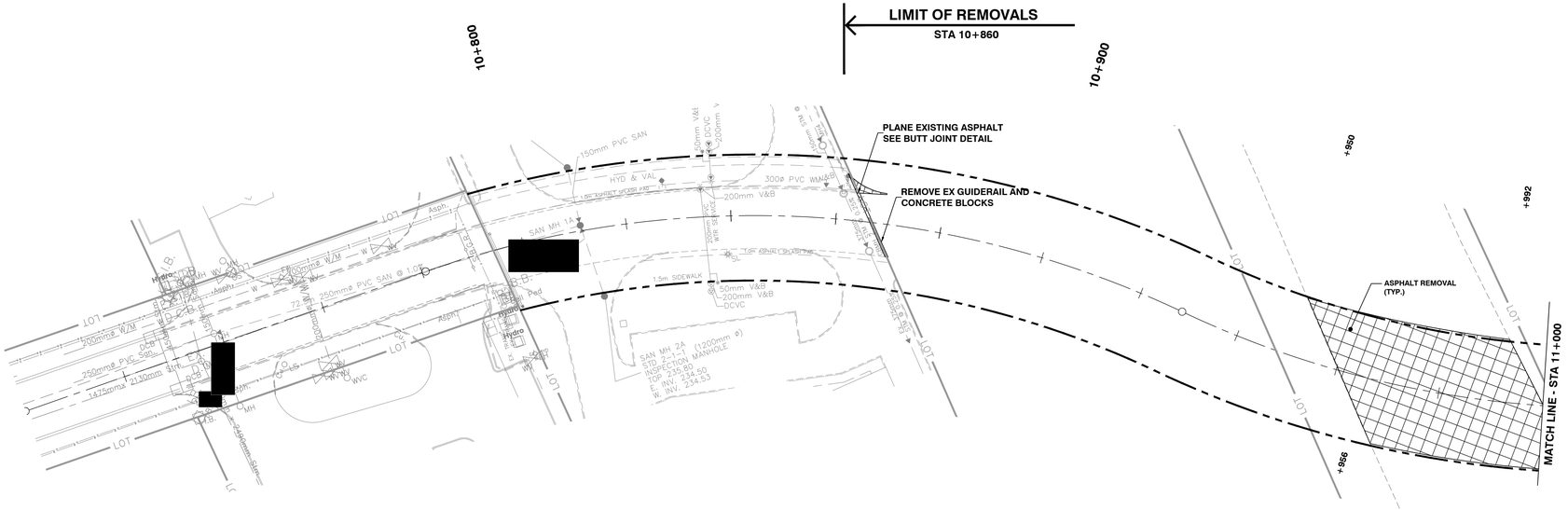
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

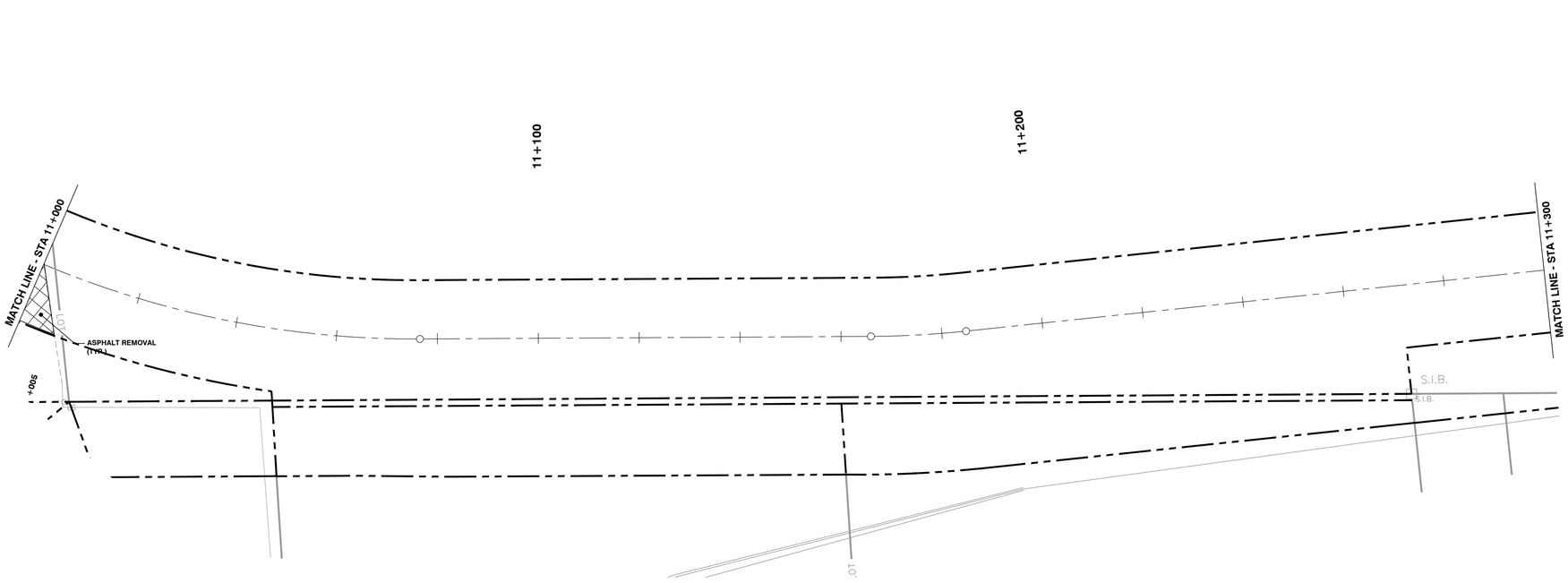
SIMPSON ROAD ALIGNMENT

STA. 10+700 TO STA. 11+455

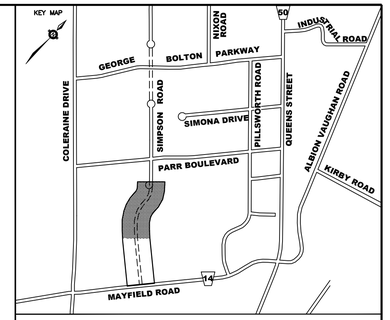
SCALE: 1:500		PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: N.H.	DRAWNING No. 6
CHECKED BY: D.S.	DATE: NOV. 2020	



SIMPSON ROAD



SIMPSON ROAD



LEGEND

- REMOVAL SYMBOL
- REMOVAL HATCHING
- TREE REMOVAL

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

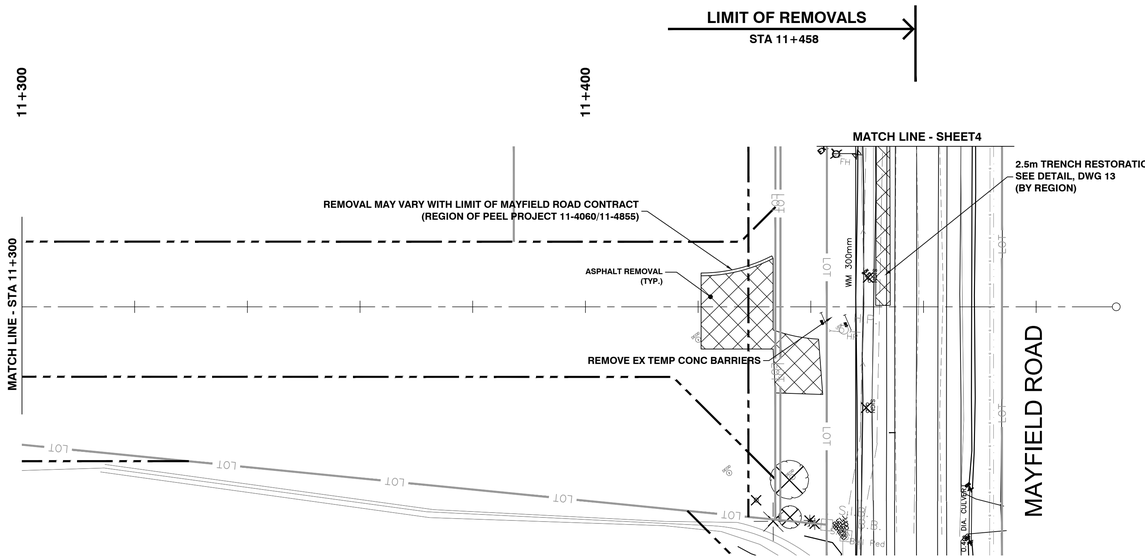
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

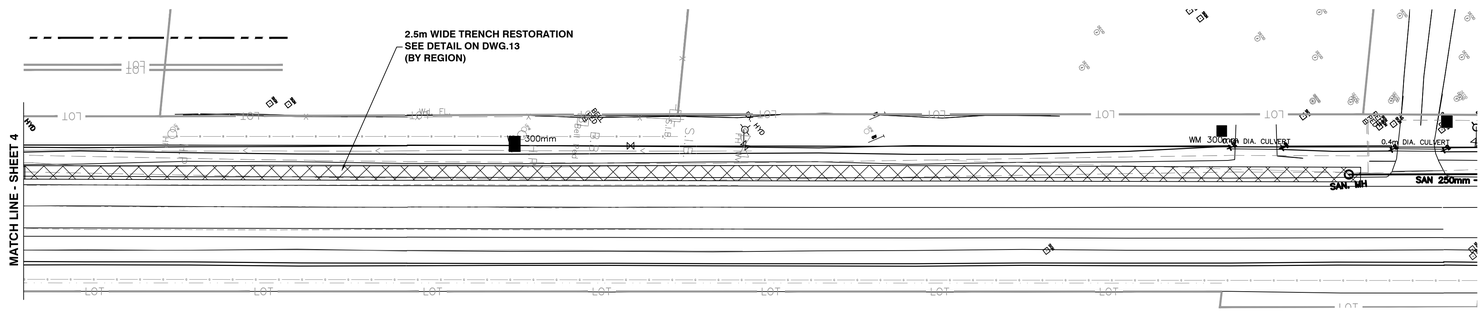
SIMPSON ROAD
REMOVALS

STA. 10+700 TO STA. 11+300

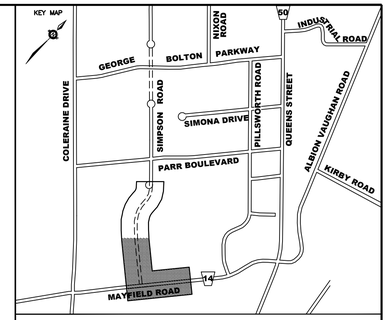
SCALE: 1:500		PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: N.H.	
CHECKED BY: D.S.	DATE: NOV. 2020	DRAWING No. 7



SIMPSON ROAD



MAYFIELD ROAD



LEGEND

- REMOVAL SYMBOL
- REMOVAL HATCHING
- TREE REMOVAL

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

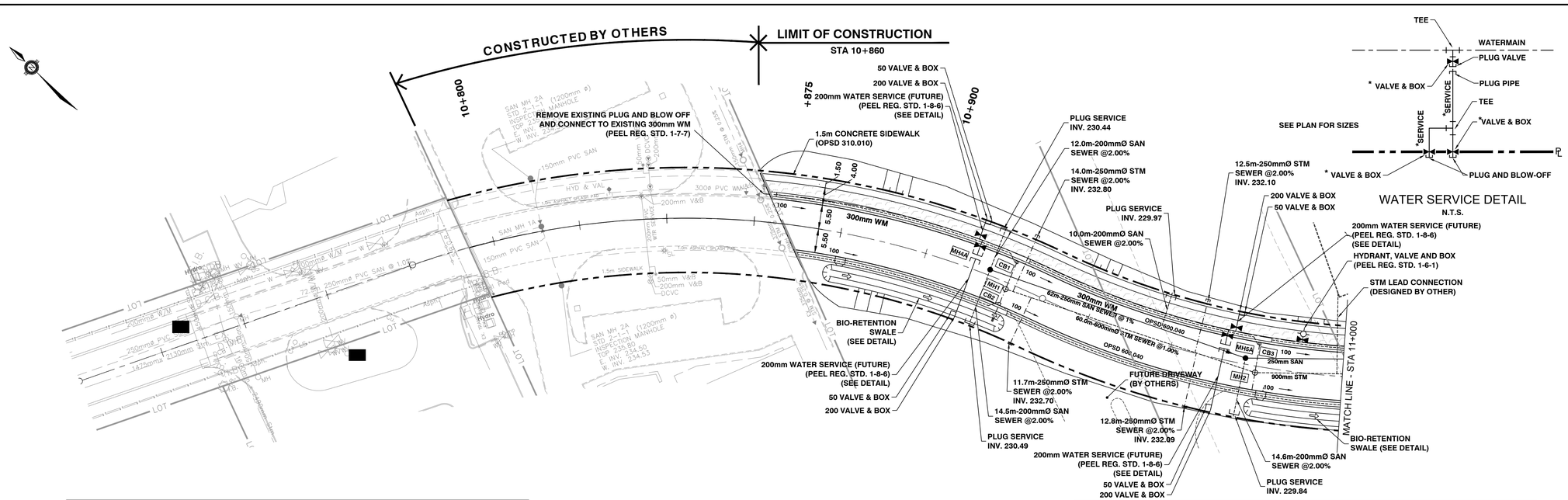
REGION OF PEEL
C02.312

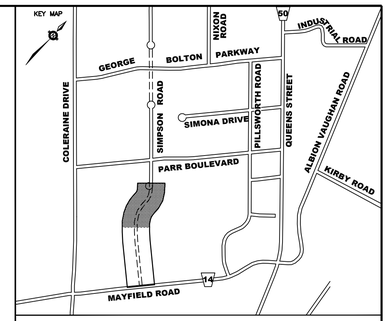
THE CORPORATION OF THE
TOWN OF CALEDON

SIMPSON ROAD
REMOVALS

STA. 11+300 TO STA. 11+455

SCALE: 1:500		PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: N.H.	DRAWNING No. 8
CHECKED BY: D.S.	DATE: NOV. 2020	





LEGEND

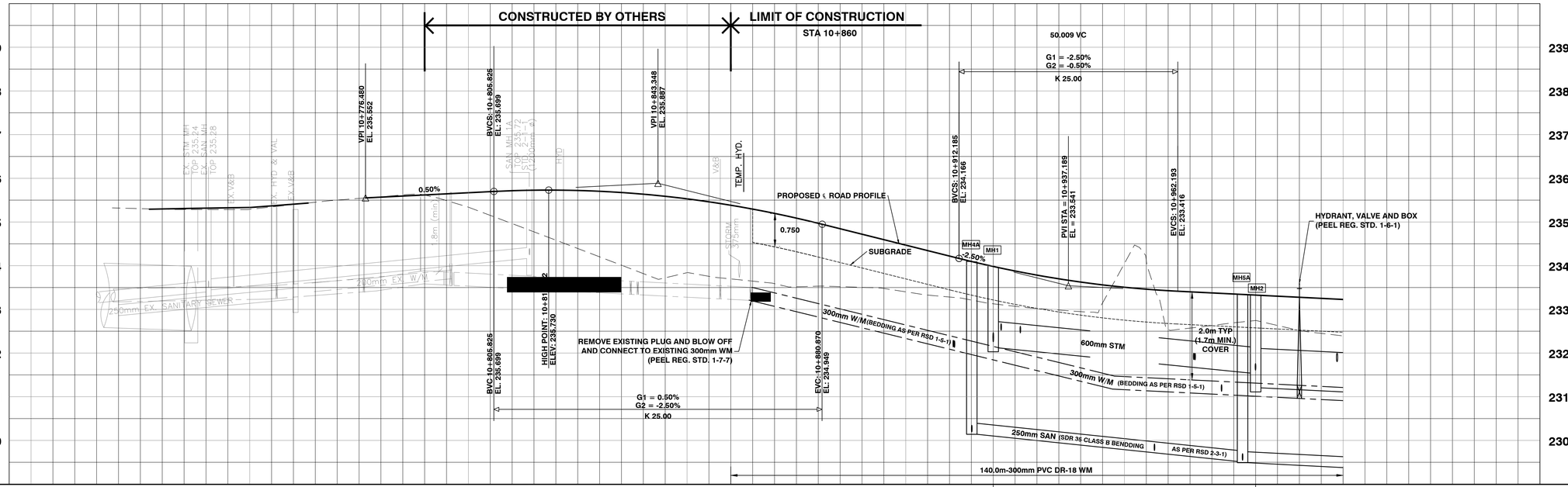
- PROPOSED PROPERTY LINE
- 100 — PROPOSED SUBDRAIN, DIRECTION AND SIZE (CALEDON STD. NO. 218)
- 825mm STM — PROPOSED STORM SEWER, DIRECTION AND SIZE
- 250mm SAN — PROPOSED SANITARY SEWER, DIRECTION AND SIZE
- 300mm WM — PROPOSED WATERMAIN AND SIZE
- PROPOSED VALVE
- PROPOSED HYDRANT
- A1 — ADJUST CATCHBASIN/MANHOLE
- CB1 — PROPOSED CATCHBASIN/MANHOLE
- MH1A — PROPOSED SANITARY MANHOLE
- FUTURE ENTRANCE
- CONCRETE GUTTER OUTLET OPSD 604.010
- FLOW ARROW

SANITARY SEWER DATA								
STRUCT NO	STATION	℄ GRATE OFFSET	STRUCT PEEL STD.	INVERTS		FRAME & COVER PEEL STD.	TOP OF FRAME ELEV	REMARKS
				INLET	OUTLET			
MH4A	10+915	1.5 LT	2-5-3		230.14	2-6-1	234.07	
MH5A	10+977	1.4 LT	2-5-3	229.52	229.49	2-6-1	233.30	

NOTE: ALL SERVICE PLUGS SHALL BE WATER TIGHT.

SIMPSON ROAD

STORM SEWER DATA								
STRUCT NO	STATION	℄ GRATE OFFSET	STRUCT OPSD	INVERTS		FRAME & COVER OPSD	TOP OF FRAME ELEV	REMARKS
				INLET	OUTLET			
CB1	10+920	5.5 LT	705.010		232.42	400.010	233.87	
CB2	10+920	5.5 RT	705.010		232.42	400.010	233.87	
MH1	10+920	1.5 RT	701.011		232.13	401.010	233.94	
CB3	10+980	5.5 LT	705.010		231.77	400.010	233.22	
MH2	10+980	1.5 RT	701.012	231.53	231.21	401.010	233.27	



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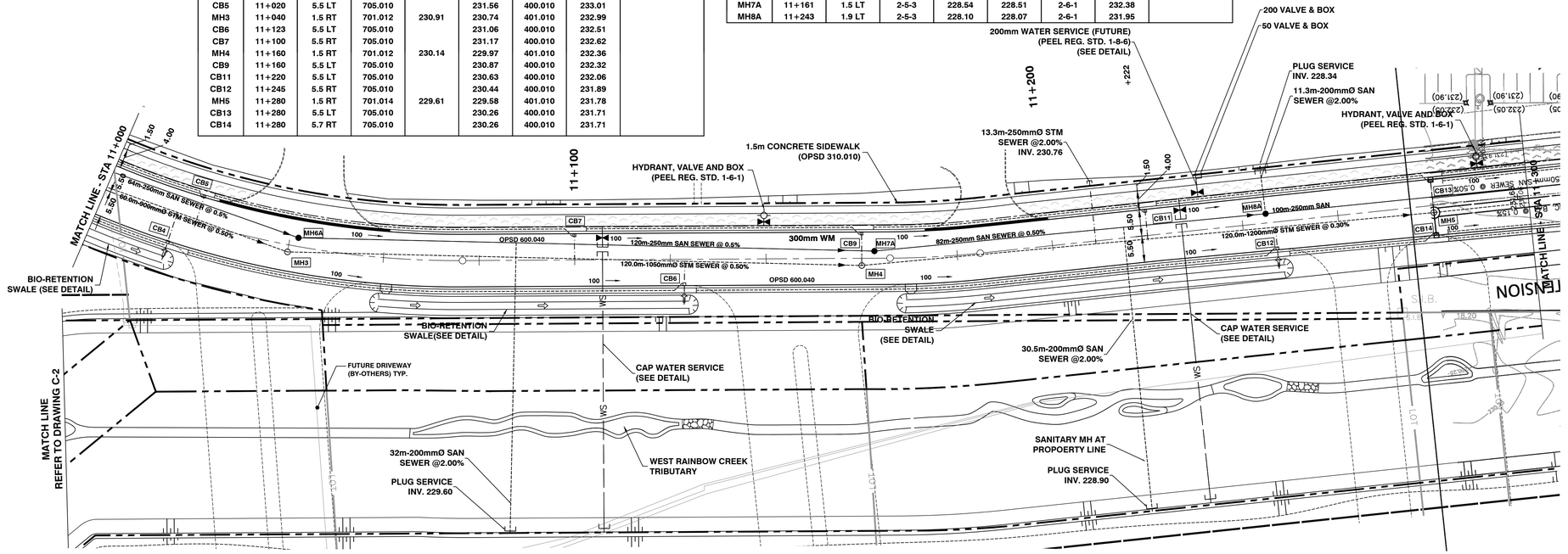
STORM SEWER DATA

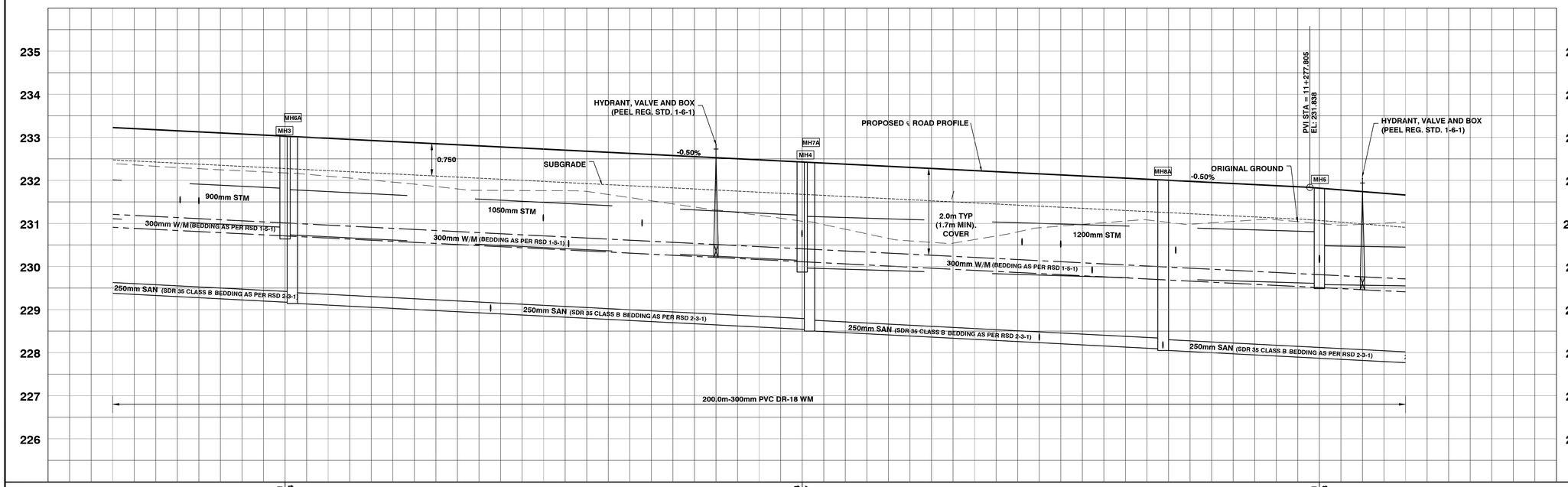
STRUCT NO	STATION	℄ GRATE OFFSET	STRUCT OPSD	INVERTS		FRAME & COVER OPSD	TOP OF FRAME ELEV	REMARKS
				INLET	OUTLET			
CB4	11+016	5.5 RT	705.010		231.59	400.010	233.05	
CB5	11+020	5.5 LT	705.010		231.56	400.010	233.01	
MH3	11+040	1.5 RT	701.012	230.91	230.74	401.010	232.99	
CB6	11+123	5.5 LT	705.010		231.06	400.010	232.51	
CB7	11+100	5.5 RT	705.010		231.17	400.010	232.62	
MH4	11+160	1.5 RT	701.012	230.14	229.97	401.010	232.36	
CB9	11+160	5.5 LT	705.010		230.87	400.010	232.32	
CB11	11+220	5.5 LT	705.010		230.63	400.010	232.06	
CB12	11+245	5.5 RT	705.010		230.44	400.010	231.89	
MH5	11+280	1.5 RT	701.014	229.61	229.58	401.010	231.78	
CB13	11+280	5.5 LT	705.010		230.26	400.010	231.71	
CB14	11+280	5.7 RT	705.010		230.26	400.010	231.71	

SANITARY SEWER DATA

STRUCT NO	STATION	℄ GRATE OFFSET	STRUCT PEEL STD.	INVERTS		FRAME & COVER PEEL STD.	TOP OF FRAME ELEV	REMARKS
				INLET	OUTLET			
MH6A	11+041	1.8 LT	2-5-3	229.17	229.14	2-6-1	232.96	
MH7A	11+161	1.5 LT	2-5-3	228.54	228.51	2-6-1	232.38	
MH8A	11+243	1.9 LT	2-5-3	228.10	228.07	2-6-1	231.95	



SIMPSON ROAD



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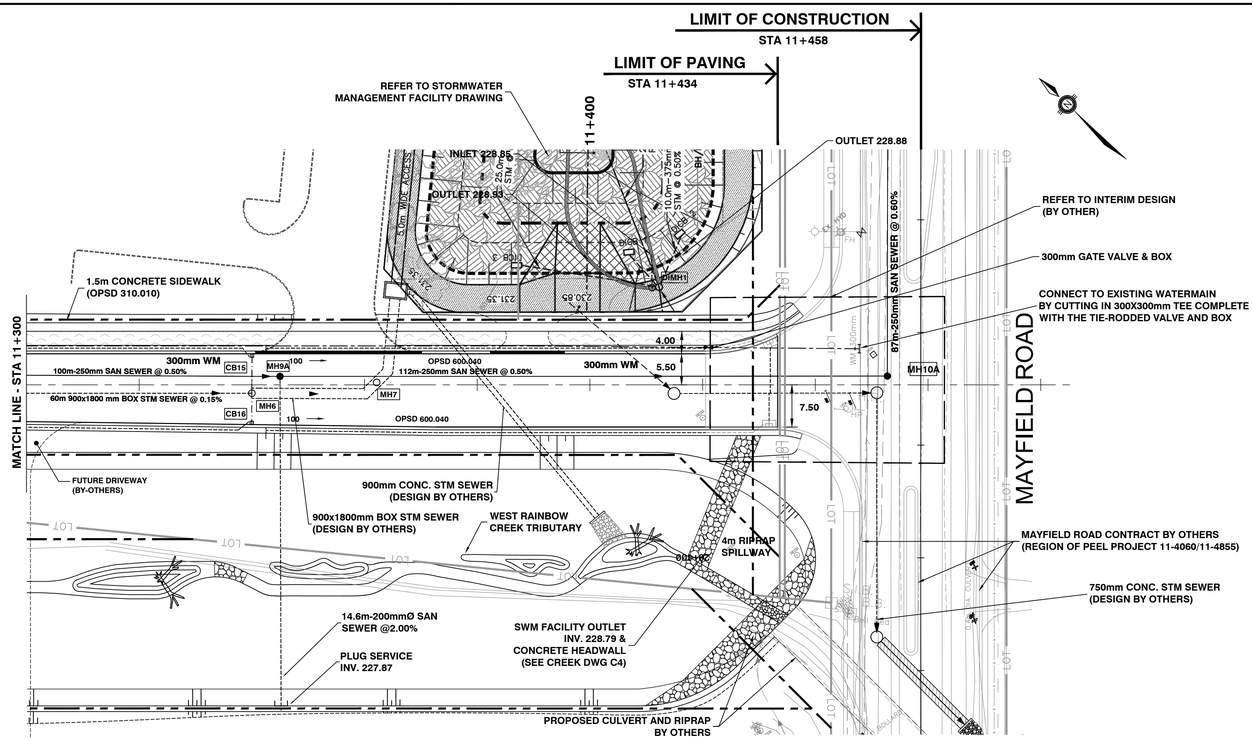
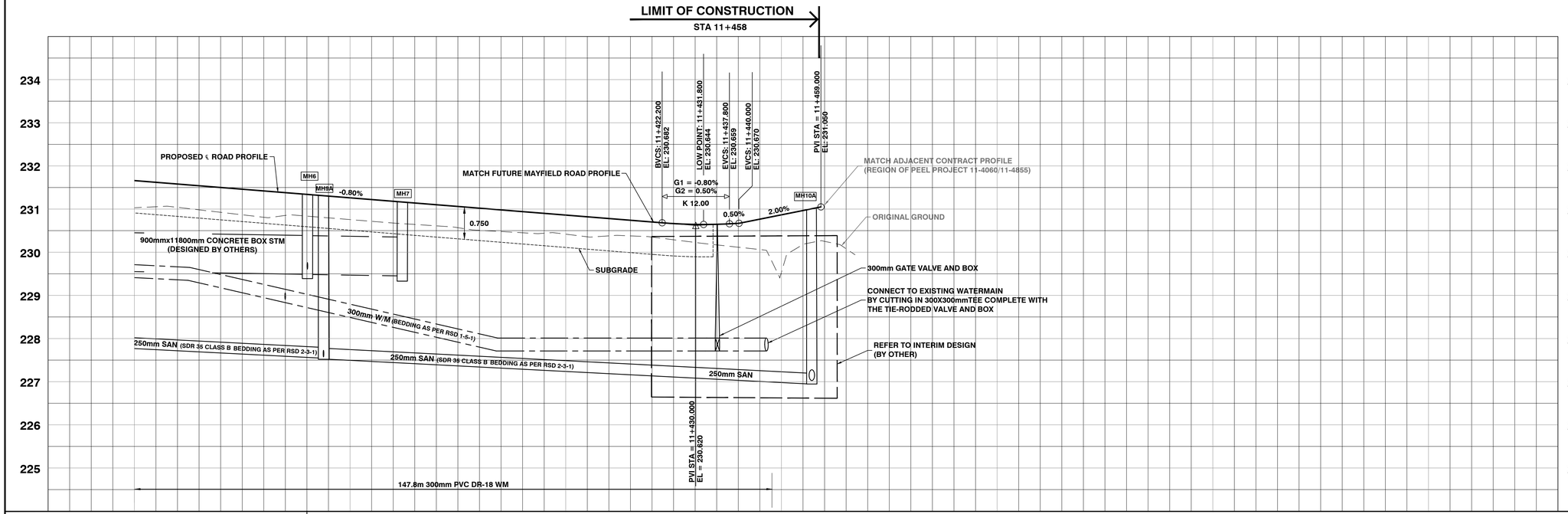


SIMPSON ROAD



STORM INVERT	60m - 1800X900 CONCRETE BOX @ 0.15% (DESIGNED BY OTHERS) → N229.49 S229.49 → 22m - 1800X900 CONCRETE BOX@ 0.15% (DESIGNED BY OTHERS)		
SANITARY INVERT	100m - 250mm SDR 35 SAN. @ 0.50% (CLASS B BEDDING AS PER RSD 2-3-1) → N227.57 S227.54 → 112m - 250mm SDR 35 SAN.@ 0.50% (CLASS B BEDDING AS PER RSD 2-3-1) → N226.95		
PROPOSED ℄ RD GRADES	231.66	231.26	230.86 → 230.86
℄ CHAINAGE	11+300	11+350	11+400 → 11+450

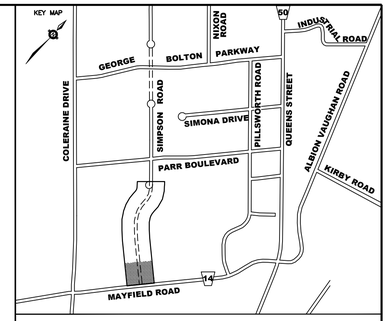
STORM SEWER DATA

STRUCT NO	STATION	℄ GRATE OFFSET	STRUCT OPSD	INVERTS		FRAME & COVER OPSD	TOP OF FRAME ELEV	REMARKS
				INLET	OUTLET			
CB15	11+340	5.5 LT	705.010		229.77	400.010	231.22	
CB16	11+340	7.0 RT	705.010		229.74	400.010	231.19	
TEE MH6	11+340	1.5 RT		229.49	229.49	401.010	231.30	
TEE MH7	11+362	0.5LT		229.45	229.45	401.010	231.15	

SANITARY SEWER DATA

STRUCT NO	STATION	℄ GRATE OFFSET	STRUCT PEEL STD.	INVERTS		FRAME & COVER PEEL STD.	TOP OF FRAME ELEV	REMARKS
				INLET	OUTLET			
MH9A	11+343	1.5 LT	2-5-3	227.57	227.54	2-6-1	231.28	
MH10A	11+455	1.5 LT	2-5-3	226.95	226.86	2-6-1	230.98 *	

* MATCH ROAD PROFILE FROM MAYFIELD ROAD CONTRACT (REGION OF PEEL PROJECT 11-4060/11-4855)



LEGEND

- PROPOSED PROPERTY LINE
- 100 → PROPOSED SUBDRAIN, DIRECTION AND SIZE (CALEDON STD. NO. 218)
- 825mm STM → PROPOSED STORM SEWER, DIRECTION AND SIZE
- 250mm SAN → PROPOSED SANITARY SEWER, DIRECTION AND SIZE
- 300mm WM — PROPOSED WATERMAIN AND SIZE
- PROPOSED VALVE
- PROPOSED HYDRANT
- A1 — ADJUST CATCHBASIN/MANHOLE
- CB1 — PROPOSED CATCHBASIN/MANHOLE
- MH1A — PROPOSED SANITARY MANHOLE
- FUTURE ENTRANCE
- CONCRETE GUTTER OUTLET OPSD 604.010
- FLOW ARROW

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE, MANAGER, ENGINEERING SERVICES — DATE

PROJECT NAME

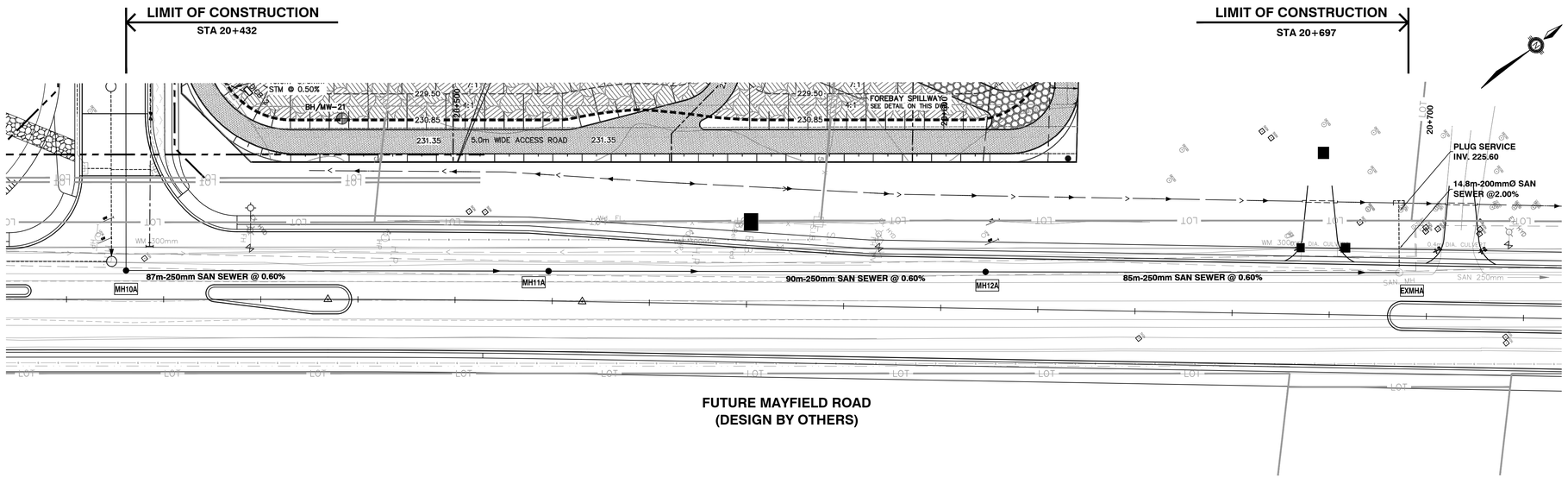
CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

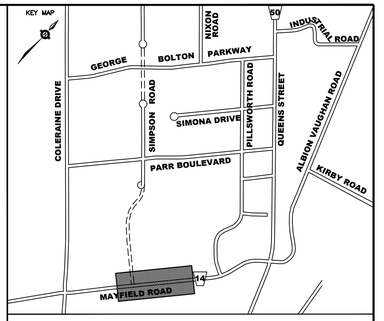
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

SIMPSON ROAD
NEW CONSTRUCTION
PLAN AND PROFILE
STA. 11+300 TO STA. 11+458

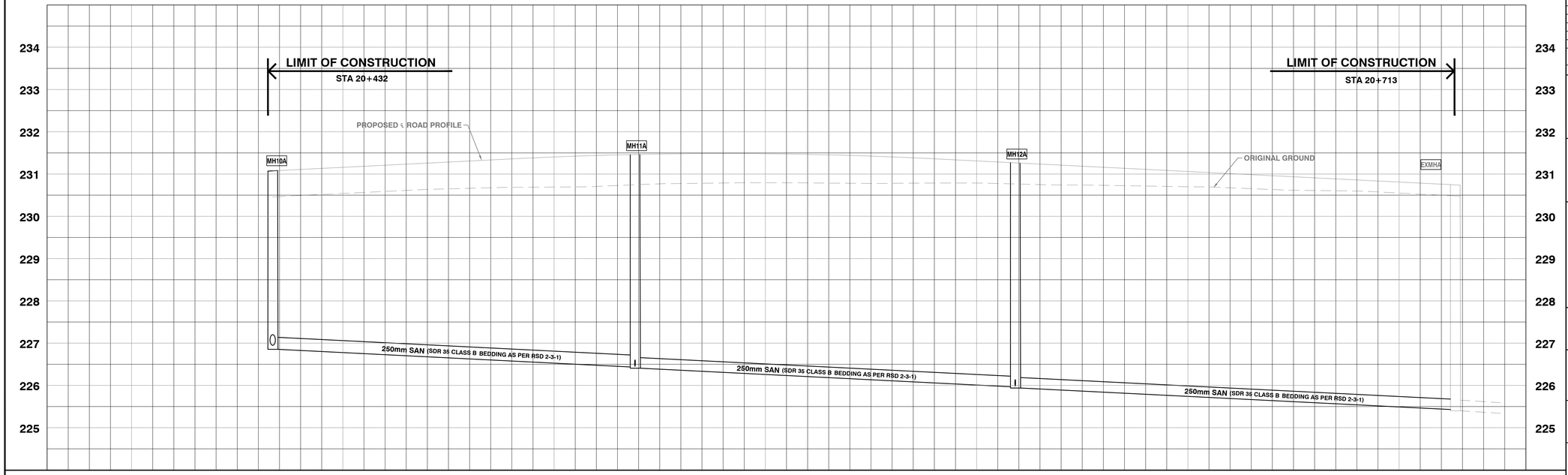
SCALE: HORIZ. 1:500	VERT. 1:50	PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: B.L.	DRAWING No. 11
CHECKED BY: D.S.	DATE: AUG. 2020	





SANITARY SEWER DATA								
STRUCT NO	STATION	℄ GRATE OFFSET	STRUCT PEEL STD.	INVERTS		FRAME & COVER PEEL STD.	TOP OF FRAME ELEV	REMARKS
				INLET	OUTLET			
MH11A	20+519	6.1 LT	2-5-3	226.44	226.41	2-6-1	231.43	
MH12A	20+609	7.5 LT	2-5-3	225.97	225.94	2-6-1	231.23	
EX.MH	20+713	EX.	EX.	225.43	225.40 (EX.)	EX.	230.64	

MAYFIELD ROAD



STORM INVERT			
SANITARY INVERT	87m - 250mm SDR 35 SAN. @ 0.50% (CLASS B BEDDING AS PER RSD 2-3-1)	W226.44 E226.41	90m - 250mm SDR 35 SAN. @ 0.50% (CLASS B BEDDING AS PER RSD 2-3-1)
PROPOSED ℄ RD GRADES			
℄ CHAINAGE	20+400	20+450	20+500

W225.97 E225.94	101m - 250mm SDR 35 SAN. @ 0.50% (CLASS B BEDDING AS PER RSD 2-3-1)	W225.43 E225.40	
20+550	20+600	20+650	20+700

LEGEND

- PROPOSED PROPERTY LINE
- 100 — PROPOSED SUBDRAIN, DIRECTION AND SIZE (CALEDON STD. NO. 218)
- 825mm STM — PROPOSED STORM SEWER, DIRECTION AND SIZE
- 250mm SAN — PROPOSED SANITARY SEWER, DIRECTION AND SIZE
- 300mm WM — PROPOSED WATERMAIN AND SIZE
- PROPOSED VALVE
- PROPOSED HYDRANT
- A1 — ADJUST CATCHBASIN/MANHOLE
- CB1 — PROPOSED CATCHBASIN/MANHOLE
- MH1A — PROPOSED SANITARY MANHOLE
- FUTURE ENTRANCE
- CONCRETE GUTTER OUTLET OPSD 604.010
- FLOW ARROW

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE, MANAGER, ENGINEERING SERVICES — DATE

PROJECT NAME

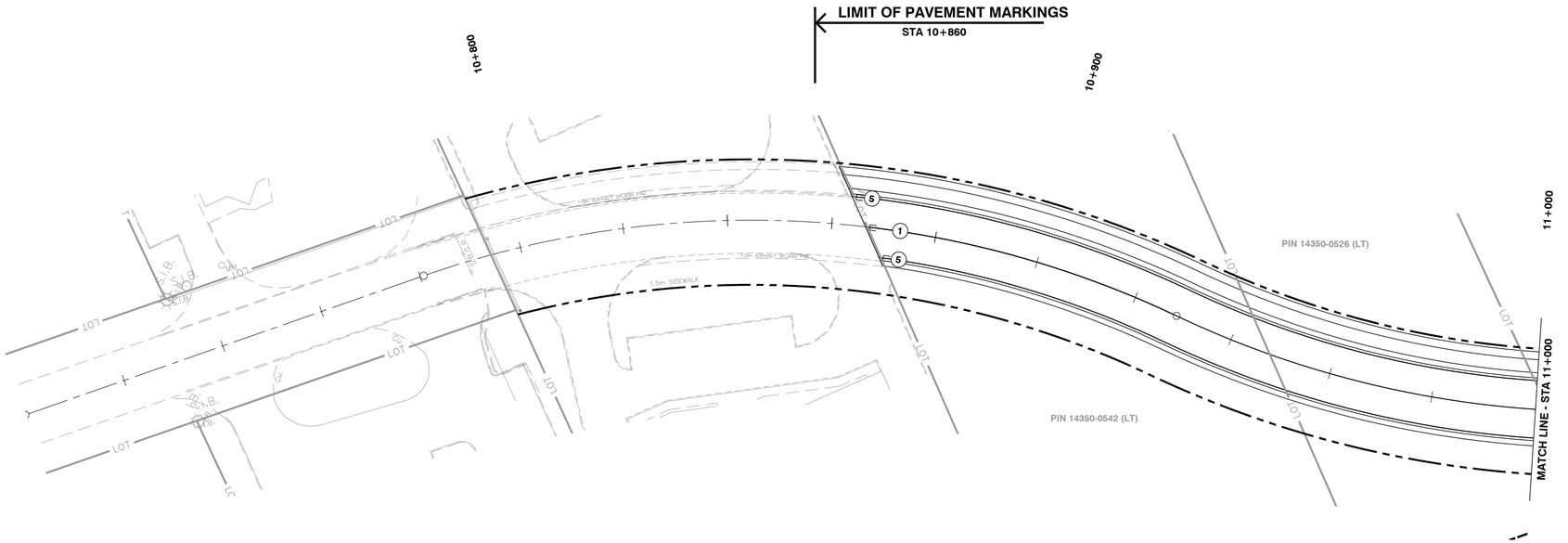
CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

REGION OF PEEL
C02.312

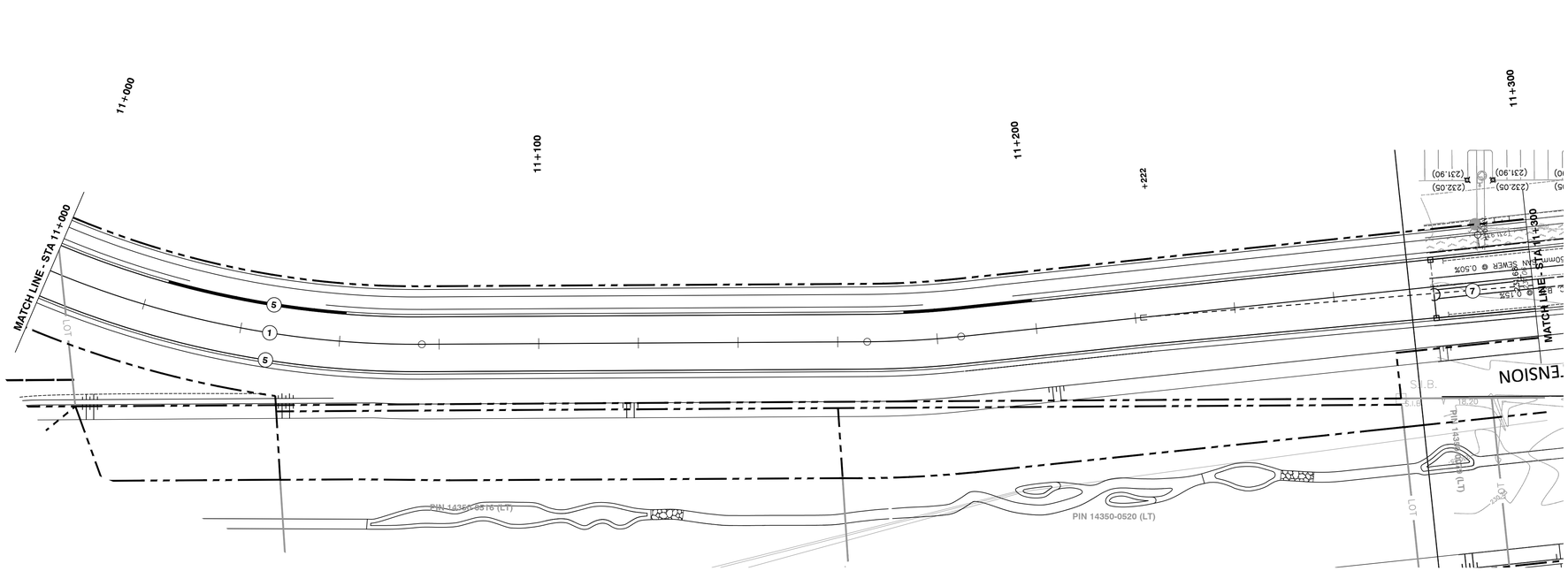
THE CORPORATION OF THE
TOWN OF CALEDON

MAYFIELD ROAD
NEW CONSTRUCTION
PLAN AND PROFILE
STA. 10+000 TO STA. 10+264

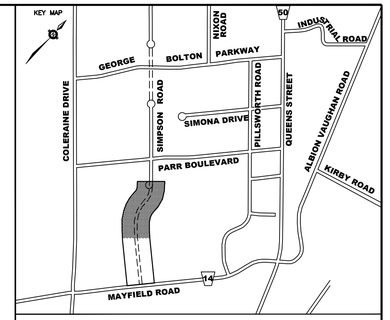
SCALE: HORIZ. 1:500	VERT. 1:50	PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: B.L.	DRAWNING No. 12
CHECKED BY: D.S.	DATE: AUG. 2020	



SIMPSON ROAD



SIMPSON ROAD



LEGEND

- (1) 10cm SOLID YELLOW
- (5) 10cm SOLID WHITE
- (6) 60cm SOLID WHITE
- (7) 10cm BROKEN WHITE, 3m LINE, 3m GAP, 3m LINE
- END OF PAVEMENT MARKING
- (X) PAVEMENT MARKING
- (X) PAVEMENT MARKING, DURABLE
- TURNING ARROWS, DURABLE

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

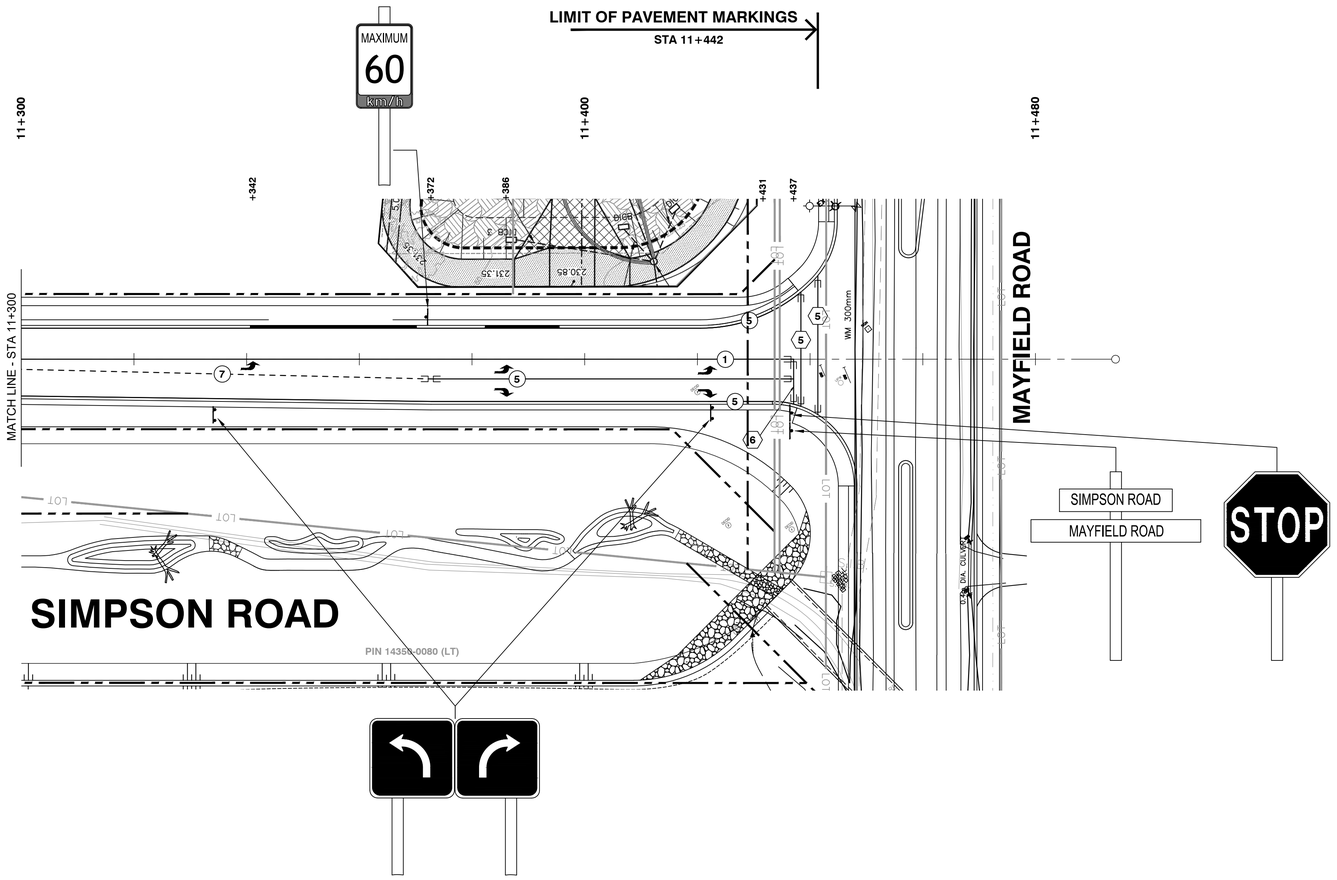
FINANCE AND INFRASTRUCTURE SERVICES

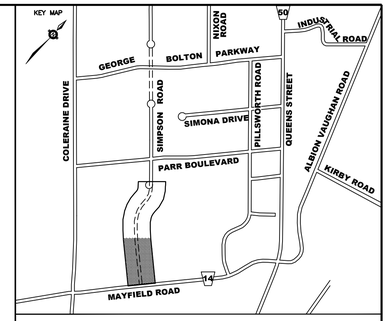
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

SIMPSON ROAD
PAVEMENT
MARKINGS AND SIGNS
STA. 10+700 TO STA. 11+300

SCALE: 1:500		PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: N.H.	
CHECKED BY: D.S.	DATE: NOV. 2020	DRAWING No. 13





LEGEND

- (1) 10cm SOLID YELLOW
- (5) 10cm SOLID WHITE
- (6) 60cm SOLID WHITE
- (7) 10cm BROKEN WHITE, 3m LINE, 3m GAP, 3m LINE
- END OF PAVEMENT MARKING
- (X) PAVEMENT MARKING
- (X) PAVEMENT MARKING, DURABLE
- TURNING ARROWS, DURABLE

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

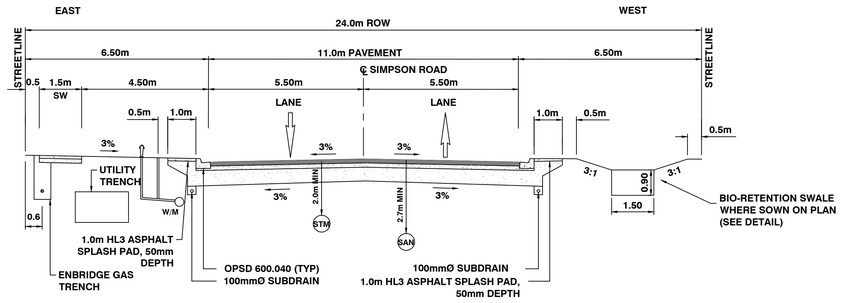
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

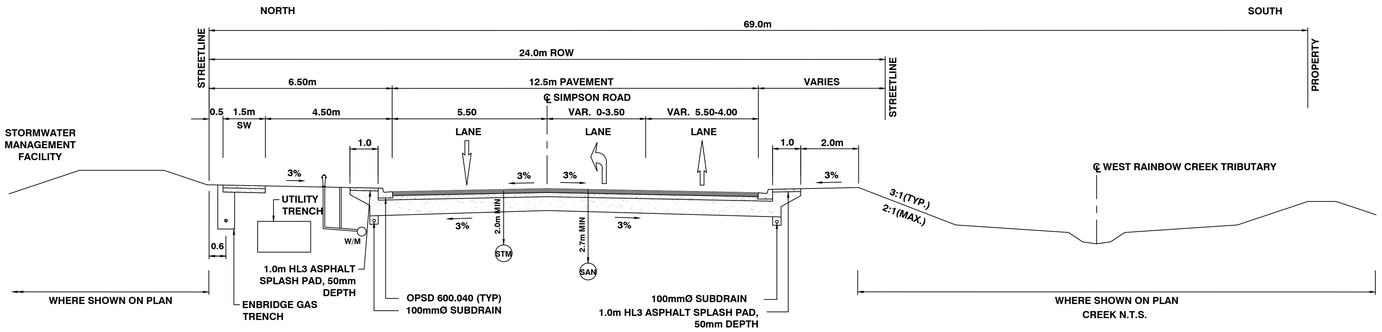
SIMPSON ROAD PAVEMENT MARKINGS AND SIGNS

STA. 11+300 TO STA. 11+455

SCALE: 1:500		PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: N.H.	DRAWNING No. 14
CHECKED BY: D.S.	DATE: NOV. 2020	

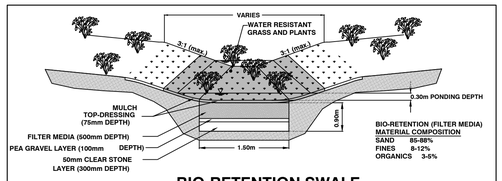


SIMPSON ROAD - EXTENSION
STA 10+860 TO STA 11+223
SCALE 1:100



SIMPSON ROAD - EXTENSION
STA 11+223 TO STA 11+434
SCALE 1:100

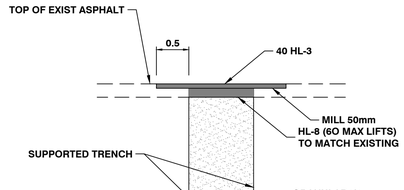
PAVEMENT AND GRANULAR SUMMARY					
	SURFACE	BINDER	GRANULAR 'A'	GRANULAR 'B'	PAVEMENT REMOVAL
	HL3	HDBC			
SIMPSON ROAD SOUTH STA 10+860 TO STA 11+434	40	50 60	150	450	FULL DEPTH
SPLASH PAD	50				



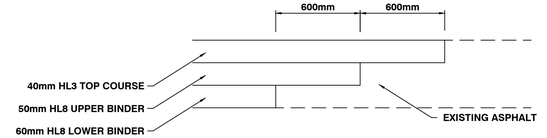
BIO-RETENTION SWALE
N.T.S.

BIO-RETENTION SWALE

1. EROSION AND SEDIMENT CONTROL TO BE CONSTRUCTED AND IN PLACE PRIOR TO ANY GRADING WORKS.
2. STOCK PILING OF MATERIALS TO BE SET BACK A MINIMUM 15m FROM SWALES AND WATERCOURSES. PERIMETER SILT FENCING TO BE PROVIDED AND INSTALLED ACCORDING TO OPSD 219.130.
3. ALL SWALE WORKS TO BE COMPLETED DURING DRY WEATHER.
4. PERIMETER SILT FENCE TO BE INSTALLED AND MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION AND REMOVED ONCE SITE HAS STABILIZED. CONSERVATION AUTHORITY TO BE CONSULTED IN THE DETERMINATION OF SITE STABILIZATION.

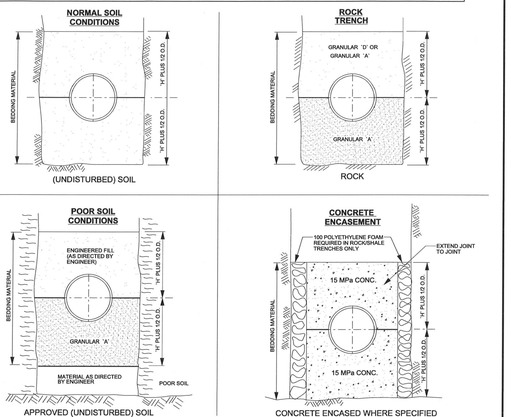


TRENCH RESTORATION DETAIL
ROAD/DRIVEWAY
N.T.S.



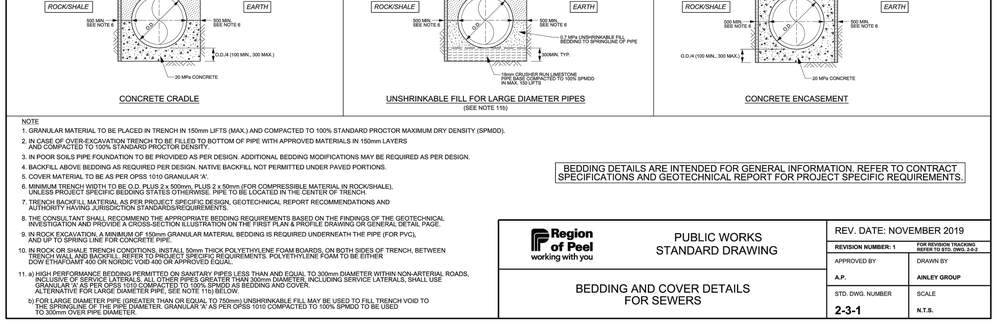
BUTT JOINT DETAIL
N.T.S.

BEDDING DETAILS ARE INTENDED FOR GENERAL INFORMATION. REFER TO CONTRACT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR PROJECT SPECIFIC REQUIREMENTS.



NOTE
1. FOR P.V.C. AND DUCTILE IRON PIPE, BEDDING MATERIAL TO BE GRANULAR D (LIMESTONE SCREENING COLOUR TO BE BETWEEN LIGHT GREY TO WHITE) 150mm ABOVE THE TOP OF PIPE.
2. MATERIAL TO BE PLACED IN TRENCH IN 150mm LAYERS AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
3. IN CASE OF OVER-EXCAVATION TRENCH TO BE FILLED TO BOTTOM OF PIPE WITH APPROVED MATERIALS IN 150mm LAYERS AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
4. IN POOR SOILS ENGINEER MAY VARY PIPE FOUNDATION TO SUIT.
5. BACKFILL ABOVE BEDDING AS APPROVED BY PROJECT MANAGER.
6. GRANULAR MATERIAL AS PER OPS SPECIFICATIONS AND REGION OF PEEL CAPITAL WORKS VOLUME 2 SPECIFICATIONS.
7. "H"=150 OR DIA./4 OF WATERMAIN WHICH EVER IS GREATER.
8. MIN. TRENCH WIDTH TO BE O.D. PLUS 600mm MAX. TRENCH WIDTH TO BE O.D. PLUS 750mm, UNLESS PROJECT SPECIFIC BEDDING STATES OTHERWISE.
9. COVER MATERIAL, NO STONES GREATER THAN 25mm WILL BE PERMITTED.
10. APPROVED SOIL AS PER GEOTECHNICAL REPORT RECOMMENDATIONS.
11. TO ADDRESS TIME DEPENDANT DEFORMATION IN ROCK OR SHALE TRENCH CONDITIONS, INSTALL 100mm THICK POLYETHYLENE FOAM FOR ALL CONCRETE ENCASED WATERMAIN INSTALLATIONS. REFER TO PROJECT SPECIFIC REQUIREMENTS. POLYETHYLENE FOAM TO BE EITHER DOW ETHAFOAM 400 OR NORDIC VOID 400 OR APPROVED EQUAL.

Region of Peel Working for you	PUBLIC WORKS STANDARD DRAWING	REV. DATE: APRIL 2014	
		APPROVED BY: A.P.	DRAWN BY: AINLEY GROUP
WATERMAIN BEDDING		STD. DWG. NUMBER: 1-5-1	SCALE: N.T.S.



NOTE
1. GRANULAR MATERIAL TO BE PLACED IN TRENCH IN 150mm LIFTS (MAX.) AND COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
2. IN CASE OF OVER-EXCAVATION TRENCH TO BE FILLED TO BOTTOM OF PIPE WITH APPROVED MATERIALS IN 150mm LAYERS AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
3. IN POOR SOILS PIPE FOUNDATION TO BE PROVIDED AS PER DESIGN. ADDITIONAL BEDDING MODIFICATIONS MAY BE REQUIRED AS PER DESIGN.
4. BACKFILL ABOVE BEDDING AS REQUIRED PER DESIGN. NATIVE BACKFILL NOT PERMITTED UNDER PAVED PORTIONS.
5. COVER MATERIAL TO BE AS PER OPSS 1010 GRANULAR 'A'.
6. MINIMUM TRENCH WIDTH TO BE O.D. PLUS 2 x 500mm, PLUS 2 x 50mm (FOR COMPRESSIBLE MATERIAL IN ROCK/SHALE), UNLESS PROJECT SPECIFIC BEDDING STATES OTHERWISE. PIPE TO BE LOCATED IN THE CENTER OF TRENCH.
7. TRENCH BACKFILL MATERIAL AS PER PROJECT SPECIFIC DESIGN, GEOTECHNICAL REPORT RECOMMENDATIONS AND AUTHORITY HAVING JURISDICTION STANDARDS/REQUIREMENTS.
8. THE CONSULTANT SHALL RECOMMEND THE APPROPRIATE BEDDING REQUIREMENTS BASED ON THE FINDINGS OF THE GEOTECHNICAL INVESTIGATION AND PROVIDE A CROSS-SECTION ILLUSTRATION ON THE FIRST PLAN & PROFILE DRAWING OR GENERAL DETAIL PAGE.
9. IN ROCK EXCAVATION, A MINIMUM OF 150mm GRANULAR MATERIAL BEDDING IS REQUIRED UNDERNEATH THE PIPE (FOR PVC), AND UP TO SPRING LINE FOR CONCRETE PIPE.
10. IN ROCK OR SHALE TRENCH CONDITIONS, INSTALL 50mm THICK POLYETHYLENE FOAM BOARDS, ON BOTH SIDES OF TRENCH, BETWEEN TRENCH WALL AND BACKFILL. REFER TO PROJECT SPECIFIC REQUIREMENTS. POLYETHYLENE FOAM TO BE EITHER DOW ETHAFOAM® 400 OR NORDIC VOID 400 OR APPROVED EQUAL.
11. a) HIGH PERFORMANCE BEDDING PERMITTED ON SANITARY PIPES LESS THAN AND EQUAL TO 300mm DIAMETER WITHIN NON-ARTERIAL ROADS, INCLUSIVE OF SERVICE LATERALS. ALL OTHER PIPES GREATER THAN 300mm DIAMETER, INCLUDING SERVICE LATERALS, SHALL USE GRANULAR 'A' AS PER OPSS 1010 COMPACTED TO 100% SPMDD AS BEDDING AND COVER. ALTERNATIVE FOR LARGE DIAMETER PIPE, SEE NOTE 11b) BELOW.
b) FOR LARGE DIAMETER PIPE (GREATER THAN OR EQUAL TO 750mm) UNSHRINKABLE FILL MAY BE USED TO FILL TRENCH VOID TO THE SPRINGLINE OF THE PIPE DIAMETER. GRANULAR 'A' AS PER OPSS 1010 COMPACTED TO 100% SPMDD TO BE USED TO 300mm OVER PIPE DIAMETER.

BEDDING DETAILS ARE INTENDED FOR GENERAL INFORMATION. REFER TO CONTRACT SPECIFICATIONS AND GEOTECHNICAL REPORT FOR PROJECT SPECIFIC REQUIREMENTS.

Region of Peel working with you	PUBLIC WORKS STANDARD DRAWING	REV. DATE: NOVEMBER 2019	
		REVISION NUMBER: 1	FOR REVISION TRACKING REFER TO STD. DWG. 2-2-1
		APPROVED BY: A.P.	DRAWN BY: AINLEY GROUP
BEDDING AND COVER DETAILS FOR SEWERS		STD. DWG. NUMBER: 2-3-1	SCALE: N.T.S.

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
2	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		
1	M.B.K.	19/09/30	REVISED – TRCA SUBMISSION #4		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

LICENSED PROFESSIONAL ENGINEER F. K. Y. WONG 100076535 PROVINCE OF ONTARIO

APPROVED FOR CONSTRUCTION

ISSUED FOR TRCA PERMIT 19/09/30

D. LOVERIDGE, PEng, DIRECTOR OF PUBLIC WORKS — DATE

PROJECT NAME

SIMPSON ROAD EXTENSION PHASE 3

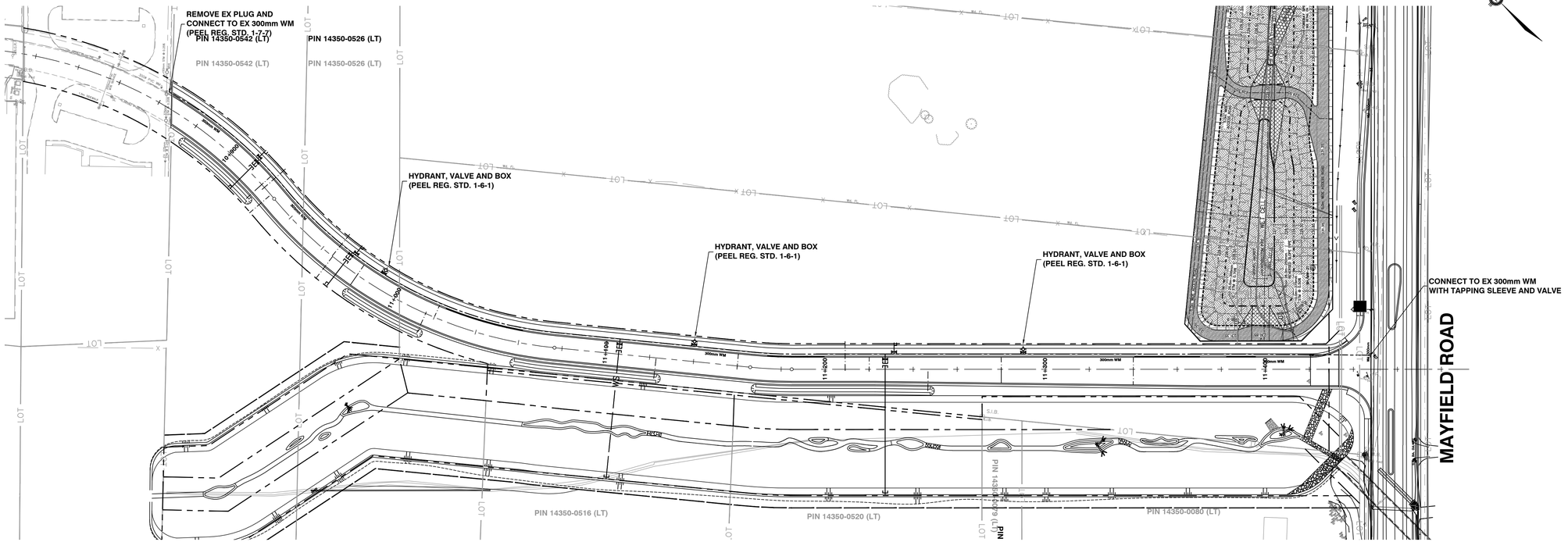
FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL

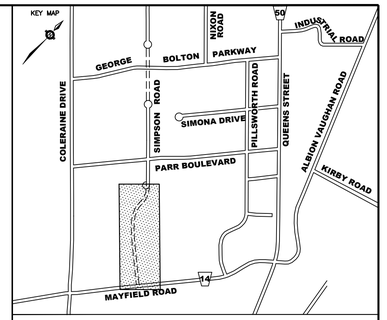
THE CORPORATION OF THE TOWN OF CALEDON

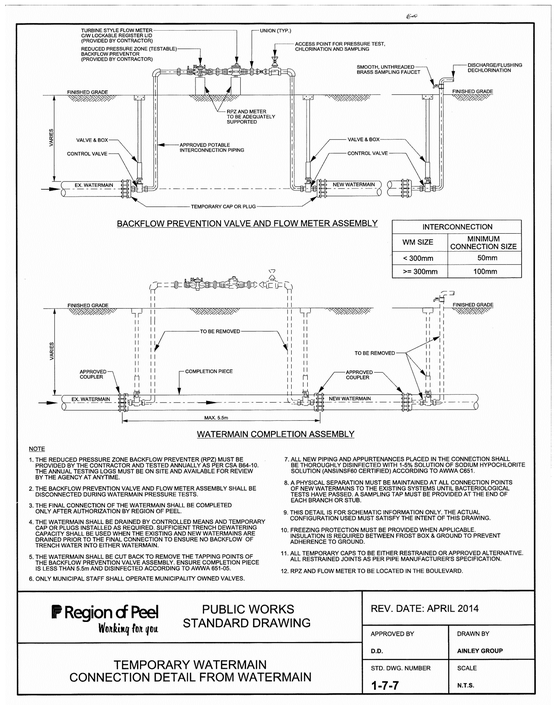
DETAILS

SCALE: AS NOTED	PROJECT No. TP113126
DESIGNED BY: F.W.	DRAWN BY: B.L.
CHECKED BY: D.S.	DATE: SEPT. 2019
	DRAWING No. 15



SIMPSON ROAD



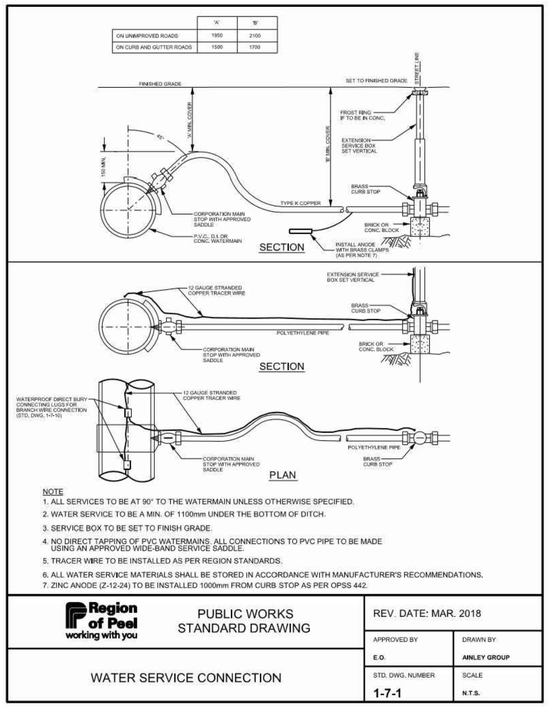


INTERCONNECTION	
WM SIZE	MINIMUM CONNECTION SIZE
< 300mm	50mm
>= 300mm	100mm

NOTE

1. THE REDUCED PRESSURE ZONE BACKFLOW PREVENTER (RPZ) MUST BE PROVIDED BY THE CONTRACTOR AND TESTED ANNUALLY AS PER CSA B64-10. THE ANNUAL TESTING LOGS MUST BE ON SITE AND AVAILABLE FOR REVIEW BY THE AGENCY AT ANYTIME.
2. THE BACKFLOW PREVENTION VALVE AND FLOW METER ASSEMBLY SHALL BE DISCONNECTED DURING WATERMAIN PRESSURE TESTS.
3. THE FINAL CONNECTION OF THE WATERMAIN SHALL BE COMPLETED ONLY AFTER AUTHORIZATION BY REGION OF PEEL.
4. THE WATERMAIN SHALL BE DRAINED BY CONTROLLED MEANS AND TEMPORARY CAP OR PLUGS INSTALLED AS REQUIRED. SUFFICIENT TRENCH DEWATERING CAPACITY SHALL BE USED WHEN THE EXISTING AND NEW WATERMAINS ARE DRAINED PRIOR TO THE FINAL CONNECTION TO ENSURE NO BACKFLOW OF TRENCH WATER INTO EITHER WATERMAIN.
5. THE WATERMAIN SHALL BE CUT BACK TO REMOVE THE TAPPING POINTS OF THE BACKFLOW PREVENTION VALVE ASSEMBLY. ENSURE COMPLETION PIECE IS LESS THAN 5.5m AND DISINFECTED ACCORDING TO AWWA 651-05.
6. ONLY MUNICIPAL STAFF SHALL OPERATE MUNICIPALITY OWNED VALVES.
7. ALL NEW PIPING AND APPURTENANCES PLACED IN THE CONNECTION SHALL BE THOROUGHLY DISINFECTED WITH 1-5% SOLUTION OF SODIUM HYPOCHLORITE SOLUTION (ANSI/NSF60 CERTIFIED) ACCORDING TO AWWA C651.
8. A PHYSICAL SEPARATION MUST BE MAINTAINED AT ALL CONNECTION POINTS OF NEW WATERMAINS TO THE EXISTING SYSTEMS UNTIL BACTERIOLOGICAL TESTS HAVE PASSED. A SAMPLING TAP MUST BE PROVIDED AT THE END OF EACH BRANCH OR STUB.
9. THIS DETAIL IS FOR SCHEMATIC INFORMATION ONLY. THE ACTUAL CONFIGURATION USED MUST SATISFY THE INTENT OF THIS DRAWING.
10. FREEZING PROTECTION MUST BE PROVIDED WHEN APPLICABLE. INSULATION IS REQUIRED BETWEEN FROST BOX & GROUND TO PREVENT ADHERENCE TO GROUND.
11. ALL TEMPORARY CAPS TO BE EITHER RESTRAINED OR APPROVED ALTERNATIVE. ALL RESTRAINED JOINTS AS PER PIPE MANUFACTURER'S SPECIFICATION.
12. RPZ AND FLOW METER TO BE LOCATED IN THE BOULEVARD.

Region of Peel Working for you	PUBLIC WORKS STANDARD DRAWING	REV. DATE: APRIL 2014	
TEMPORARY WATERMAIN CONNECTION DETAIL FROM WATERMAIN		APPROVED BY: D.D.	DRAWN BY: AINLEY GROUP
		STD. DWG. NUMBER: 1-7-7	SCALE: N.T.S.

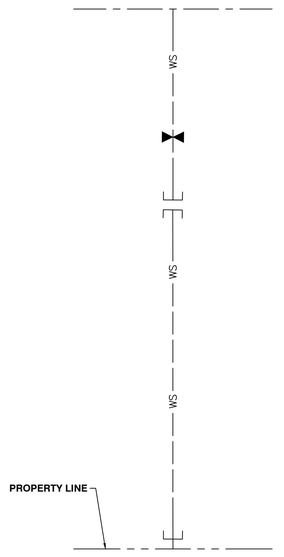


NOTE

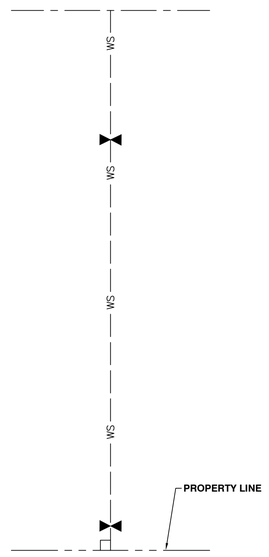
1. ALL SERVICES TO BE AT 90° TO THE WATERMAIN UNLESS OTHERWISE SPECIFIED.
2. WATER SERVICE TO BE A MIN. OF 1100mm UNDER THE BOTTOM OF DITCH.
3. SERVICE BOX TO BE SET TO FINISH GRADE.
4. NO DIRECT TAPPING OF PVC WATERMAINS. ALL CONNECTIONS TO PVC PIPE TO BE MADE USING AN APPROVED WIDE-BAND SERVICE SADDLE.
5. TRACER WIRE TO BE INSTALLED AS PER REGION STANDARDS.
6. ALL WATER SERVICE MATERIALS SHALL BE STORED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. ZINC ANODE (Z-12-24) TO BE INSTALLED 1000mm FROM CURB STOP AS PER OPSS 442.

Region of Peel working with you	PUBLIC WORKS STANDARD DRAWING	REV. DATE: MAR. 2018	
WATER SERVICE CONNECTION		APPROVED BY: E.O.	DRAWN BY: AINLEY GROUP
		STD. DWG. NUMBER: 1-7-1	SCALE: N.T.S.

NOTE: MINIMUM CLEARANCE AS PER PEEL REGION 1-7-1 SHALL BE MAINTAINED BELOW PROPOSED CHANNEL.



OPTION A: WATER SERVICE WITHOUT SITE PLAN APPROVED



OPTION B: WATER SERVICE WITH SITE PLAN APPROVED

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE, MANAGER, ENGINEERING SERVICES — DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

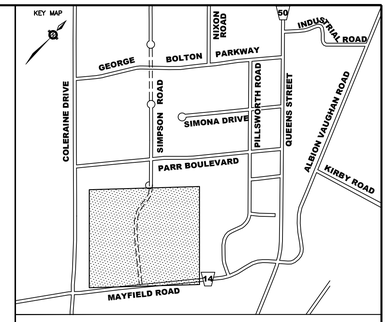
FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

THE CORPORATION OF THE TOWN OF CALEDON

SIMPSON ROAD
WATER DISTRIBUTION AND COMMISSIONING PLAN

SCALE: 1:750		PROJECT No. TP113126
DESIGNED BY: L.V.	DRAWN BY: N.H.	DRAWING No. 16
CHECKED BY: D.S.	DATE: NOV. 2020	



LEGEND

- MH1A — PROPOSED SANITARY MANHOLE
- 140 / 2.00 — EQUIVALENT POPULATION (70ppha) / AREA (ha)
- SANITARY BOUNDARY DRAINAGE AREA

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	ISSUED FOR 100% CLIENT REVIEW		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	ISSUED FOR 100% DETAILED DESIGN FOR ROP – MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES
DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

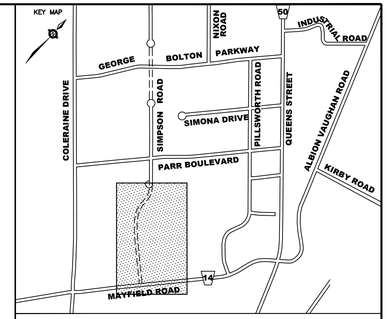
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

SANITARY DRAINAGE AREA PLAN

SCALE: 1:1250		PROJECT No. TP113126
DESIGNED BY: L.V.	DRAWN BY: N.H.	DRAWNING No. 17
CHECKED BY: D.S.	DATE: NOV. 2020	

KEY MAP



LEGEND

- CB1 — PROPOSED CATCHBASIN/MANHOLE
- 0.9 / 7.57 — RUNOFF COEFFICIENT / AREA (ha)
- STORM BOUNDARY DRAINAGE AREA

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
5	F.W.	SEP. 21	ISSUED FOR 100% CLIENT REVIEW		
4	F.W.	NOV. 20	[redacted]		
3	F.W.	AUG. 20	ISSUED FOR 100% CLIENT REVIEW		
2	F.W.	JUN. 20	[redacted] MAYFIELD ROAD COORDINATION REVIEW		
1	F.W.	JAN. 20	ISSUED FOR 100% REVIEW		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE — DATE
MANAGER, ENGINEERING SERVICES

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

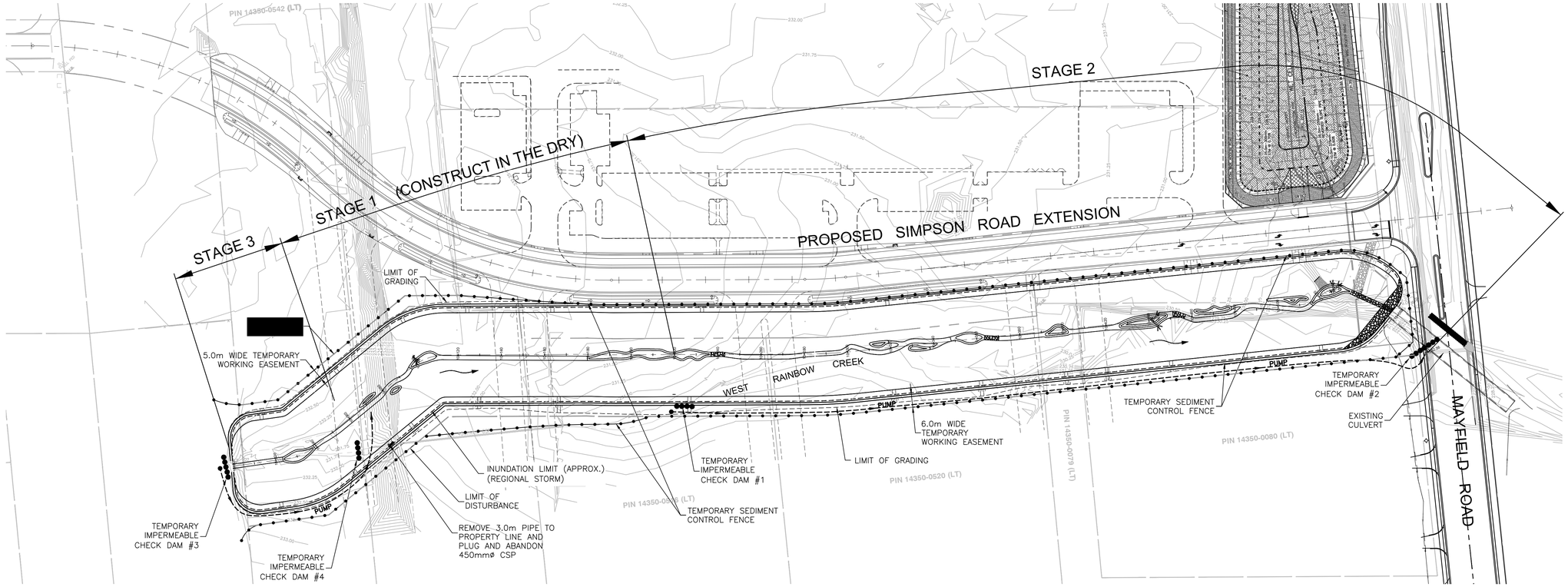
REGION OF PEEL
C02.312

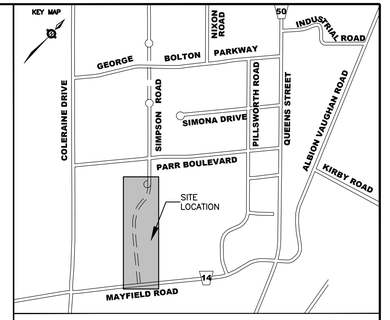
THE CORPORATION OF THE
TOWN OF CALEDON

STORM DRAINAGE AREA PLAN

STA. 10+860 TO STA. 11+458

SCALE: 1:1250		PROJECT No. TP113126
DESIGNED BY: L.V.	DRAWN BY: N.H.	
CHECKED BY: D.S.	DATE: NOV. 2020	DRAWNING No. 18





LEGEND

- SEDIMENT CONTROL FENCE
- TEMPORARY IMPERMEABLE CHECK DAM / COFFER DAM
- RIPRAP
- WOODY DEBRIS
- FLOW DIRECTION
- INUNDATION LIMIT (REGIONAL STORM)
- PROPERTY LINE

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	CONS. CHECKED	APP'D
7	M.B.K.	20/11/19	ISSUED FOR 100% CLIENT REVIEW		
6	M.B.K.	20/01/20	ISSUED FOR 100% REVIEW		
5	M.B.K.	19/09/30	REVISED – TRCA SUBMISSION #4		
4	M.B.K.	19/02/19	REVISED – TRCA SUBMISSION #3		
3	J.P.E.	18/11/05	REVISED – TRCA SUBMISSION #2		
2	B.S.	18/05/14	REVISED – TRCA SUBMISSION		
1	B.S.	17/09/05	ISSUED FOR TRCA PERMIT		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE — DATE
MANAGER, ENGINEERING SERVICES

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

WEST RAINBOW CREEK TRIBUTARY EROSION & SEDIMENT CONTROL & STAGING PLAN

SCALE: 1:1000		PROJECT No. TP113126
DESIGNED BY: M.K./B.D.	DRAWN BY: M.K.	DRAWING No. C1
CHECKED BY: B.B.	DATE: NOV. 2020	

GENERAL NOTES:

1. AN ON-SITE PRE-CONSTRUCTION MEETING MUST TAKE PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK. REPRESENTATIVES FROM THE TORONTO REGION CONSERVATION AUTHORITY, THE REGION OF PEEL, THE DESIGN TEAM, AND THE SUCCESSFUL CONTRACTOR MUST BE PRESENT.
2. PRIOR TO COMMENCEMENT OF ALL PHASES OF WORK, INCLUDING STRIPPING AND FILLING, ALL EROSION AND SEDIMENT CONTROLS SHALL BE IN PLACE TO THE SATISFACTION OF THE SITE SUPERVISOR.
3. ALL EROSION AND SEDIMENT CONTROLS MUST BE MAINTAINED DURING CONSTRUCTION AND FULLY REMOVED ONCE ALL DISTURBED AREAS HAVE BEEN STABILIZED.
4. THE CONTRACTOR MUST ABIDE BY THE REGULATIONS SET OUT IN THE ONTARIO GOVERNMENT PUBLICATION "GUIDELINES ON EROSION AND SEDIMENTATION CONTROLS FOR URBAN CONSTRUCTION SITES", AND "EROSION & SEDIMENT CONTROL GUIDELINES FOR URBAN CONSTRUCTION" PREPARED BY THE GREATER GOLDEN HORSESHOE AREA CONSERVATION AUTHORITIES (DECEMBER 2006).
5. REFER TO LANDSCAPING PLANS FOR REVEGETATION STAGING AND SEED MIXES.
6. THE ENTIRE CONSTRUCTION SITE TO BE MONITORED DAILY FOR SEDIMENT AND EROSION CONTROL FOR THE DURATION OF THE CONTRACT. DEFICIENCIES AND/OR BREACHES OF THE EROSION AND SEDIMENT CONTROL MEASURES MUST BE BROUGHT TO THE ATTENTION OF THE SITE ENGINEER AND THE TORONTO REGION CONSERVATION AUTHORITY AND RECTIFIED IMMEDIATELY.
7. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REGULATIONS AND PERMITTING PROVISION OF TRCA, THE REGION OF PEEL, MNR AND MOECC. THESE ARE TO BE POSTED OR AVAILABLE AT THE CONSTRUCTION SITE.
8. TEMPORARY IMPERMEABLE CHECK DAMS SHALL BE USED AS A COMPONENT OF THE DAM AND PUMP OPERATIONS FOR DEWATERING. IN THE EVENT THAT A TEMPORARY IMPERMEABLE CHECK DAM HAS BEEN PUT IN PLACE, IT SHALL BE REMOVED AS WELL AS ANY TRAPPED SEDIMENT UPON CONSTRUCTION COMPLETION OR AT THE DISCRETION OF THE SITE ENGINEER. UPON COMPLETION OF THE CHANNEL WORKS, THE ENGINEER AND CONTRACTOR ARE TO ENSURE THAT ALL STRUCTURES CONSTRUCTED WITHIN THE STREAM HAVE BEEN COMPLETELY REMOVED.
9. UNDER NO CIRCUMSTANCES SHALL RUNOFF FROM UNVEGETATED SOIL OR EXCAVATED PITS BE DISCHARGED OFF SITE OR DIRECTLY INTO ACTIVE OR TEMPORARILY INACTIVE WATERCOURSES.
10. ALL SEDIMENT CONTROL FENCING MUST BE MAINTAINED UNTIL SUCH TIME THE SITE SUPERVISOR DEEMS THE MEASURE IS NO LONGER NECESSARY.
11. ALL ACCUMULATED SEDIMENT MUST BE REMOVED DURING PERIODS OF LOW-FLOW OR DRY CONDITIONS, PRIOR TO THE REMOVAL OF THE DEWATERING CONTROLS, AND DISPOSED OF IN AN APPROVED ON-SITE LOCATION (TO BE DETERMINED IN THE FIELD).
12. ALL EXCAVATION/GRADING IS TO BE DONE IN THE DRY.
13. ALL DISTURBED AREAS SHALL BE REVEGETATED AS SOON AS WEATHER PERMITS FOLLOWING COMPLETION OF CONSTRUCTION WITH THE EXCEPTION OF SLOPES GREATER THAN 3:1 OR IN SENSITIVE AREAS. THESE AREAS SHALL BE STABILIZED IMMEDIATELY WITH TOPSOIL, SEED AND CURLEX II CL EROSION CONTROL BLANKET OR APPROVED EQUIVALENT.
14. ANY DISTURBANCE TO EXISTING VEGETATION AS PART OF CONSTRUCTION TEMPORARY WORK IS TO BE RESTORED AT THE DIRECTION OF THE LANDSCAPE ARCHITECT AND/OR THE SITE SUPERVISOR.
15. ALL STOCKPILES AND STORAGE AREAS ARE TO BE SURROUNDED BY SEDIMENT CONTROL FENCING OR EQUIVALENT.
16. FILL MATERIAL SHALL BE PLACED IN UNIFORM LAYERS NOT EXCEEDING A 150mm (6 in.) THICKNESS OF LOOSE LIFTS . EACH LAYER SHALL BE COMPACTED BEFORE PLACING SUCCEEDING LAYER.
17. COMPACTION SHALL BE DONE IN ACCORDANCE WITH REGION OF PEEL STANDARDS. RECOMMENDED MINIMUM PERCENTAGE OF STANDARD PROCTOR MAXIMUM DRY DENSITY:
    (a) IN SITU SUBGRADE SOIL - A MINIMUM OF 98%
    (b) GENERAL FILL MATERIAL - A MINIMUM OF 98%
    (c) GRANULAR MATERIAL - A MINIMUM OF 98%
18. EXCAVATED MATERIAL FROM THE CREEK IS TO BE REMOVED OFF-SITE TO A LOCATION SOURCED BY THE CONTRACTOR.
19. LIVE STAKES ARE TO BE INSTALLED WITHIN 48 HRS. OF HARVEST. OTHERWISE THEY SHOULD BE SOAKED FOR 7-10 DAYS TO PROLONG THE WINDOW OF ROOTING OPPORTUNITY.
20. ALL MATERIALS AND EQUIPMENT USED FOR THE PURPOSE OF SITE PREPARATION AND PROJECT COMPLETION SHALL BE OPERATED AND STORED IN A MANNER THAT PREVENTS ANY DELETERIOUS SUBSTANCE (i.e. PETROLEUM PRODUCTS, DEBRIS) FROM ENTERING THE WATERCOURSE.
21. ALL VEHICLE AND EQUIPMENT REFUELING AND MAINTENANCE, STORAGE AND STOCKPILE AREAS AND ANY OTHER TEMPORARY CONSTRUCTION AREAS, SHALL BE CONDUCTED AND/OR LOCATED A MINIMUM OF 30m AWAY FROM THE WATERCOURSE ON FLAT GROUND SO THAT ANY RUNOFF FLOWS AWAY FROM THE CREEK.
22. ONLY CLEAN MATERIAL FREE OF FINE PARTICULATE MATTER SHALL BE PLACED IN THE CREEK.
23. DUE TO LOCAL FISH SPAWNING AND NURSERY PERIODS, NO IN-WATER WORK OR ACTIVITY SHALL TAKE PLACE BETWEEN MARCH 31st TO JULY 1st.
24. DUE TO MITIGATING IMPACTS OF TREE CLEARING ON BREEDING BIRDS, ANY VEGETATION REMOVAL WITH THE CORE BIRD BREEDING SEASON OF MAY 1st TO JULY 31st, MUST BE DONE IN ADHERENCE TO THE MIGRATORY BIRDS CONVENTION ACT. VEGETATION REMOVAL WITHIN THIS TIME MUST BE DONE IN CONSULTATION WITH ENVIRONMENT CANADA, CANADIAN WILDLIFE SERVICES.
25. CONSTRUCTION OF THE LOW-FLOW CHANNEL MUST BE SUPERVISED BY A QUALIFIED FLUVIAL GEOMORPHOLOGIST (OR APPROVED EQUIVALENT).

CONSTRUCTION STAGING NOTES:

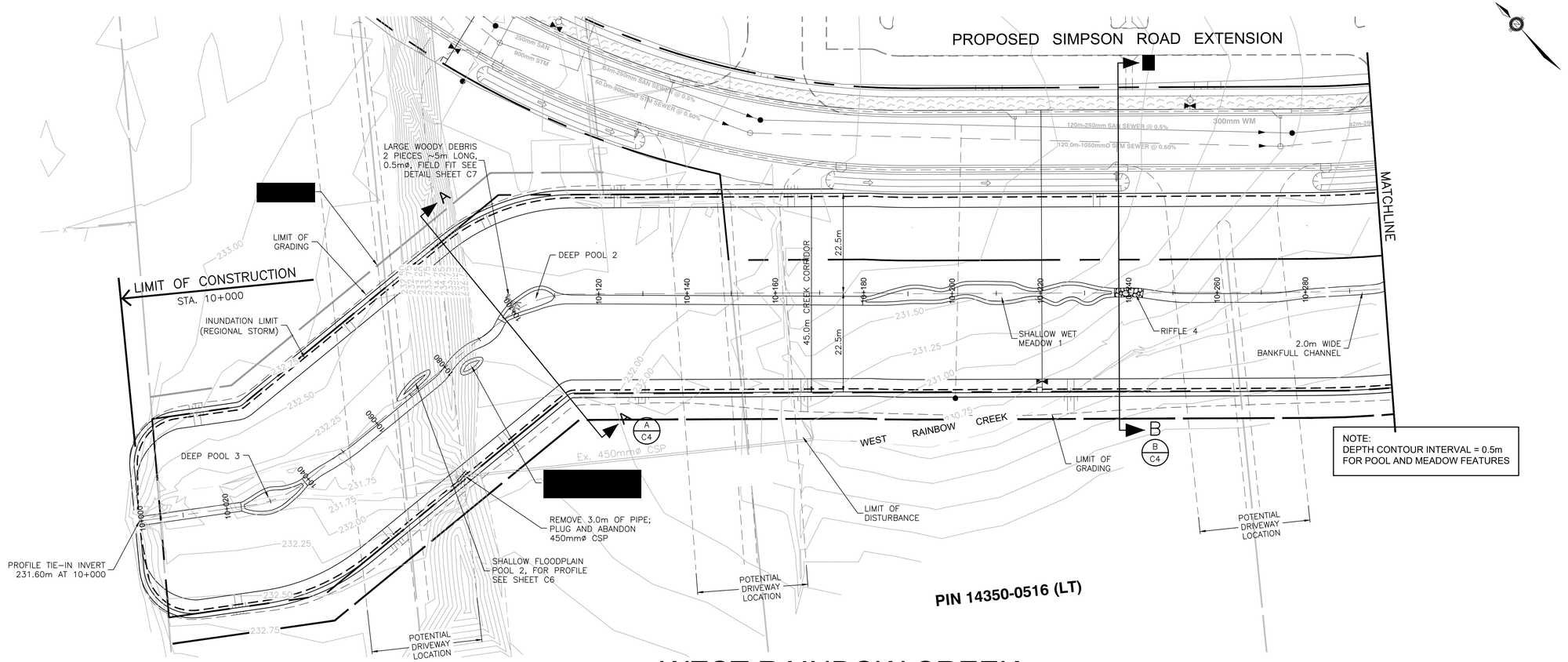
1. THE GEOMORPHOLOGIST AND/OR THE ENGINEERS RESPONSIBLE FOR THE DESIGN OF THE CREEK REALIGNMENT DESIGN MUST BE PRESENT DURING CONSTRUCTION AND APPROVE THE COMPLETION OF EACH STAGE.
2. NO FLOWS ARE TO BE REINSTATED INTO NEWLY CONSTRUCTED CHANNEL WORKS UNTIL THE WORK HAS BEEN APPROVED BY TORONTO REGION CONSERVATION AUTHORITY STAFF BASED ON A SITE INSPECTION OR SUBMISSION OF A DETAILED PHOTOGRAPHIC INVENTORY OF THE CHANNEL.
3. DAM AND PUMP FLOW LENGTHS AS STATED WITHIN EACH STAGE OF WORK ARE TO INFORM THE CONTRACTOR OF THE MAXIMUM LENGTH REQUIRED TO DEWATER . THE CONTRACTOR SHALL KEEP CLOSE ATTENTION TO WEATHER PATTERNS DURING CONSTRUCTION AND DAM AND PUMP IN LENGTHS SO THAT CONSTRUCTION CAN BE COMPLETED DURING DRY WEATHER. THE CONTRACTOR SHALL ENSURE THAT ALL TEMPORARY IMPERMEABLE CHECK DAMS ARE REMOVED (AS WELL AS ANY ACCUMULATED SEDIMENT) DURING ALL RAIN EVENTS THAT MAY CAUSE THE CREEK TO OVERTOP THE DAMS.
4. DURING ALL DAM AND PUMP DEWATERING OPERATIONS, FISH RESCUE MUST TAKE PLACE BY A QUALIFIED FISHERIES BIOLOGIST. RESCUE TRAPPED FISH FROM THE EXISTING CREEK BED BETWEEN THE 2 TEMPORARY DEWATERING CONTROLS (TEMPORARY IMPERMEABLE CHECK DAMS) AND RELOCATE FISH BACK INTO THE CREEK AT A POINT DOWNSTREAM OF THE LIMIT OF CONSTRUCTION.
5. DURING THE DEWATERING OPERATIONS, IF PUMPING, ENSURE THAT THE DISCHARGE HOSE (OR FLUME) OUTLETS TO AN APPROPRIATE DISSIPATION AREA SUCH AS A PATIO STONE OR PEA GRAVEL BAG AS OPPOSED TO EXPOSED SOIL, USE FILTER BAGS OR ANY OTHER FILTRATION TECHNIQUE/PRACTISE ED TO TREAT DEWATERING DISCHARGE BEFORE RETURNING IT TO CREEK DOWNSTREAM.
6. PRIOR TO COMMENCEMENT OF CONSTRUCTION, INSTALL ALL EROSION AND SEDIMENTATION CONTROLS.
7. CLEAR AND GRUB ALL WORK AREAS PRIOR TO CONSTRUCTION AS PER OPSS 201.
8. STRIP TOPSOIL FROM WORK AREA AND STOCKPILE IN AN AREA ON SITE TO BE DETERMINED IN THE FIELD IF APPLICABLE.

Stage 1 - Channel Realignment (Constructed In The Dry)

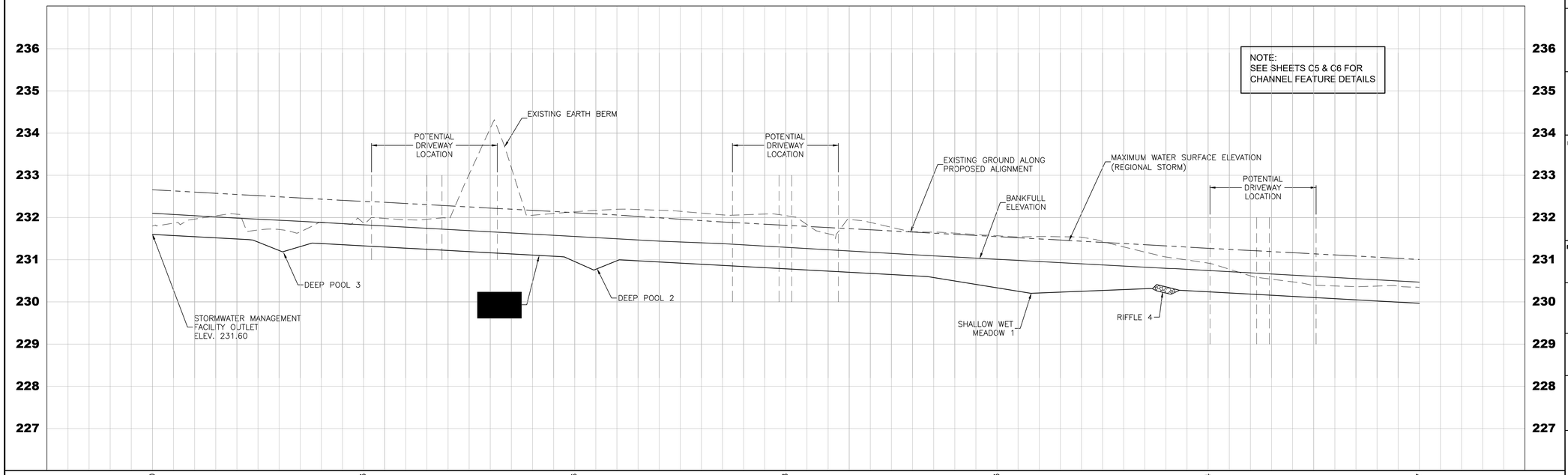
1. INSTALL SEDIMENT FENCING AS SHOWN ALONG THE NORTH BANK OF THE EXISTING CREEK.
2. CONSTRUCT NEW CHANNEL REALIGNMENT FROM STA. 10+060± TO STA. 10+220±.
3. STABILIZE AND REVEGETATE THE NEWLY CONSTRUCTED CHANNEL.
4. COMPLETE BALANCE OF FILL AND GRADING WORK REQUIRED. ALL RESTORATION, STABILIZATION AND LANDSCAPING WORK TO BE CARRIED OUT IMMEDIATELY FOLLOWING GRADING COMPLETION.
5. INSTALL TEMPORARY SEDIMENT CONTROL FENCING ALONG THE NORTH SIDE OF THE NEWLY CONSTRUCTED CHANNEL.

Stage 2 & 3 - Channel Realignment (Dam And Pump)

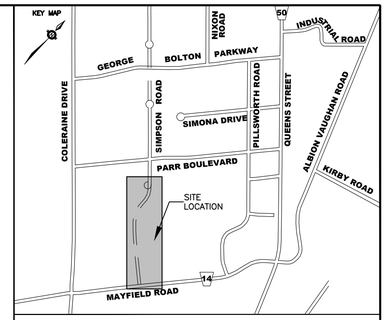
1. SEQUENCE THE CONSTRUCTION METHOD IN THE SAME MANNER FOR STAGES 2 & 3, STARTING AT THE DOWNSTREAM LIMIT (STAGE 2) AND MOVING THE TEMPORARY IMPERMEABLE CHECK DAMS UPSTREAM TO THE LOCATION FOR STAGE 3 AS SHOWN ON THE ABOVE PLAN.
2. CONSTRUCT A TEMPORARY IMPERMEABLE CHECK DAM AT THE UPSTREAM LIMIT OF THE STAGE TO BE COMPLETED.
3. GUIDE FISH FROM THE WORK AREA BEING DEWATERED AND MAKE SURE THEY HAVE BEEN DISPLACED TO THE CREEK DOWNSTREAM OF THE WORK BELOW THE AREA WHERE THE DOWNSTREAM TEMPORARY IMPERMEABLE CHECK DAM IS TO BE CONSTRUCTED.
4. CONSTRUCT A TEMPORARY IMPERMEABLE CHECK DAM AT THE DOWNSTREAM LIMIT OF THE STAGE TO BE COMPLETED.
5. WORK AREA TO BE KEPT DRY BY APPROPRIATE DEWATERING OPERATION (EG. DAM AND PUMP).
6. PUMP FLOW INTO THE EXISTING CULVERT FOR STAGE 2 AND INTO THE NEWLY CONSTRUCTED CHANNEL FOR STAGE 3 ENSURING THAT THAT THE DISCHARGE HOSE (OR FLUME) OUTLETS TO AN APPROPRIATE DISSIPATION AREA SUCH AS A PATIO STONE OR PEA GRAVEL BAG.
7. CONSTRUCT THE NEW CHANNEL CONNECTING WITH THE NEWLY CONSTRUCTED CHANNEL THAT WAS COMPLETED IN THE DRY (STAGE 1).
8. COMPLETE BALANCE OF FILL AND GRADING WORK REQUIRED. ALL RESTORATION, STABILIZATION AND LANDSCAPING WORK TO BE CARRIED OUT IMMEDIATELY FOLLOWING GRADING COMPLETION.
9. ALL CONSTRUCTION AND RESTORATION WORK MUST BE INSPECTED AND APPROVED BY TORONTO REGION CONSERVATION AUTHORITY STAFF PRIOR TO THE REINSTATEMENT OF CREEK FLOW TO ENSURE STABILIZATION AND REVEGETATION OF THE WORKS AFTER THE COMPLETION OF EACH STAGE.
10. INSTALL TEMPORARY SEDIMENT CONTROL FENCE ALONG THE NORTH AND SOUTH SIDES OF THE NEWLY CONSTRUCTED CHANNEL AFTER THE COMPLETION OF EACH STAGE
11. REMOVE AND DISPOSE OF ALL ACCUMULATED SEDIMENT (OFF-SITE) PRIOR TO THE REMOVAL OF THE TEMPORARY IMPERMEABLE CHECK DAMS.
12. REMOVE THE TEMPORARY IMPERMEABLE CHECK DAMS AND REINSTATE THE CREEK FLOW.



WEST RAINBOW CREEK



PROPOSED ℄ GRADES	231.60	231.33	230.96	230.78	230.33	230.24	229.97
℄ CHAINAGE	10+000	10+050	10+100	0+150	0+200	0+250	0+300



INUNDATION LIMIT (REGIONAL STORM)

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
7	M.B.K.	20/11/19	ISSUED FOR 100% CLIENT REVIEW		
6	M.B.K.	20/01/20	ISSUED FOR 100% REVIEW		
5	M.B.K.	19/09/30	REVISED – TRCA SUBMISSION #4		
4	M.B.K.	19/02/19	REVISED – TRCA SUBMISSION #3		
3	J.P.E.	18/11/05	REVISED – TRCA SUBMISSION #2		
2	B.S.	18/05/14	REVISED – TRCA SUBMISSION		
[redacted]	B.S.	17/09/05	ISSUED FOR TRCA PERMIT		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

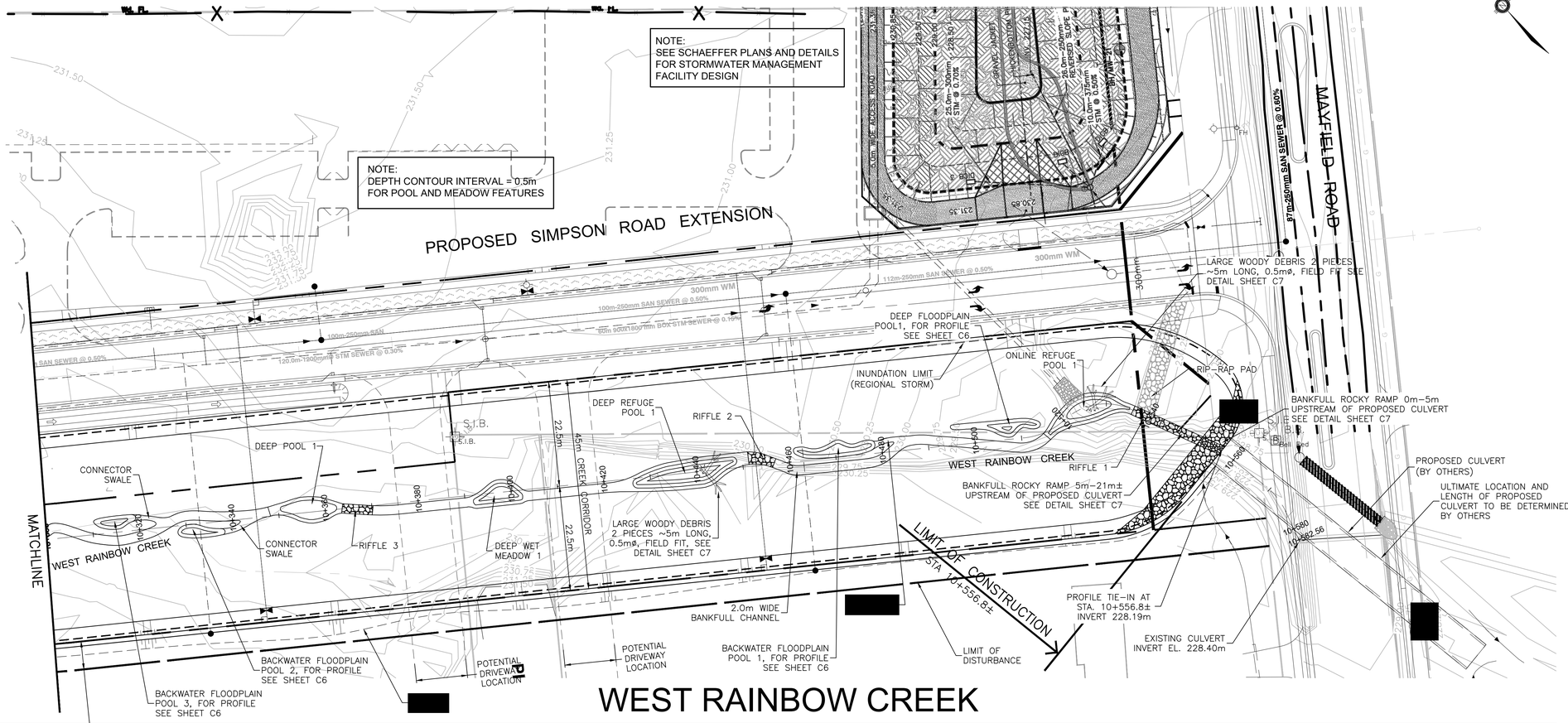
FINANCE AND INFRASTRUCTURE SERVICES

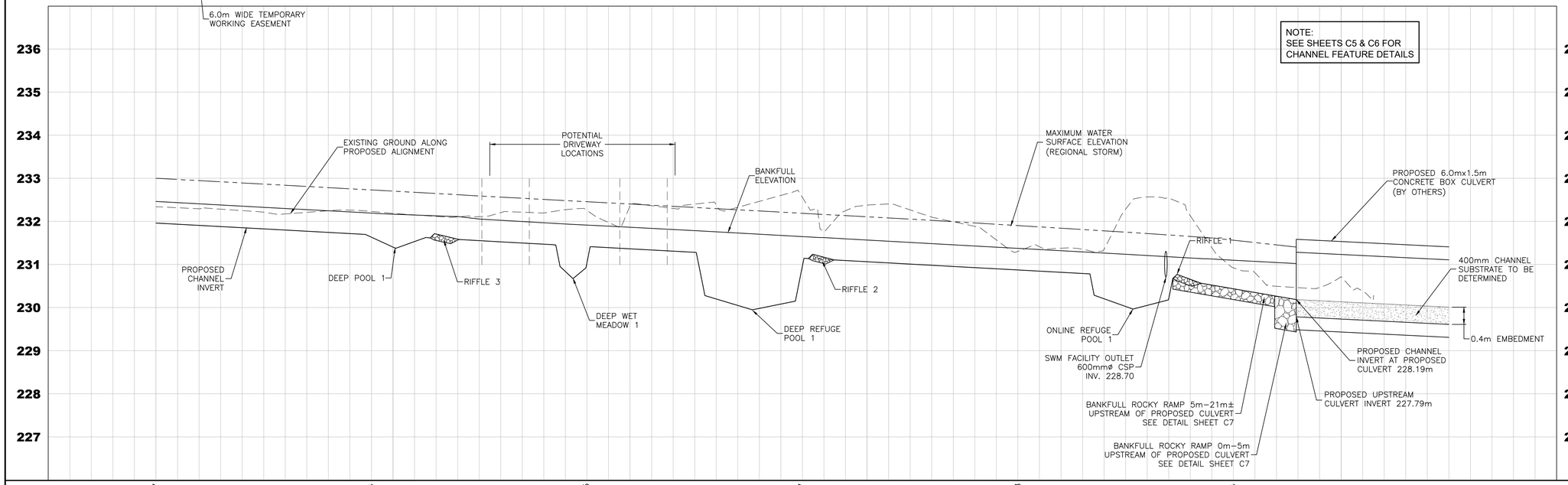
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

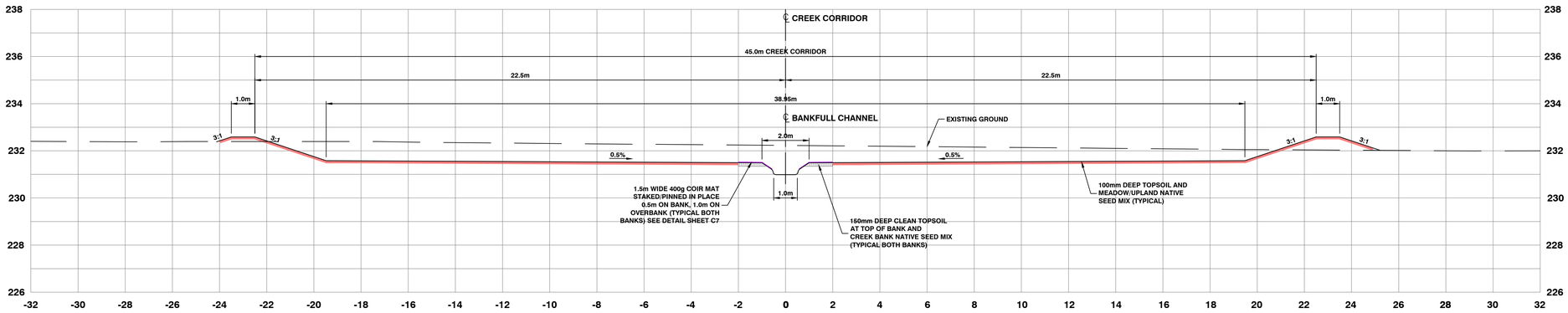
WEST RAINBOW CREEK TRIBUTARY
PLAN AND PROFILE
STA. 10+000 TO STA. 10+300

SCALE: HORIZ. 1:500	VERT. 1:100	[redacted] TP113126
DESIGNED BY: M.K./D.B.	DRAWN BY: M.K.	DRAWING No. C2
CHECKED BY: B.B.	DATE: NOV. 2020	


NOTE:
SEE SCHAEFFER PLANS AND DETAILS FOR STORMWATER MANAGEMENT FACILITY DESIGN
NOTE:
DEPTH CONTOUR INTERVAL = 0.5m
FOR POOL AND MEADOW FEATURES
PROPOSED SIMPSON ROAD EXTENSION
MAYFIELD ROAD
87m-250mm SAN SEWER @ 0.60%
300mm WM
100m-250mm SAN SEWER @ 0.50%
112m-250mm SAN SEWER @ 0.50%
60m 900x1800mm BOX STM SEWER @ 0.15%
120.0m-1200mm STM SEWER @ 0.30%
LARGE WOODY DEBRIS 2 PIECES ~5m LONG, 0.5mø, FIELD FIT SEE DETAIL SHEET C7
DEEP FLOODPLAIN POOL1, FOR PROFILE SEE SHEET C6
INUNDATION LIMIT (REGIONAL STORM)
ONLINE REFUGE POOL 1
RIP-RAP PAD
BANKFULL ROCKY RAMP 0m-5m UPSTREAM OF PROPOSED CULVERT SEE DETAIL SHEET C7
DEEP REFUGE POOL 1
RIFFLE 2
S.I.B.
WEST RAINBOW CREEK
RIFFLE 1
PROPOSED CULVERT (BY OTHERS)
ULTIMATE LOCATION AND LENGTH OF PROPOSED CULVERT TO BE DETERMINED BY OTHERS
DEEP POOL 1
CONNECTOR SWALE
RIFFLE 3
DEEP WET MEADOW 1
22.5m
45m CREEK CORRIDOR
LARGE WOODY DEBRIS 2 PIECES ~5m LONG, 0.5mø, FIELD FIT, SEE DETAIL SHEET C7
BANKFULL ROCKY RAMP 5m-21m± UPSTREAM OF PROPOSED CULVERT SEE DETAIL SHEET C7
LIMIT OF CONSTRUCTION
STA 10+556.8±
2.0m WIDE BANKFULL CHANNEL
PROFILE TIE-IN AT STA. 10+556.8± INVERT 228.19m
EXISTING CULVERT INVERT EL. 228.40m
MATCHLINE
BACKWATER FLOODPLAIN POOL 2, FOR PROFILE SEE SHEET C6
BACKWATER FLOODPLAIN POOL 3, FOR PROFILE SEE SHEET C6
POTENTIAL DRIVEWAY LOCATION
POTENTIAL DRIVEWAY LOCATION
BACKWATER FLOODPLAIN POOL 1, FOR PROFILE SEE SHEET C6
LIMIT OF DISTURBANCE
6.0m WIDE TEMPORARY WORKING EASEMENT
WEST RAINBOW CREEK

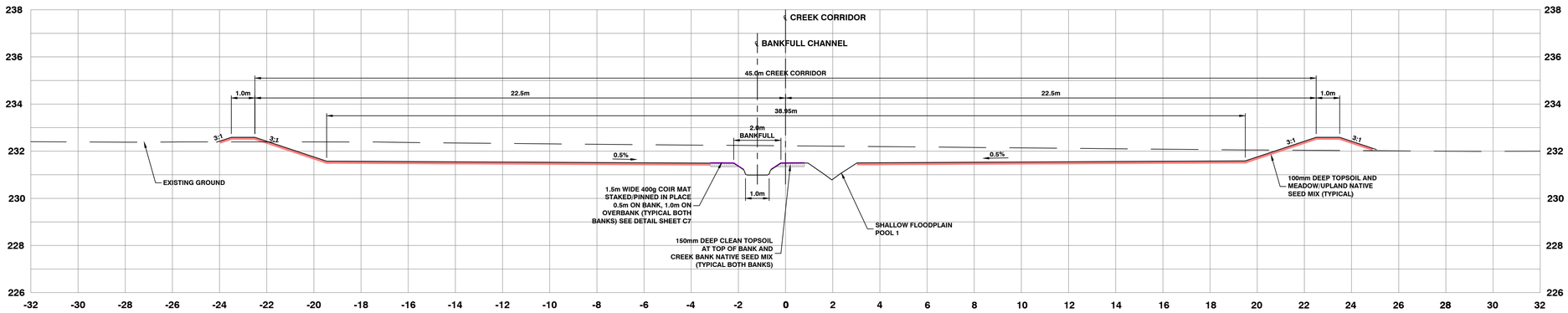

NOTE:
SEE SHEETS C5 & C6 FOR CHANNEL FEATURE DETAILS
EXISTING GROUND ALONG PROPOSED ALIGNMENT
POTENTIAL DRIVEWAY LOCATIONS
BANKFULL ELEVATION
MAXIMUM WATER SURFACE ELEVATION (REGIONAL STORM)
PROPOSED 6.0mx1.5m CONCRETE BOX CULVERT (BY OTHERS)
PROPOSED CHANNEL INVERT
DEEP POOL 1
RIFFLE 3
DEEP WET MEADOW 1
DEEP REFUGE POOL 1
RIFFLE 2
RIFFLE 1
400mm CHANNEL SUBSTRATE TO BE DETERMINED
0.4m EMBEDMENT
ONLINE REFUGE POOL 1
SWM FACILITY OUTLET 600mmø CSP INV. 228.70
PROPOSED CHANNEL INVERT AT PROPOSED CULVERT 228.19m
BANKFULL ROCKY RAMP 5m-21m± UPSTREAM OF PROPOSED CULVERT SEE DETAIL SHEET C7
PROPOSED UPSTREAM CULVERT INVERT 227.79m
BANKFULL ROCKY RAMP 0m-5m UPSTREAM OF PROPOSED CULVERT SEE DETAIL SHEET C7
236
235
234
233
232
231
230
229
228
227

| | | |



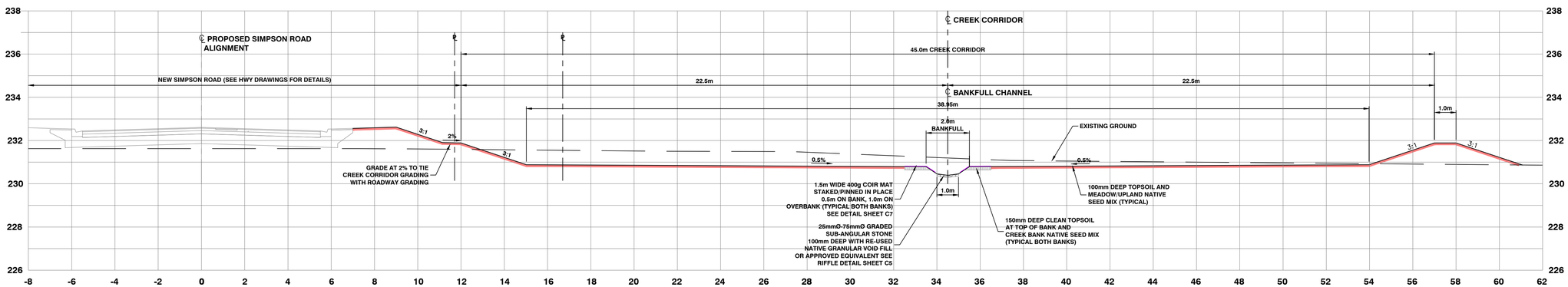
TYPICAL CREEK CORRIDOR CROSS SECTION

SCALE 1:100



SECTION A-A

SCALE 1:100



SECTION B-B

SCALE 1:100

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
7	M.B.K.	20/11/19	ISSUED FOR 100% CLIENT REVIEW		
6	M.B.K.	20/01/20	ISSUED FOR 100% REVIEW		
5	M.B.K.	19/09/30	REVISED – TRCA SUBMISSION #4		
4	M.B.K.	19/02/19	REVISED – TRCA SUBMISSION #3		
3	J.P.E.	18/11/05	REVISED – TRCA SUBMISSION #2		
2	B.S.	18/05/14	REVISED – TRCA SUBMISSION		
1	B.S.	17/09/05	ISSUED FOR TRCA PERMIT		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

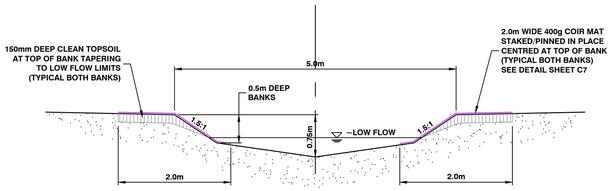
THE CORPORATION OF THE
TOWN OF CALEDON

WEST RAINBOW CREEK TRIBUTARY

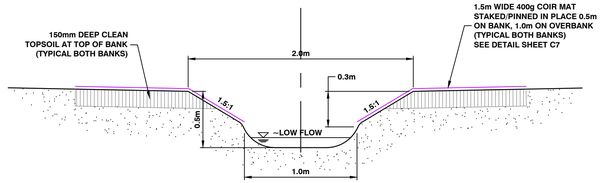
CROSS SECTIONS

SCALE: **AS NOTED**		[redacted] **TP113126**
DESIGNED BY: **M.K./B.D.**	DRAWN BY: **M.K.**	DRAWING No. **C4**
CHECKED BY: **B.B.**	DATE: **NOV. 2020**	

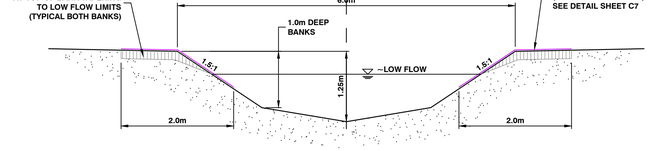
NOTE:
SEED MIX APPLIED UNDER COIR MAT TO BE ONTARIO SEED COMPANY #8215 "BANK SEED MIX", WITH A NURSE CROP OF ANNUAL OATS



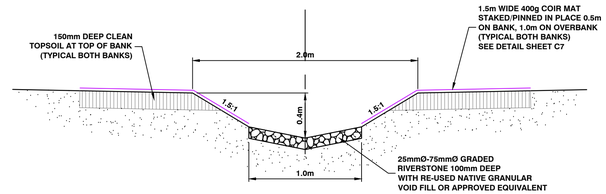
DEEP POOL DETAIL
SHALLOW WET MEADOW DETAIL
SCALE 1:50



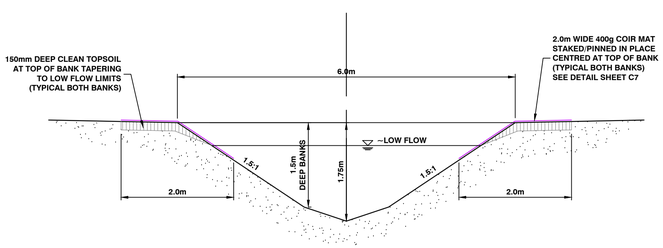
BANKFULL RUN DETAIL
SCALE 1:25



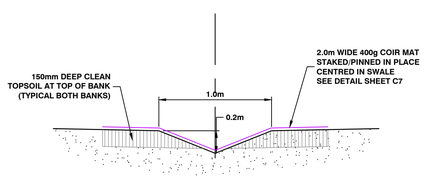
ONLINE REFUGE POOL DETAIL
DEEP WET MEADOW DETAIL
SCALE 1:50



BANKFULL RIFFLE (AT CREST) DETAIL
SCALE 1:25



DEEP REFUGE POOL DETAIL
SCALE 1:50



CONNECTOR SWALE DETAIL
SCALE 1:25

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
7	M.B.K.	20/11/19	ISSUED FOR 100% CLIENT REVIEW		
6	M.B.K.	20/01/20	ISSUED FOR 100% REVIEW		
5	M.B.K.	19/09/30	REVISED – TRCA SUBMISSION #4		
4	M.B.K.	19/05/19	REVISED – TRCA SUBMISSION #3		
3	J.P.E.	[redacted]	REVISED – TRCA SUBMISSION #2		
2	B.S.	18/05/14	REVISED – TRCA SUBMISSION		
1	B.S.	17/09/05	ISSUED FOR TRCA PERMIT		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

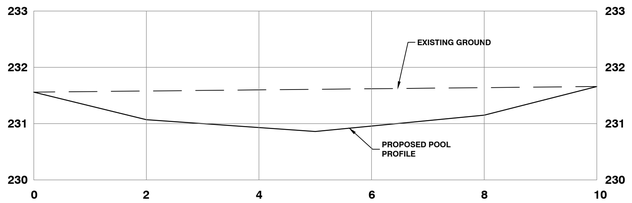
FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

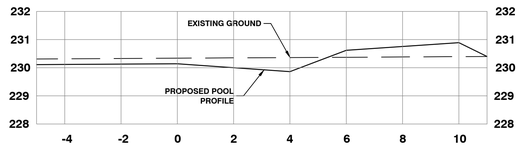
WEST RAINBOW CREEK TRIBUTARY
CREEK BANKFULL SECTIONS

SCALE: **AS NOTED**		PROJECT No. **TP113126**
DESIGNED BY: **M.K./B.D.**	DRAWN BY: **M.K.**	DRAWING No. **C5**
CHECKED BY: **B.B.**	DATE: **NOV. 2020**	

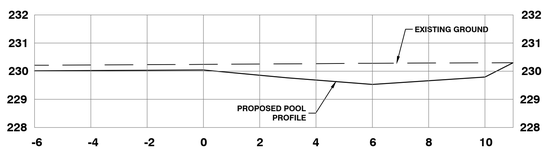


SHALLOW FLOODPLAIN
POOL 2 - PROFILE
SCALE 1:50

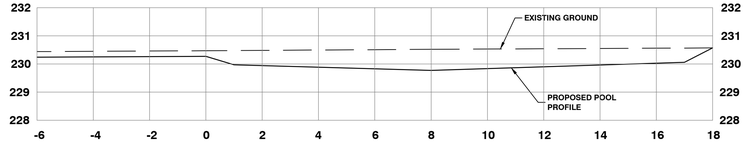
SHALLOW FLOODPLAIN
POOL 1 - PROFILE
SCALE 1:50



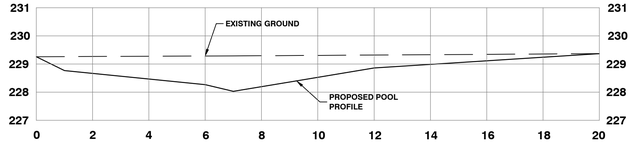
BACKWATER FLOODPLAIN
POOL 3 - PROFILE
SCALE 1:100



BACKWATER FLOODPLAIN
POOL 2 - PROFILE
SCALE 1:100



BACKWATER FLOODPLAIN
POOL 1 - PROFILE
SCALE 1:100



DEEP FLOODPLAIN
POOL 1 - PROFILE
SCALE 1:100

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	CHECKED	TOWN APPR'D
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6	M.B.K.	20/01/20	ISSUED FOR 100% REVIEW		
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[redacted]	J.P.E.	18/11/05	REVISED – TRCA SUBMISSION #2		
2	B.S.	18/05/14	REVISED – TRCA SUBMISSION		
1	B.S.	17/09/05	ISSUED FOR TRCA PERMIT		

BENCH MARK:

CONSULTANT

wood.

[redacted]

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE — DATE
MANAGER, ENGINEERING SERVICES

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

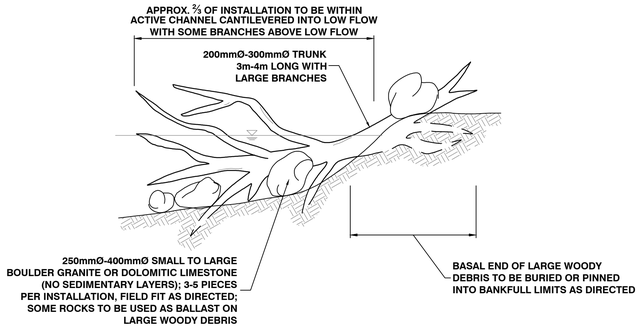
REGION OF PEEL
C02.312

THE CORPORATION OF THE
TOWN OF CALEDON

WEST RAINBOW CREEK TRIBUTARY

POOL PROFILES

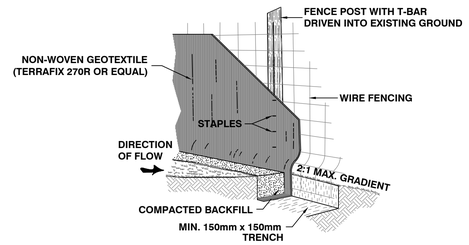
SCALE: **AS NOTED**		PROJECT No.	**TP113126**
DESIGNED BY: **M.K./B.D.**	DRAWN BY: **M.K.**	DRAWING No.	**C6**
CHECKED BY: **B.B.**	DATE: **NOV. 2020**		



NOTES:
1. RE-USED FOUND ON SITE MATERIALS PREFERRED EXCEPT SHALE
2. DISTURBED AREAS TO BE SEEDED AND RESTORED PER APPROVED LANDSCAPE PLANS

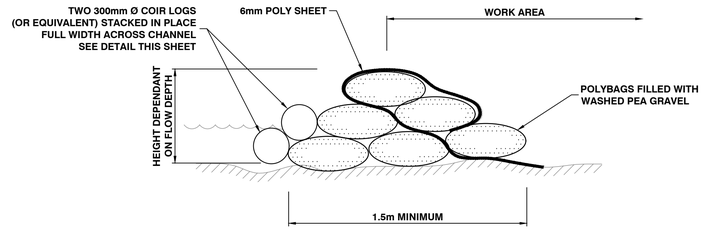
LARGE WOODY DEBRIS AND BOULDER INSTALLATION SECTION VIEW

N.T.S.



TEMPORARY SEDIMENT CONTROL FENCE

N.T.S.



TEMPORARY SANDBAG COFFERDAM

N.T.S.

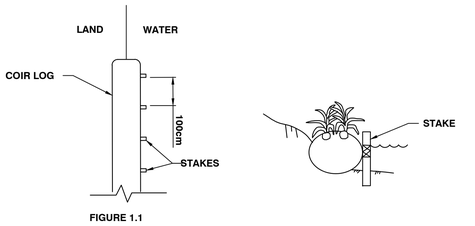


FIGURE 1.1

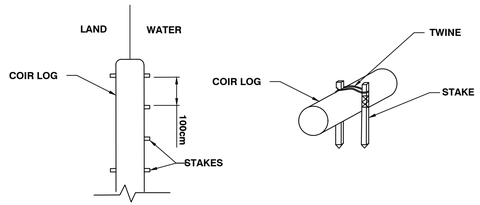


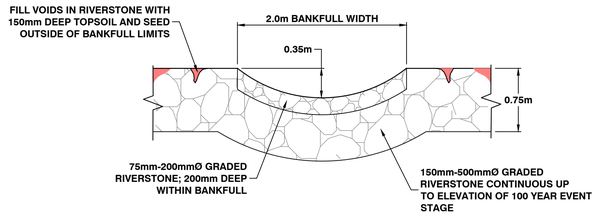
FIGURE 1.2

NOTES:

1. THE WOOD STAKES SHOULD BE PLACED ALONG THE WATER SIDE OF THE COIR LOG AND THE STAKE SHOULD BE PLACED THROUGH THE NETTING, FIGURE 1.1
2. WHERE WATER FLOW IS SLOW MOVING, AS FEW AS 4 STAKES PER 2.28 METRE LOG CAN BE USED. ON MEDIUM WATER FLOW SITES, 6 STAKES SHOULD BE USED AS FIGURE 1.2
3. FOR EROSION CONTROL, TYPICAL CHANNEL TO USE COIR MAT AS PER TERRAFIX GEOSYNTHETICS INC. INSTALLATION GUIDE.

COIR LOG INSTALLATION

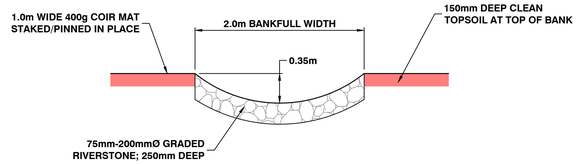
N.T.S.



BANKFULL ROCKY RAMP DETAIL 0m-5m UPSTREAM OF CULVERT

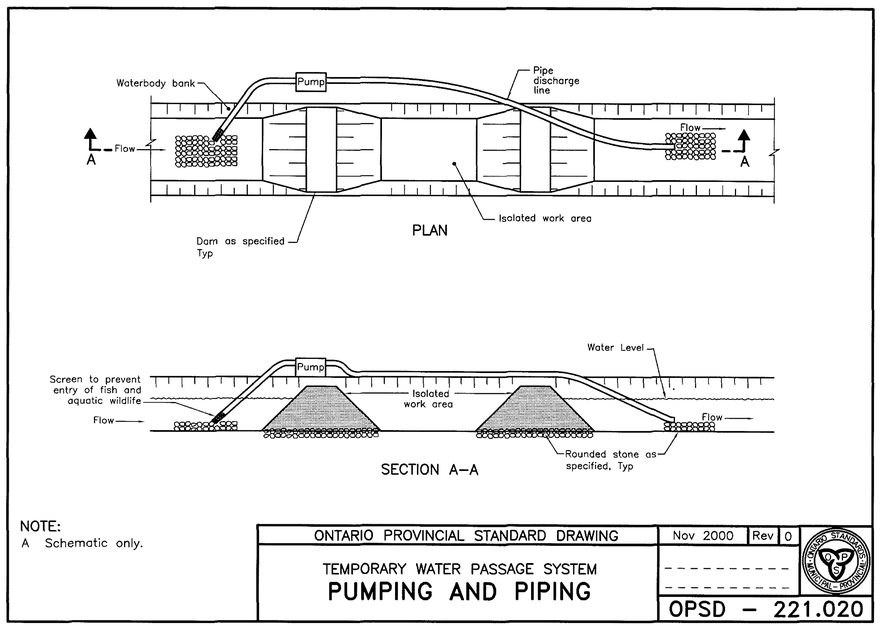
N.T.S.

NOTE:
SEED MIX ADDED TO VOID TOPSOIL FILL AND APPLIED UNDER COIR MAT TO BE ONTARIO SEED COMPANY #8215 BANK SEED MIX, WITH A NURSE CROP OF ANNUAL OATS



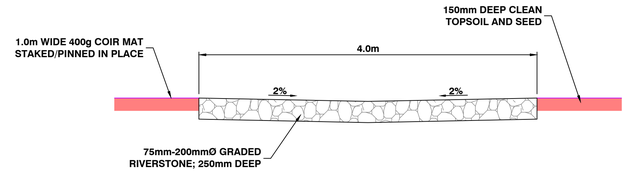
BANKFULL ROCKY RAMP DETAIL 5m-21m± UPSTREAM OF CULVERT

N.T.S.



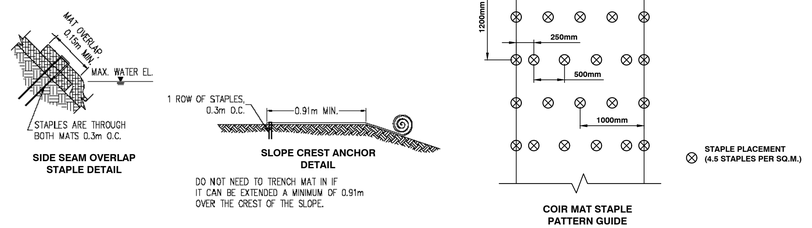
NOTE:
A Schematic only.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2000	Rev 0
TEMPORARY WATER PASSAGE SYSTEM PUMPING AND PIPING		OPSD – 221.020



RIP RAP SPILLWAY AND PAD

N.T.S.



1. FOR COHESIVE SOIL USE A 0.152m WIRE STAPLE AND FOR NON-COHESIVE SOIL USE A 0.203m WIRE STAPLE.
2. FOR BEST RESULTS INSERT STAPLES SO HEADS ARE PARALLEL TO THE FLOW OF WATER.
3. NOT TO SCALE DIMENSIONS IN METRES UNLESS OTHERWISE NOTED.

COIR MAT INSTALLATION

N.T.S.

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	CONS. CHECKED	TOWN APPR'D
7	M.B.K.	20/11/19	ISSUED FOR CLIENT REVIEW–100% DETAILED DESIGN		
6	M.B.K.	20/01/20	ISSUED FOR 100% REVIEW		
5	M.B.K.	19/09/30	REVISED – TRCA SUBMISSION #4		
4	M.B.K.	19/02/19	REVISED – TRCA SUBMISSION #3		
3	J.P.E.	18/11/05	REVISED – TRCA SUBMISSION #2		
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1	B.S.	17/09/05	ISSUED FOR TRCA PERMIT		

BENCH MARK:

CONSULTANT

wood.

ENGINEER'S STAMP

APPROVED FOR CONSTRUCTION

R. GRODECKI, C.E.T., MITE
MANAGER, ENGINEERING SERVICES

DATE

PROJECT NAME

CONTRACT 14-093
SIMPSON ROAD EXTENSION PHASE 3

FINANCE AND INFRASTRUCTURE SERVICES

REGION OF PEEL
C02.312

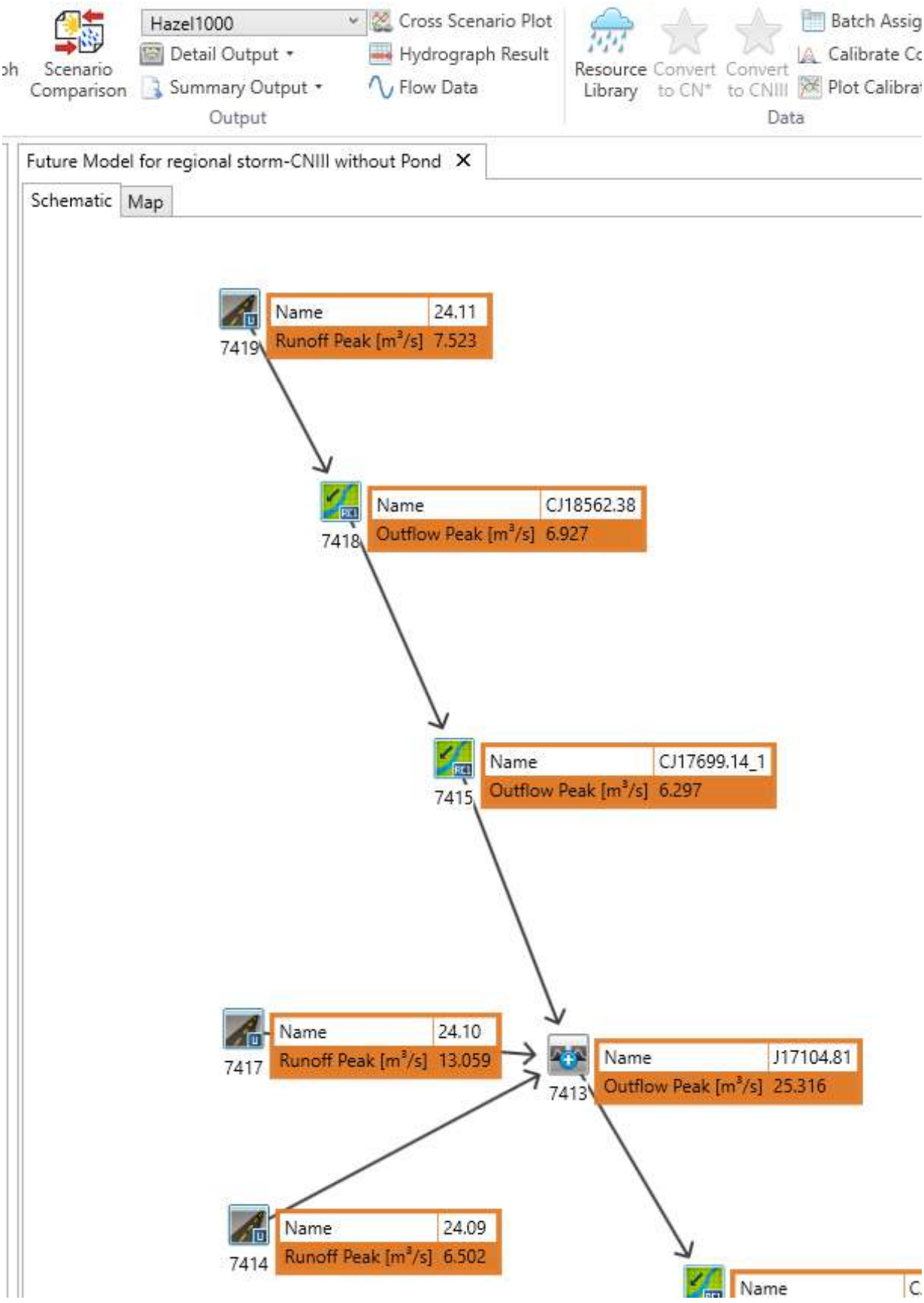
THE CORPORATION OF THE
TOWN OF CALEDON

WEST RAINBOW CREEK TRIBUTARY

TYPICAL DETAILS

SCALE: AS NOTED		PROJECT No. TP113126
DESIGNED BY: M.K./B.D.	DRAWN BY: M.K.	DRAWING No. C7
CHECKED BY: B.B.	DATE: NOV. 2020	

VO Modeling Results Alternative Flow Routing
Scenario 1: Future Conditions – Original Civica Model



```
**************************************************
** SIMULATION:100 Year 12 Hour AES (Bloor, TRCA) **
**************************************************
--------------------
| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56          2.66
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.31          1.31
     Length            (m)=     584.35         40.00
     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	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

```
     Max.Eff.Inten.(mm/hr)=      40.71         37.96
                over (min)       10.00         15.00
     Storage Coeff.  (min)=       9.73 (ii)    13.33 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.11          0.08
```

				TOTALS
PEAK FLOW	(cms)=	5.48	0.27	5.750 (iii)
TIME TO PEAK	(hrs)=	5.25	5.25	5.25
RUNOFF VOLUME	(mm)=	86.54	67.98	85.57
TOTAL RAINFALL	(mm)=	88.54	88.54	88.54
RUNOFF COEFFICIENT	=	0.98	0.77	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

ROUTE CHN(7418)
IN= 2---> OUT= 1

Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.125E+04	0.4	0.32	55.12
0.43	231.12	.501E+04	2.4	0.50	34.72
0.64	231.33	.113E+05	7.1	0.66	26.50
0.86	231.55	.201E+05	15.3	0.80	21.87
1.07	231.76	.313E+05	27.7	0.92	18.85
1.29	231.98	.453E+05	43.0	0.99	17.53
1.50	232.19	.662E+05	55.3	0.87	19.94
1.72	232.41	.112E+06	80.6	0.75	23.21
1.93	232.62	.184E+06	152.1	0.86	20.20
2.15	232.84	.275E+06	254.6	0.97	18.01
2.36	233.05	.383E+06	418.6	1.14	15.27
2.58	233.27	.499E+06	620.1	1.30	13.41
2.79	233.48	.631E+06	831.7	1.38	12.64
3.01	233.70	.774E+06	1122.6	1.52	11.49
3.22	233.91	.926E+06	1446.6	1.63	10.67
3.44	234.13	.109E+07	1792.6	1.72	10.14
3.65	234.34	.127E+07	2189.3	1.80	9.67
3.98	234.67	.156E+07	3042.9	2.04	8.55
4.30	234.99	.187E+07	4039.2	2.26	7.72

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
		<---- hydrograph ---->			<-pipe / channel->	
INFLOW : ID= 2 (7419)	51.22	5.75	5.25	85.57	0.58	0.60
OUTFLOW: ID= 1 (7418)	51.22	5.11	5.33	85.57	0.55	0.58

ROUTE CHN(7415) IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
		<---- hydrograph ---->			<-pipe / channel->	
INFLOW : ID= 2 (7418)	51.22	5.11	5.33	85.57	0.65	0.42

OUTFLOW: ID= 1 (7415) 51.22 4.48 5.42 85.56 0.62 0.40

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

Max.Eff.Inten.(mm/hr)=		40.71	37.91
	over (min)	10.00	20.00
Storage Coeff. (min)=		8.61 (ii)	19.47 (ii)

Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.12	0.06	
			TOTALS
PEAK FLOW (cms)=	3.66	1.19	4.849 (iii)
TIME TO PEAK (hrs)=	5.25	5.25	5.25
RUNOFF VOLUME (mm)=	86.54	68.02	81.40
TOTAL RAINFALL (mm)=	88.54	88.54	88.54
RUNOFF COEFFICIENT =	0.98	0.77	0.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB
STANDHYD (7417)
ID= 1 DT= 5.0 min

Area (ha)= 90.03
Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	72.11	17.92
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	774.73	40.00
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	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89

2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

Max.Eff.Inten.(mm/hr)=	40.71	37.94	
over (min)	10.00	25.00	
Storage Coeff. (min)=	10.48 (ii)	21.21 (ii)	
Unit Hyd. Tpeak (min)=	10.00	25.00	
Unit Hyd. peak (cms)=	0.11	0.05	
			TOTALS
PEAK FLOW (cms)=	8.13	1.66	9.779 (iii)
TIME TO PEAK (hrs)=	5.25	5.33	5.25
RUNOFF VOLUME (mm)=	86.54	68.03	82.85
TOTAL RAINFALL (mm)=	88.54	88.54	88.54
RUNOFF COEFFICIENT =	0.98	0.77	0.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7414):		44.87	4.849	5.25	81.40
+ ID2= 2 (7415):		51.22	4.479	5.42	85.56
ID = 3 (7413):		96.09	9.031	5.25	83.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7413)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (7413):		96.09	9.031	5.25	83.62
+ ID2= 2 (7417):		90.03	9.779	5.25	82.85
ID = 1 (7413):		186.12	18.810	5.25	83.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:100 Year 24 Hour AES (Bloor, TRCA) **
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CALIB			
STANDHYD (7419)	Area (ha)=	51.22	
ID= 1 DT= 5.0 min	Total Imp(%)=	94.80	Dir. Conn.(%)= 94.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	48.56	2.66
Dep. Storage	(mm)=	2.00	5.00

Average Slope	(%)=	1.31	1.31
Length	(m)=	584.35	40.00
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	0.00	6.167	2.88	12.250	6.23	18.33	0.48
0.167	0.00	6.250	2.88	12.333	3.36	18.42	0.48
0.250	0.00	6.333	8.15	12.417	3.36	18.50	0.48
0.333	0.48	6.417	8.15	12.500	3.36	18.58	0.48
0.417	0.48	6.500	8.15	12.583	3.36	18.67	0.48
0.500	0.48	6.583	8.15	12.667	3.36	18.75	0.48
0.583	0.48	6.667	8.15	12.750	3.36	18.83	0.48
0.667	0.48	6.750	8.15	12.833	3.36	18.92	0.48
0.750	0.48	6.833	8.15	12.917	3.36	19.00	0.48
0.833	0.48	6.917	8.15	13.000	3.36	19.08	0.48
0.917	0.48	7.000	8.15	13.083	3.36	19.17	0.48
1.000	0.48	7.083	8.15	13.167	3.36	19.25	0.48
1.083	0.48	7.167	8.15	13.250	3.36	19.33	0.48
1.167	0.48	7.250	8.15	13.333	3.36	19.42	0.48
1.250	0.48	7.333	8.15	13.417	3.36	19.50	0.48
1.333	0.48	7.417	8.15	13.500	3.36	19.58	0.48
1.417	0.48	7.500	8.15	13.583	3.36	19.67	0.48
1.500	0.48	7.583	8.15	13.667	3.36	19.75	0.48
1.583	0.48	7.667	8.15	13.750	3.36	19.83	0.48
1.667	0.48	7.750	8.15	13.833	3.36	19.92	0.48
1.750	0.48	7.833	8.15	13.917	3.36	20.00	0.48
1.833	0.48	7.917	8.15	14.000	3.36	20.08	0.48
1.917	0.48	8.000	8.15	14.083	3.36	20.17	0.48
2.000	0.48	8.083	8.15	14.167	3.36	20.25	0.48
2.083	0.48	8.167	8.15	14.250	3.36	20.33	0.48
2.167	0.48	8.250	8.15	14.333	1.92	20.42	0.48
2.250	0.48	8.333	22.06	14.417	1.92	20.50	0.48
2.333	0.48	8.417	22.06	14.500	1.92	20.58	0.48
2.417	0.48	8.500	22.06	14.583	1.92	20.67	0.48
2.500	0.48	8.583	22.06	14.667	1.92	20.75	0.48
2.583	0.48	8.667	22.06	14.750	1.92	20.83	0.48
2.667	0.48	8.750	22.06	14.833	1.92	20.92	0.48
2.750	0.48	8.833	22.06	14.917	1.92	21.00	0.48
2.833	0.48	8.917	22.06	15.000	1.92	21.08	0.48
2.917	0.48	9.000	22.06	15.083	1.92	21.17	0.48
3.000	0.48	9.083	22.06	15.167	1.92	21.25	0.48
3.083	0.48	9.167	22.06	15.250	1.92	21.33	0.48
3.167	0.48	9.250	22.06	15.333	1.92	21.42	0.48
3.250	0.48	9.333	22.06	15.417	1.92	21.50	0.48
3.333	0.48	9.417	22.06	15.500	1.92	21.58	0.48
3.417	0.48	9.500	22.06	15.583	1.92	21.67	0.48
3.500	0.48	9.583	22.06	15.667	1.92	21.75	0.48
3.583	0.48	9.667	22.06	15.750	1.92	21.83	0.48
3.667	0.48	9.750	22.06	15.833	1.92	21.92	0.48
3.750	0.48	9.833	22.06	15.917	1.92	22.00	0.48
3.833	0.48	9.917	22.06	16.000	1.92	22.08	0.48
3.917	0.48	10.000	22.06	16.083	1.92	22.17	0.48
4.000	0.48	10.083	22.06	16.167	1.92	22.25	0.48
4.083	0.48	10.167	22.06	16.250	1.92	22.33	0.48
4.167	0.48	10.250	22.06	16.333	0.96	22.42	0.48
4.250	0.48	10.333	6.23	16.417	0.96	22.50	0.48
4.333	2.88	10.417	6.23	16.500	0.96	22.58	0.48
4.417	2.88	10.500	6.23	16.583	0.96	22.67	0.48
4.500	2.88	10.583	6.23	16.667	0.96	22.75	0.48

4.583	2.88	10.667	6.23	16.750	0.96	22.83	0.48
4.667	2.88	10.750	6.23	16.833	0.96	22.92	0.48
4.750	2.88	10.833	6.23	16.917	0.96	23.00	0.48
4.833	2.88	10.917	6.23	17.000	0.96	23.08	0.48
4.917	2.88	11.000	6.23	17.083	0.96	23.17	0.48
5.000	2.88	11.083	6.23	17.167	0.96	23.25	0.48
5.083	2.88	11.167	6.23	17.250	0.96	23.33	0.48
5.167	2.88	11.250	6.23	17.333	0.96	23.42	0.48
5.250	2.88	11.333	6.23	17.417	0.96	23.50	0.48
5.333	2.88	11.417	6.23	17.500	0.96	23.58	0.48
5.417	2.88	11.500	6.23	17.583	0.96	23.67	0.48
5.500	2.88	11.583	6.23	17.667	0.96	23.75	0.48
5.583	2.88	11.667	6.23	17.750	0.96	23.83	0.48
5.667	2.88	11.750	6.23	17.833	0.96	23.92	0.48
5.750	2.88	11.833	6.23	17.917	0.96	24.00	0.48
5.833	2.88	11.917	6.23	18.000	0.96	24.08	0.48
5.917	2.88	12.000	6.23	18.083	0.96	24.17	0.48
6.000	2.88	12.083	6.23	18.167	0.96	24.25	0.48
6.083	2.88	12.167	6.23	18.250	0.96		

Max.Eff.Inten.(mm/hr)=	22.06		20.81	
over (min)	10.00		20.00	
Storage Coeff. (min)=	12.44	(ii)	17.03	(ii)
Unit Hyd. Tpeak (min)=	10.00		20.00	
Unit Hyd. peak (cms)=	0.10		0.06	
				TOTALS
PEAK FLOW (cms)=	2.98		0.15	3.127 (iii)
TIME TO PEAK (hrs)=	10.25		10.25	10.25
RUNOFF VOLUME (mm)=	93.92		75.12	92.94
TOTAL RAINFALL (mm)=	95.92		95.92	95.92
RUNOFF COEFFICIENT =	0.98		0.78	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

ROUTE CHN(7418)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel

940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.125E+04	0.4	0.32	55.12
0.43	231.12	.501E+04	2.4	0.50	34.72
0.64	231.33	.113E+05	7.1	0.66	26.50
0.86	231.55	.201E+05	15.3	0.80	21.87
1.07	231.76	.313E+05	27.7	0.92	18.85
1.29	231.98	.453E+05	43.0	0.99	17.53
1.50	232.19	.662E+05	55.3	0.87	19.94
1.72	232.41	.112E+06	80.6	0.75	23.21
1.93	232.62	.184E+06	152.1	0.86	20.20
2.15	232.84	.275E+06	254.6	0.97	18.01
2.36	233.05	.383E+06	418.6	1.14	15.27
2.58	233.27	.499E+06	620.1	1.30	13.41
2.79	233.48	.631E+06	831.7	1.38	12.64
3.01	233.70	.774E+06	1122.6	1.52	11.49
3.22	233.91	.926E+06	1446.6	1.63	10.67
3.44	234.13	.109E+07	1792.6	1.72	10.14
3.65	234.34	.127E+07	2189.3	1.80	9.67
3.98	234.67	.156E+07	3042.9	2.04	8.55
4.30	234.99	.187E+07	4039.2	2.26	7.72

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7419)	51.22	3.13	10.25	92.94	0.46	0.52
OUTFLOW: ID= 1 (7418)	51.22	3.06	10.25	92.94	0.46	0.52

ROUTE CHN(7415) IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH	ELEV	VOLUME	FLOW RATE	VELOCITY	TRAV.TIME

(m)	(m)	(cu.m.)	(cms)	(m/s)	(min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7418)	51.22	3.06	10.25	92.94	0.54	0.38
OUTFLOW: ID= 1 (7415)	51.22	2.96	10.33	92.93	0.54	0.37

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	6.167	2.88	12.250	6.23	18.33	0.48
0.167	0.00	6.250	2.88	12.333	3.36	18.42	0.48
0.250	0.00	6.333	8.15	12.417	3.36	18.50	0.48
0.333	0.48	6.417	8.15	12.500	3.36	18.58	0.48
0.417	0.48	6.500	8.15	12.583	3.36	18.67	0.48
0.500	0.48	6.583	8.15	12.667	3.36	18.75	0.48
0.583	0.48	6.667	8.15	12.750	3.36	18.83	0.48
0.667	0.48	6.750	8.15	12.833	3.36	18.92	0.48
0.750	0.48	6.833	8.15	12.917	3.36	19.00	0.48
0.833	0.48	6.917	8.15	13.000	3.36	19.08	0.48
0.917	0.48	7.000	8.15	13.083	3.36	19.17	0.48
1.000	0.48	7.083	8.15	13.167	3.36	19.25	0.48
1.083	0.48	7.167	8.15	13.250	3.36	19.33	0.48
1.167	0.48	7.250	8.15	13.333	3.36	19.42	0.48
1.250	0.48	7.333	8.15	13.417	3.36	19.50	0.48
1.333	0.48	7.417	8.15	13.500	3.36	19.58	0.48

1.417	0.48	7.500	8.15	13.583	3.36	19.67	0.48
1.500	0.48	7.583	8.15	13.667	3.36	19.75	0.48
1.583	0.48	7.667	8.15	13.750	3.36	19.83	0.48
1.667	0.48	7.750	8.15	13.833	3.36	19.92	0.48
1.750	0.48	7.833	8.15	13.917	3.36	20.00	0.48
1.833	0.48	7.917	8.15	14.000	3.36	20.08	0.48
1.917	0.48	8.000	8.15	14.083	3.36	20.17	0.48
2.000	0.48	8.083	8.15	14.167	3.36	20.25	0.48
2.083	0.48	8.167	8.15	14.250	3.36	20.33	0.48
2.167	0.48	8.250	8.15	14.333	1.92	20.42	0.48
2.250	0.48	8.333	22.06	14.417	1.92	20.50	0.48
2.333	0.48	8.417	22.06	14.500	1.92	20.58	0.48
2.417	0.48	8.500	22.06	14.583	1.92	20.67	0.48
2.500	0.48	8.583	22.06	14.667	1.92	20.75	0.48
2.583	0.48	8.667	22.06	14.750	1.92	20.83	0.48
2.667	0.48	8.750	22.06	14.833	1.92	20.92	0.48
2.750	0.48	8.833	22.06	14.917	1.92	21.00	0.48
2.833	0.48	8.917	22.06	15.000	1.92	21.08	0.48
2.917	0.48	9.000	22.06	15.083	1.92	21.17	0.48
3.000	0.48	9.083	22.06	15.167	1.92	21.25	0.48
3.083	0.48	9.167	22.06	15.250	1.92	21.33	0.48
3.167	0.48	9.250	22.06	15.333	1.92	21.42	0.48
3.250	0.48	9.333	22.06	15.417	1.92	21.50	0.48
3.333	0.48	9.417	22.06	15.500	1.92	21.58	0.48
3.417	0.48	9.500	22.06	15.583	1.92	21.67	0.48
3.500	0.48	9.583	22.06	15.667	1.92	21.75	0.48
3.583	0.48	9.667	22.06	15.750	1.92	21.83	0.48
3.667	0.48	9.750	22.06	15.833	1.92	21.92	0.48
3.750	0.48	9.833	22.06	15.917	1.92	22.00	0.48
3.833	0.48	9.917	22.06	16.000	1.92	22.08	0.48
3.917	0.48	10.000	22.06	16.083	1.92	22.17	0.48
4.000	0.48	10.083	22.06	16.167	1.92	22.25	0.48
4.083	0.48	10.167	22.06	16.250	1.92	22.33	0.48
4.167	0.48	10.250	22.06	16.333	0.96	22.42	0.48
4.250	0.48	10.333	6.23	16.417	0.96	22.50	0.48
4.333	2.88	10.417	6.23	16.500	0.96	22.58	0.48
4.417	2.88	10.500	6.23	16.583	0.96	22.67	0.48
4.500	2.88	10.583	6.23	16.667	0.96	22.75	0.48
4.583	2.88	10.667	6.23	16.750	0.96	22.83	0.48
4.667	2.88	10.750	6.23	16.833	0.96	22.92	0.48
4.750	2.88	10.833	6.23	16.917	0.96	23.00	0.48
4.833	2.88	10.917	6.23	17.000	0.96	23.08	0.48
4.917	2.88	11.000	6.23	17.083	0.96	23.17	0.48
5.000	2.88	11.083	6.23	17.167	0.96	23.25	0.48
5.083	2.88	11.167	6.23	17.250	0.96	23.33	0.48
5.167	2.88	11.250	6.23	17.333	0.96	23.42	0.48
5.250	2.88	11.333	6.23	17.417	0.96	23.50	0.48
5.333	2.88	11.417	6.23	17.500	0.96	23.58	0.48
5.417	2.88	11.500	6.23	17.583	0.96	23.67	0.48
5.500	2.88	11.583	6.23	17.667	0.96	23.75	0.48
5.583	2.88	11.667	6.23	17.750	0.96	23.83	0.48
5.667	2.88	11.750	6.23	17.833	0.96	23.92	0.48
5.750	2.88	11.833	6.23	17.917	0.96	24.00	0.48
5.833	2.88	11.917	6.23	18.000	0.96	24.08	0.48
5.917	2.88	12.000	6.23	18.083	0.96	24.17	0.48
6.000	2.88	12.083	6.23	18.167	0.96	24.25	0.48
6.083	2.88	12.167	6.23	18.250	0.96		

Max.Eff.Inten.(mm/hr)=	22.06	20.83
over (min)	10.00	25.00
Storage Coeff. (min)=	11.00 (ii)	24.80 (ii)
Unit Hyd. Tpeak (min)=	10.00	25.00
Unit Hyd. peak (cms)=	0.10	0.05

TOTALS

PEAK FLOW (cms)=	1.99	0.70	2.682 (iii)
TIME TO PEAK (hrs)=	10.25	10.25	10.25
RUNOFF VOLUME (mm)=	93.92	75.16	88.71
TOTAL RAINFALL (mm)=	95.92	95.92	95.92
RUNOFF COEFFICIENT =	0.98	0.78	0.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB	
STANDHYD (7417)	Area (ha)= 90.03
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	72.11	17.92
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	774.73	40.00
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	0.00	6.167	2.88	12.250	6.23	18.33	0.48
0.167	0.00	6.250	2.88	12.333	3.36	18.42	0.48
0.250	0.00	6.333	8.15	12.417	3.36	18.50	0.48
0.333	0.48	6.417	8.15	12.500	3.36	18.58	0.48
0.417	0.48	6.500	8.15	12.583	3.36	18.67	0.48
0.500	0.48	6.583	8.15	12.667	3.36	18.75	0.48
0.583	0.48	6.667	8.15	12.750	3.36	18.83	0.48
0.667	0.48	6.750	8.15	12.833	3.36	18.92	0.48
0.750	0.48	6.833	8.15	12.917	3.36	19.00	0.48
0.833	0.48	6.917	8.15	13.000	3.36	19.08	0.48
0.917	0.48	7.000	8.15	13.083	3.36	19.17	0.48
1.000	0.48	7.083	8.15	13.167	3.36	19.25	0.48
1.083	0.48	7.167	8.15	13.250	3.36	19.33	0.48
1.167	0.48	7.250	8.15	13.333	3.36	19.42	0.48
1.250	0.48	7.333	8.15	13.417	3.36	19.50	0.48
1.333	0.48	7.417	8.15	13.500	3.36	19.58	0.48
1.417	0.48	7.500	8.15	13.583	3.36	19.67	0.48
1.500	0.48	7.583	8.15	13.667	3.36	19.75	0.48
1.583	0.48	7.667	8.15	13.750	3.36	19.83	0.48
1.667	0.48	7.750	8.15	13.833	3.36	19.92	0.48
1.750	0.48	7.833	8.15	13.917	3.36	20.00	0.48
1.833	0.48	7.917	8.15	14.000	3.36	20.08	0.48
1.917	0.48	8.000	8.15	14.083	3.36	20.17	0.48
2.000	0.48	8.083	8.15	14.167	3.36	20.25	0.48
2.083	0.48	8.167	8.15	14.250	3.36	20.33	0.48
2.167	0.48	8.250	8.15	14.333	1.92	20.42	0.48
2.250	0.48	8.333	22.06	14.417	1.92	20.50	0.48
2.333	0.48	8.417	22.06	14.500	1.92	20.58	0.48
2.417	0.48	8.500	22.06	14.583	1.92	20.67	0.48
2.500	0.48	8.583	22.06	14.667	1.92	20.75	0.48
2.583	0.48	8.667	22.06	14.750	1.92	20.83	0.48
2.667	0.48	8.750	22.06	14.833	1.92	20.92	0.48

2.750	0.48	8.833	22.06	14.917	1.92	21.00	0.48
2.833	0.48	8.917	22.06	15.000	1.92	21.08	0.48
2.917	0.48	9.000	22.06	15.083	1.92	21.17	0.48
3.000	0.48	9.083	22.06	15.167	1.92	21.25	0.48
3.083	0.48	9.167	22.06	15.250	1.92	21.33	0.48
3.167	0.48	9.250	22.06	15.333	1.92	21.42	0.48
3.250	0.48	9.333	22.06	15.417	1.92	21.50	0.48
3.333	0.48	9.417	22.06	15.500	1.92	21.58	0.48
3.417	0.48	9.500	22.06	15.583	1.92	21.67	0.48
3.500	0.48	9.583	22.06	15.667	1.92	21.75	0.48
3.583	0.48	9.667	22.06	15.750	1.92	21.83	0.48
3.667	0.48	9.750	22.06	15.833	1.92	21.92	0.48
3.750	0.48	9.833	22.06	15.917	1.92	22.00	0.48
3.833	0.48	9.917	22.06	16.000	1.92	22.08	0.48
3.917	0.48	10.000	22.06	16.083	1.92	22.17	0.48
4.000	0.48	10.083	22.06	16.167	1.92	22.25	0.48
4.083	0.48	10.167	22.06	16.250	1.92	22.33	0.48
4.167	0.48	10.250	22.06	16.333	0.96	22.42	0.48
4.250	0.48	10.333	6.23	16.417	0.96	22.50	0.48
4.333	2.88	10.417	6.23	16.500	0.96	22.58	0.48
4.417	2.88	10.500	6.23	16.583	0.96	22.67	0.48
4.500	2.88	10.583	6.23	16.667	0.96	22.75	0.48
4.583	2.88	10.667	6.23	16.750	0.96	22.83	0.48
4.667	2.88	10.750	6.23	16.833	0.96	22.92	0.48
4.750	2.88	10.833	6.23	16.917	0.96	23.00	0.48
4.833	2.88	10.917	6.23	17.000	0.96	23.08	0.48
4.917	2.88	11.000	6.23	17.083	0.96	23.17	0.48
5.000	2.88	11.083	6.23	17.167	0.96	23.25	0.48
5.083	2.88	11.167	6.23	17.250	0.96	23.33	0.48
5.167	2.88	11.250	6.23	17.333	0.96	23.42	0.48
5.250	2.88	11.333	6.23	17.417	0.96	23.50	0.48
5.333	2.88	11.417	6.23	17.500	0.96	23.58	0.48
5.417	2.88	11.500	6.23	17.583	0.96	23.67	0.48
5.500	2.88	11.583	6.23	17.667	0.96	23.75	0.48
5.583	2.88	11.667	6.23	17.750	0.96	23.83	0.48
5.667	2.88	11.750	6.23	17.833	0.96	23.92	0.48
5.750	2.88	11.833	6.23	17.917	0.96	24.00	0.48
5.833	2.88	11.917	6.23	18.000	0.96	24.08	0.48
5.917	2.88	12.000	6.23	18.083	0.96	24.17	0.48
6.000	2.88	12.083	6.23	18.167	0.96	24.25	0.48
6.083	2.88	12.167	6.23	18.250	0.96		

Max.Eff.Inten.(mm/hr)=	22.06	20.85	
over (min)	15.00	30.00	
Storage Coeff. (min)=	13.39 (ii)	27.03 (ii)	
Unit Hyd. Tpeak (min)=	15.00	30.00	
Unit Hyd. peak (cms)=	0.08	0.04	
			TOTALS
PEAK FLOW (cms)=	4.42	0.99	5.408 (iii)
TIME TO PEAK (hrs)=	10.25	10.25	10.25
RUNOFF VOLUME (mm)=	93.92	75.18	90.18
TOTAL RAINFALL (mm)=	95.92	95.92	95.92
RUNOFF COEFFICIENT =	0.98	0.78	0.94

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7414):	44.87	2.682	10.25	88.71
+ ID2= 2 (7415):	51.22	2.957	10.33	92.93
ID = 3 (7413):	96.09	5.620	10.25	90.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7413)|
| 3 + 2 = 1 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (7413):	96.09	5.620	10.25	90.96
+ ID2= 2 (7417):	90.03	5.408	10.25	90.18
ID = 1 (7413):	186.12	11.029	10.25	90.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:100 Year 6 Hour AES (Bloor, TRCA) **
****

| CALIB |
| STANDHYD (7419)|
|ID= 1 DT= 5.0 min |

Area (ha)= 51.22
Total Imp(%)= 94.80 Dir. Conn.(%)= 94.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	48.56	2.66
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.31	1.31
Length	(m)=	584.35	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)= 73.88 67.43

over (min)	10.00	15.00		
Storage Coeff. (min)=	7.67 (ii)	10.50 (ii)		
Unit Hyd. Tpeak (min)=	10.00	15.00		
Unit Hyd. peak (cms)=	0.13	0.09		
			TOTALS	
PEAK FLOW (cms)=	9.77	0.43	10.202 (iii)	
TIME TO PEAK (hrs)=	2.75	2.75	2.75	
RUNOFF VOLUME (mm)=	78.31	60.06	77.36	
TOTAL RAINFALL (mm)=	80.31	80.31	80.31	
RUNOFF COEFFICIENT =	0.98	0.75	0.96	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

ROUTE CHN(7418)
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.125E+04	0.4	0.32	55.12
0.43	231.12	.501E+04	2.4	0.50	34.72
0.64	231.33	.113E+05	7.1	0.66	26.50
0.86	231.55	.201E+05	15.3	0.80	21.87
1.07	231.76	.313E+05	27.7	0.92	18.85
1.29	231.98	.453E+05	43.0	0.99	17.53
1.50	232.19	.662E+05	55.3	0.87	19.94
1.72	232.41	.112E+06	80.6	0.75	23.21
1.93	232.62	.184E+06	152.1	0.86	20.20
2.15	232.84	.275E+06	254.6	0.97	18.01
2.36	233.05	.383E+06	418.6	1.14	15.27
2.58	233.27	.499E+06	620.1	1.30	13.41
2.79	233.48	.631E+06	831.7	1.38	12.64
3.01	233.70	.774E+06	1122.6	1.52	11.49
3.22	233.91	.926E+06	1446.6	1.63	10.67

3.44	234.13	.109E+07	1792.6	1.72	10.14
3.65	234.34	.127E+07	2189.3	1.80	9.67
3.98	234.67	.156E+07	3042.9	2.04	8.55
4.30	234.99	.187E+07	4039.2	2.26	7.72

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7419)	51.22	10.20	2.75	77.36	0.73	0.70
OUTFLOW: ID= 1 (7418)	51.22	7.55	2.83	77.36	0.66	0.66

ROUTE CHN(7415)|
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
		<---- hydrograph ---->			<-pipe / channel->	
INFLOW : ID= 2 (7418)	51.22	7.55	2.83	77.36	0.77	0.48
OUTFLOW: ID= 1 (7415)	51.22	5.77	3.00	77.35	0.68	0.43

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.	(mm/hr)=	73.88	67.59	
	over (min)	5.00	20.00	
Storage Coeff.	(min)=	6.78 (ii)	15.40 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	20.00	
Unit Hyd. peak	(cms)=	0.18	0.07	
				TOTALS
PEAK FLOW	(cms)=	6.60	1.79	8.305 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	78.31	60.10	73.25
TOTAL RAINFALL	(mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT	=	0.98	0.75	0.91

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB	
STANDHYD (7417)	Area (ha)= 90.03
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	72.11	17.92
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	774.73	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

			TOTALS
Max.Eff.Inten.(mm/hr)=	73.88	67.66	
over (min)	10.00	15.00	
Storage Coeff. (min)=	8.26 (ii)	12.97 (ii)	
Unit Hyd. Tpeak (min)=	10.00	15.00	
Unit Hyd. peak (cms)=	0.13	0.08	
PEAK FLOW (cms)=	14.42	2.77	17.190 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	78.31	60.11	74.68
TOTAL RAINFALL (mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT =	0.98	0.75	0.93

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)

```
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   8.305     2.75    73.25
      + ID2= 2 (  7415):    51.22   5.772     3.00    77.35
        ================================================
        ID = 3 (  7413):    96.09  12.441     2.75    75.44

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


--------------------
| ADD HYD  (  7413)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  7413):    96.09  12.441     2.75    75.44
      + ID2= 2 (  7417):    90.03  17.190     2.75    74.68
        ================================================
        ID = 1 (  7413):   186.12  29.632     2.75    75.07

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
*********************************
** SIMULATION:Hazel1000       **
*********************************
--------------------
| CALIB              |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56          2.66
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.31          1.31
     Length            (m)=     584.35         40.00
     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	52.33	
over (min)	10.00	15.00	
Storage Coeff. (min)=	8.76 (ii)	11.99 (ii)	
Unit Hyd. Tpeak (min)=	10.00	15.00	
Unit Hyd. peak (cms)=	0.12	0.09	
			TOTALS
PEAK FLOW (cms)=	7.14	0.38	7.523 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.50	208.93
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.99

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

ROUTE CHN(7418)
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH	ELEV	VOLUME	FLOW RATE	VELOCITY	TRAV.TIME

(m)	(m)	(cu.m.)	(cms)	(m/s)	(min)
0.21	230.90	.125E+04	0.4	0.32	55.12
0.43	231.12	.501E+04	2.4	0.50	34.72
0.64	231.33	.113E+05	7.1	0.66	26.50
0.86	231.55	.201E+05	15.3	0.80	21.87
1.07	231.76	.313E+05	27.7	0.92	18.85
1.29	231.98	.453E+05	43.0	0.99	17.53
1.50	232.19	.662E+05	55.3	0.87	19.94
1.72	232.41	.112E+06	80.6	0.75	23.21
1.93	232.62	.184E+06	152.1	0.86	20.20
2.15	232.84	.275E+06	254.6	0.97	18.01
2.36	233.05	.383E+06	418.6	1.14	15.27
2.58	233.27	.499E+06	620.1	1.30	13.41
2.79	233.48	.631E+06	831.7	1.38	12.64
3.01	233.70	.774E+06	1122.6	1.52	11.49
3.22	233.91	.926E+06	1446.6	1.63	10.67
3.44	234.13	.109E+07	1792.6	1.72	10.14
3.65	234.34	.127E+07	2189.3	1.80	9.67
3.98	234.67	.156E+07	3042.9	2.04	8.55
4.30	234.99	.187E+07	4039.2	2.26	7.72

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7419)	51.22	7.52	10.00	208.93	0.66	0.66
OUTFLOW: ID= 1 (7418)	51.22	6.93	10.08	208.93	0.64	0.65

ROUTE CHN(7415) IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH	ELEV	VOLUME	FLOW RATE	VELOCITY	TRAV.TIME
(m)	(m)	(cu.m.)	(cms)	(m/s)	(min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84

1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7418)	51.22	6.93	10.08	208.93	0.74	0.47
OUTFLOW: ID= 1 (7415)	51.22	6.30	10.25	208.92	0.71	0.45

CALIB STANDHYD (7414) ID= 1 DT= 5.0 min	Area (ha)= 44.87 Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	52.45	
over (min)	10.00	20.00	
Storage Coeff. (min)=	7.74 (ii)	17.29 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.13	0.06	
			TOTALS
PEAK FLOW (cms)=	4.77	1.73	6.502 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.54	204.32
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB	
STANDHYD (7417)	Area (ha)= 90.03
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	72.11	17.92
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	774.73	40.00
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	52.50	
over (min)	10.00	20.00	
Storage Coeff. (min)=	9.43 (ii)	18.86 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.12	0.06	
			TOTALS
PEAK FLOW (cms)=	10.59	2.47	13.059 (iii)
TIME TO PEAK (hrs)=	10.00	10.08	10.00
RUNOFF VOLUME (mm)=	210.00	189.56	205.92
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7414):	44.87	6.502	10.00	204.32
+ ID2= 2 (7415):	51.22	6.297	10.25	208.92
ID = 3 (7413):	96.09	12.288	10.08	206.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7413)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)

```
      ID1= 3 (  7413):    96.09  12.288    10.08   206.77
    + ID2= 2 (  7417):    90.03  13.059    10.00   205.92
      ==============================================
      ID = 1 (  7413):   186.12  25.316    10.00   206.36

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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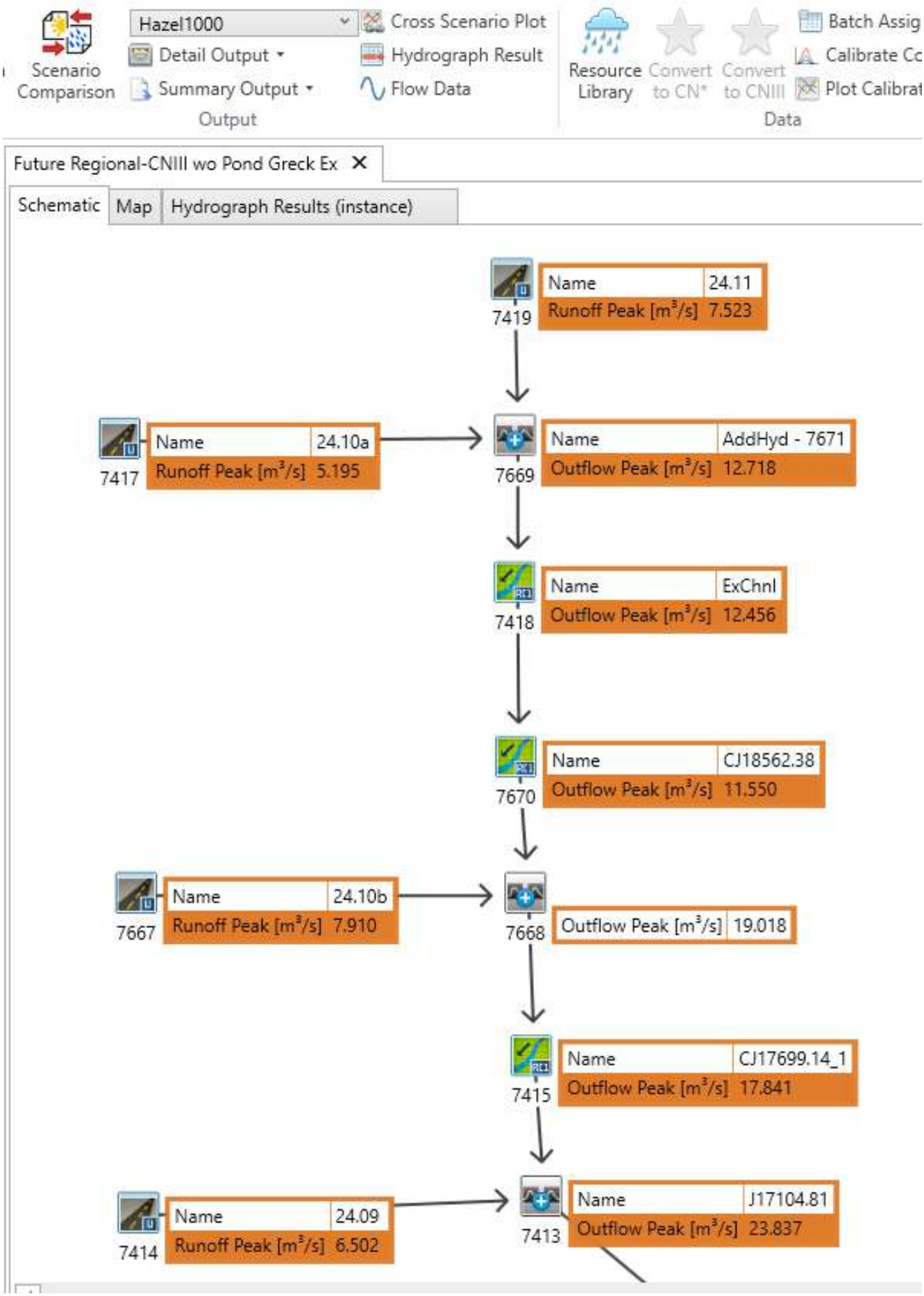
VO Modeling Results Alternative Flow Routing
Scenario 2: Future Conditions – Civica Model with Greck Edits



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**************************************************
** SIMULATION:1. 2 Year 6 Hour AES (Bloor, TRCA) **
**************************************************
--------------------
| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    4.32 | 3.250    9.36 |  4.83    0.72
              0.167    0.00 | 1.750    4.32 | 3.333    5.04 |  4.92    0.72
              0.250    0.00 | 1.833   12.24 | 3.417    5.04 |  5.00    0.72
              0.333    0.72 | 1.917   12.24 | 3.500    5.04 |  5.08    0.72
              0.417    0.72 | 2.000   12.24 | 3.583    5.04 |  5.17    0.72
              0.500    0.72 | 2.083   12.24 | 3.667    5.04 |  5.25    0.72
              0.583    0.72 | 2.167   12.24 | 3.750    5.04 |  5.33    0.72
              0.667    0.72 | 2.250   12.24 | 3.833    2.88 |  5.42    0.72
              0.750    0.72 | 2.333   33.12 | 3.917    2.88 |  5.50    0.72
              0.833    0.72 | 2.417   33.12 | 4.000    2.88 |  5.58    0.72
              0.917    0.72 | 2.500   33.12 | 4.083    2.88 |  5.67    0.72
              1.000    0.72 | 2.583   33.12 | 4.167    2.88 |  5.75    0.72
              1.083    0.72 | 2.667   33.12 | 4.250    2.88 |  5.83    0.72
              1.167    0.72 | 2.750   33.12 | 4.333    1.44 |  5.92    0.72
              1.250    0.72 | 2.833    9.36 | 4.417    1.44 |  6.00    0.72
              1.333    4.32 | 2.917    9.36 | 4.500    1.44 |  6.08    0.72
              1.417    4.32 | 3.000    9.36 | 4.583    1.44 |  6.17    0.72
              1.500    4.32 | 3.083    9.36 | 4.667    1.44 |  6.25    0.72
              1.583    4.32 | 3.167    9.36 | 4.750    1.44 |

     Max.Eff.Inten.(mm/hr)=      33.12         24.19
               over (min)        10.00         15.00
     Storage Coeff.  (min)=      10.57 (ii)    14.47 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.11          0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       4.24          0.13      4.363 (iii)
     TIME TO PEAK    (hrs)=       2.75          2.83       2.75
     RUNOFF VOLUME    (mm)=      34.00         19.17      33.23
     TOTAL RAINFALL   (mm)=      36.00         36.00      36.00
     RUNOFF COEFFICIENT   =       0.94          0.53       0.92


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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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| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
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|ID= 1 DT= 5.0 min | Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	4.32	3.250	9.36	4.83	0.72
0.167	0.00	1.750	4.32	3.333	5.04	4.92	0.72
0.250	0.00	1.833	12.24	3.417	5.04	5.00	0.72
0.333	0.72	1.917	12.24	3.500	5.04	5.08	0.72
0.417	0.72	2.000	12.24	3.583	5.04	5.17	0.72
0.500	0.72	2.083	12.24	3.667	5.04	5.25	0.72
0.583	0.72	2.167	12.24	3.750	5.04	5.33	0.72
0.667	0.72	2.250	12.24	3.833	2.88	5.42	0.72
0.750	0.72	2.333	33.12	3.917	2.88	5.50	0.72
0.833	0.72	2.417	33.12	4.000	2.88	5.58	0.72
0.917	0.72	2.500	33.12	4.083	2.88	5.67	0.72
1.000	0.72	2.583	33.12	4.167	2.88	5.75	0.72
1.083	0.72	2.667	33.12	4.250	2.88	5.83	0.72
1.167	0.72	2.750	33.12	4.333	1.44	5.92	0.72
1.250	0.72	2.833	9.36	4.417	1.44	6.00	0.72
1.333	4.32	2.917	9.36	4.500	1.44	6.08	0.72
1.417	4.32	3.000	9.36	4.583	1.44	6.17	0.72
1.500	4.32	3.083	9.36	4.667	1.44	6.25	0.72
1.583	4.32	3.167	9.36	4.750	1.44		

				TOTALS
Max.Eff.Inten.(mm/hr)=		33.12	23.51	
over (min)		10.00	25.00	
Storage Coeff. (min)=		8.62 (ii)	21.62 (ii)	
Unit Hyd. Tpeak (min)=		10.00	25.00	
Unit Hyd. peak (cms)=		0.12	0.05	
PEAK FLOW	(cms)=	2.55	0.28	2.765 (iii)
TIME TO PEAK	(hrs)=	2.75	3.00	2.75
RUNOFF VOLUME	(mm)=	34.00	19.21	31.05
TOTAL RAINFALL	(mm)=	36.00	36.00	36.00
RUNOFF COEFFICIENT	=	0.94	0.53	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7417):		35.65	2.765	2.75	31.05
+ ID2= 2 (7419):		51.22	4.363	2.75	33.23
ID = 3 (7669):		86.87	7.129	2.75	32.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7418)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.748E+03	0.4	0.32	32.91
0.43	231.12	.299E+04	2.4	0.50	20.73
0.64	231.33	.674E+04	7.1	0.66	15.82
0.86	231.55	.120E+05	15.3	0.80	13.06
1.07	231.76	.187E+05	27.7	0.92	11.26
1.29	231.98	.270E+05	43.0	0.99	10.47
1.50	232.19	.395E+05	55.3	0.87	11.91
1.72	232.41	.670E+05	80.6	0.75	13.86
1.93	232.62	.110E+06	152.1	0.86	12.06
2.15	232.84	.164E+06	254.6	0.97	10.75
2.36	233.05	.229E+06	418.6	1.14	9.12
2.58	233.27	.298E+06	620.1	1.30	8.00
2.79	233.48	.377E+06	831.7	1.38	7.55
3.01	233.70	.462E+06	1122.6	1.52	6.86
3.22	233.91	.553E+06	1446.6	1.63	6.37
3.44	234.13	.652E+06	1792.6	1.72	6.06
3.65	234.34	.759E+06	2189.3	1.80	5.78
3.98	234.67	.932E+06	3042.9	2.04	5.11
4.30	234.99	.112E+07	4039.2	2.26	4.61

		AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	7669)	86.87	7.13	2.75	32.33	0.64	0.66
OUTFLOW: ID= 1 (	7418)	86.87	5.96	2.83	32.33	0.59	0.61

| ROUTE CHN(7670)|

| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

	AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7418)	86.87	5.96	2.83	32.33	0.59	0.61
OUTFLOW: ID= 1 (7670)	86.87	4.30	3.08	32.33	0.52	0.55

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	43.56	10.82

Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	4.32	3.250	9.36	4.83	0.72
0.167	0.00	1.750	4.32	3.333	5.04	4.92	0.72
0.250	0.00	1.833	12.24	3.417	5.04	5.00	0.72
0.333	0.72	1.917	12.24	3.500	5.04	5.08	0.72
0.417	0.72	2.000	12.24	3.583	5.04	5.17	0.72
0.500	0.72	2.083	12.24	3.667	5.04	5.25	0.72
0.583	0.72	2.167	12.24	3.750	5.04	5.33	0.72
0.667	0.72	2.250	12.24	3.833	2.88	5.42	0.72
0.750	0.72	2.333	33.12	3.917	2.88	5.50	0.72
0.833	0.72	2.417	33.12	4.000	2.88	5.58	0.72
0.917	0.72	2.500	33.12	4.083	2.88	5.67	0.72
1.000	0.72	2.583	33.12	4.167	2.88	5.75	0.72
1.083	0.72	2.667	33.12	4.250	2.88	5.83	0.72
1.167	0.72	2.750	33.12	4.333	1.44	5.92	0.72
1.250	0.72	2.833	9.36	4.417	1.44	6.00	0.72
1.333	4.32	2.917	9.36	4.500	1.44	6.08	0.72
1.417	4.32	3.000	9.36	4.583	1.44	6.17	0.72
1.500	4.32	3.083	9.36	4.667	1.44	6.25	0.72
1.583	4.32	3.167	9.36	4.750	1.44		

Max.Eff.Inten.(mm/hr)=		33.12	23.51	
over (min)		10.00	25.00	
Storage Coeff. (min)=		9.78 (ii)	22.78 (ii)	
Unit Hyd. Tpeak (min)=		10.00	25.00	
Unit Hyd. peak (cms)=		0.11	0.05	
				TOTALS
PEAK FLOW	(cms)=	3.84	0.42	4.157 (iii)
TIME TO PEAK	(hrs)=	2.75	3.00	2.75
RUNOFF VOLUME	(mm)=	34.00	19.21	31.05
TOTAL RAINFALL	(mm)=	36.00	36.00	36.00
RUNOFF COEFFICIENT	=	0.94	0.53	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (7667):	54.38	4.157	2.75	31.05
	+ ID2= 2 (7670):	86.87	4.301	3.08	32.33
	ID = 3 (7668):	141.25	7.387	2.83	31.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7415)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7668)	141.25	7.39	2.83	31.84	0.77	0.48
OUTFLOW: ID= 1 (7415)	141.25	5.83	3.17	31.83	0.69	0.44

CALIB
STANDHYD (7414)
ID= 1 DT= 5.0 min

Area (ha)= 44.87
Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	4.32	3.250	9.36	4.83	0.72
0.167	0.00	1.750	4.32	3.333	5.04	4.92	0.72
0.250	0.00	1.833	12.24	3.417	5.04	5.00	0.72
0.333	0.72	1.917	12.24	3.500	5.04	5.08	0.72
0.417	0.72	2.000	12.24	3.583	5.04	5.17	0.72
0.500	0.72	2.083	12.24	3.667	5.04	5.25	0.72
0.583	0.72	2.167	12.24	3.750	5.04	5.33	0.72
0.667	0.72	2.250	12.24	3.833	2.88	5.42	0.72
0.750	0.72	2.333	33.12	3.917	2.88	5.50	0.72
0.833	0.72	2.417	33.12	4.000	2.88	5.58	0.72
0.917	0.72	2.500	33.12	4.083	2.88	5.67	0.72
1.000	0.72	2.583	33.12	4.167	2.88	5.75	0.72
1.083	0.72	2.667	33.12	4.250	2.88	5.83	0.72
1.167	0.72	2.750	33.12	4.333	1.44	5.92	0.72
1.250	0.72	2.833	9.36	4.417	1.44	6.00	0.72
1.333	4.32	2.917	9.36	4.500	1.44	6.08	0.72
1.417	4.32	3.000	9.36	4.583	1.44	6.17	0.72
1.500	4.32	3.083	9.36	4.667	1.44	6.25	0.72
1.583	4.32	3.167	9.36	4.750	1.44		

Max.Eff.Inten.	(mm/hr)=	33.12	23.48	
	over (min)	10.00	25.00	
Storage Coeff.	(min)=	9.35 (ii)	22.51 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	25.00	
Unit Hyd. peak	(cms)=	0.12	0.05	
				TOTALS
PEAK FLOW	(cms)=	2.87	0.49	3.242 (iii)
TIME TO PEAK	(hrs)=	2.75	3.00	2.75
RUNOFF VOLUME	(mm)=	34.00	19.20	29.89
TOTAL RAINFALL	(mm)=	36.00	36.00	36.00
RUNOFF COEFFICIENT	=	0.94	0.53	0.83

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (7414):	44.87	3.242	2.75	29.89
	+ ID2= 2 (7415):	141.25	5.832	3.17	31.83
	ID = 3 (7413):	186.12	8.019	2.83	31.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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**************************************************
** SIMULATION:2. 5 Year 6 Hour AES (Bloor, TRCA) **
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| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    5.74 | 3.250   12.43 |  4.83    0.96
              0.167    0.00 | 1.750    5.74 | 3.333    6.69 |  4.92    0.96
              0.250    0.00 | 1.833   16.25 | 3.417    6.69 |  5.00    0.96
              0.333    0.96 | 1.917   16.25 | 3.500    6.69 |  5.08    0.96
              0.417    0.96 | 2.000   16.25 | 3.583    6.69 |  5.17    0.96
              0.500    0.96 | 2.083   16.25 | 3.667    6.69 |  5.25    0.96
              0.583    0.96 | 2.167   16.25 | 3.750    6.69 |  5.33    0.96
              0.667    0.96 | 2.250   16.25 | 3.833    3.82 |  5.42    0.96
              0.750    0.96 | 2.333   43.98 | 3.917    3.82 |  5.50    0.96
              0.833    0.96 | 2.417   43.98 | 4.000    3.82 |  5.58    0.96
              0.917    0.96 | 2.500   43.98 | 4.083    3.82 |  5.67    0.96
              1.000    0.96 | 2.583   43.98 | 4.167    3.82 |  5.75    0.96
              1.083    0.96 | 2.667   43.98 | 4.250    3.82 |  5.83    0.96
              1.167    0.96 | 2.750   43.98 | 4.333    1.91 |  5.92    0.96
              1.250    0.96 | 2.833   12.43 | 4.417    1.91 |  6.00    0.96
              1.333    5.74 | 2.917   12.43 | 4.500    1.91 |  6.08    0.96
              1.417    5.74 | 3.000   12.43 | 4.583    1.91 |  6.17    0.96
              1.500    5.74 | 3.083   12.43 | 4.667    1.91 |  6.25    0.96
              1.583    5.74 | 3.167   12.43 | 4.750    1.91 |

     Max.Eff.Inten.(mm/hr)=      43.98         35.77
               over (min)        10.00         15.00
     Storage Coeff.  (min)=       9.44 (ii)    12.92 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.12          0.08
                                                    *TOTALS*
     PEAK FLOW       (cms)=       5.71          0.21          5.912 (iii)
     TIME TO PEAK    (hrs)=       2.75          2.83           2.75
     RUNOFF VOLUME    (mm)=      45.81         29.59          44.97
     TOTAL RAINFALL   (mm)=      47.81         47.81          47.81
     RUNOFF COEFFICIENT   =       0.96          0.62           0.94


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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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| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
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|ID= 1 DT= 5.0 min | Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	5.74	3.250	12.43	4.83	0.96
0.167	0.00	1.750	5.74	3.333	6.69	4.92	0.96
0.250	0.00	1.833	16.25	3.417	6.69	5.00	0.96
0.333	0.96	1.917	16.25	3.500	6.69	5.08	0.96
0.417	0.96	2.000	16.25	3.583	6.69	5.17	0.96
0.500	0.96	2.083	16.25	3.667	6.69	5.25	0.96
0.583	0.96	2.167	16.25	3.750	6.69	5.33	0.96
0.667	0.96	2.250	16.25	3.833	3.82	5.42	0.96
0.750	0.96	2.333	43.98	3.917	3.82	5.50	0.96
0.833	0.96	2.417	43.98	4.000	3.82	5.58	0.96
0.917	0.96	2.500	43.98	4.083	3.82	5.67	0.96
1.000	0.96	2.583	43.98	4.167	3.82	5.75	0.96
1.083	0.96	2.667	43.98	4.250	3.82	5.83	0.96
1.167	0.96	2.750	43.98	4.333	1.91	5.92	0.96
1.250	0.96	2.833	12.43	4.417	1.91	6.00	0.96
1.333	5.74	2.917	12.43	4.500	1.91	6.08	0.96
1.417	5.74	3.000	12.43	4.583	1.91	6.17	0.96
1.500	5.74	3.083	12.43	4.667	1.91	6.25	0.96
1.583	5.74	3.167	12.43	4.750	1.91		

Max.Eff.Inten.(mm/hr)=		43.98	35.10	
over (min)		10.00	20.00	
Storage Coeff. (min)=		7.70 (ii)	18.77 (ii)	
Unit Hyd. Tpeak (min)=		10.00	20.00	
Unit Hyd. peak (cms)=		0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	3.42	0.48	3.845 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	45.81	29.63	42.58
TOTAL RAINFALL	(mm)=	47.81	47.81	47.81
RUNOFF COEFFICIENT	=	0.96	0.62	0.89

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)			AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3			(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7417):		35.65	3.845	2.75	42.58
+	ID2= 2 (7419):		51.22	5.912	2.75	44.97
	ID = 3 (7669):		86.87	9.757	2.75	43.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7418)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.748E+03	0.4	0.32	32.91
0.43	231.12	.299E+04	2.4	0.50	20.73
0.64	231.33	.674E+04	7.1	0.66	15.82
0.86	231.55	.120E+05	15.3	0.80	13.06
1.07	231.76	.187E+05	27.7	0.92	11.26
1.29	231.98	.270E+05	43.0	0.99	10.47
1.50	232.19	.395E+05	55.3	0.87	11.91
1.72	232.41	.670E+05	80.6	0.75	13.86
1.93	232.62	.110E+06	152.1	0.86	12.06
2.15	232.84	.164E+06	254.6	0.97	10.75
2.36	233.05	.229E+06	418.6	1.14	9.12
2.58	233.27	.298E+06	620.1	1.30	8.00
2.79	233.48	.377E+06	831.7	1.38	7.55
3.01	233.70	.462E+06	1122.6	1.52	6.86
3.22	233.91	.553E+06	1446.6	1.63	6.37
3.44	234.13	.652E+06	1792.6	1.72	6.06
3.65	234.34	.759E+06	2189.3	1.80	5.78
3.98	234.67	.932E+06	3042.9	2.04	5.11
4.30	234.99	.112E+07	4039.2	2.26	4.61

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	9.76	2.75	43.99	0.71	0.70
OUTFLOW: ID= 1 (7418)	86.87	8.35	2.83	43.99	0.68	0.68

| ROUTE CHN(7670)|

| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

	AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7418)	86.87	8.35	2.83	43.99	0.68	0.68
OUTFLOW: ID= 1 (7670)	86.87	6.36	3.00	43.98	0.61	0.63

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	43.56	10.82

Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	5.74	3.250	12.43	4.83	0.96
0.167	0.00	1.750	5.74	3.333	6.69	4.92	0.96
0.250	0.00	1.833	16.25	3.417	6.69	5.00	0.96
0.333	0.96	1.917	16.25	3.500	6.69	5.08	0.96
0.417	0.96	2.000	16.25	3.583	6.69	5.17	0.96
0.500	0.96	2.083	16.25	3.667	6.69	5.25	0.96
0.583	0.96	2.167	16.25	3.750	6.69	5.33	0.96
0.667	0.96	2.250	16.25	3.833	3.82	5.42	0.96
0.750	0.96	2.333	43.98	3.917	3.82	5.50	0.96
0.833	0.96	2.417	43.98	4.000	3.82	5.58	0.96
0.917	0.96	2.500	43.98	4.083	3.82	5.67	0.96
1.000	0.96	2.583	43.98	4.167	3.82	5.75	0.96
1.083	0.96	2.667	43.98	4.250	3.82	5.83	0.96
1.167	0.96	2.750	43.98	4.333	1.91	5.92	0.96
1.250	0.96	2.833	12.43	4.417	1.91	6.00	0.96
1.333	5.74	2.917	12.43	4.500	1.91	6.08	0.96
1.417	5.74	3.000	12.43	4.583	1.91	6.17	0.96
1.500	5.74	3.083	12.43	4.667	1.91	6.25	0.96
1.583	5.74	3.167	12.43	4.750	1.91		

Max.Eff.Inten.	(mm/hr)=	43.98	35.10	
	over (min)	10.00	20.00	
Storage Coeff.	(min)=	8.73 (ii)	19.81 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	20.00	
Unit Hyd. peak	(cms)=	0.12	0.06	
				TOTALS
PEAK FLOW	(cms)=	5.16	0.71	5.794 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	45.81	29.63	42.58
TOTAL RAINFALL	(mm)=	47.81	47.81	47.81
RUNOFF COEFFICIENT	=	0.96	0.62	0.89

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (7667):	54.38	5.794	2.75	42.58
	+ ID2= 2 (7670):	86.87	6.361	3.00	43.98
	ID = 3 (7668):	141.25	10.699	2.83	43.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7415)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7668)	141.25	10.70	2.83	43.44	0.87	0.51
OUTFLOW: ID= 1 (7415)	141.25	8.67	3.08	43.44	0.81	0.49

CALIB
STANDHYD (7414)
ID= 1 DT= 5.0 min

Area (ha)= 44.87
Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	5.74	3.250	12.43	4.83	0.96
0.167	0.00	1.750	5.74	3.333	6.69	4.92	0.96
0.250	0.00	1.833	16.25	3.417	6.69	5.00	0.96
0.333	0.96	1.917	16.25	3.500	6.69	5.08	0.96
0.417	0.96	2.000	16.25	3.583	6.69	5.17	0.96
0.500	0.96	2.083	16.25	3.667	6.69	5.25	0.96
0.583	0.96	2.167	16.25	3.750	6.69	5.33	0.96
0.667	0.96	2.250	16.25	3.833	3.82	5.42	0.96
0.750	0.96	2.333	43.98	3.917	3.82	5.50	0.96
0.833	0.96	2.417	43.98	4.000	3.82	5.58	0.96
0.917	0.96	2.500	43.98	4.083	3.82	5.67	0.96
1.000	0.96	2.583	43.98	4.167	3.82	5.75	0.96
1.083	0.96	2.667	43.98	4.250	3.82	5.83	0.96
1.167	0.96	2.750	43.98	4.333	1.91	5.92	0.96
1.250	0.96	2.833	12.43	4.417	1.91	6.00	0.96
1.333	5.74	2.917	12.43	4.500	1.91	6.08	0.96
1.417	5.74	3.000	12.43	4.583	1.91	6.17	0.96
1.500	5.74	3.083	12.43	4.667	1.91	6.25	0.96
1.583	5.74	3.167	12.43	4.750	1.91		

Max.Eff.Inten.(mm/hr)=	43.98	35.06		
over (min)	10.00	20.00		
Storage Coeff. (min)=	8.34 (ii)	19.56 (ii)		
Unit Hyd. Tpeak (min)=	10.00	20.00		
Unit Hyd. peak (cms)=	0.13	0.06		
			TOTALS	
PEAK FLOW (cms)=	3.86	0.82	4.591 (iii)	
TIME TO PEAK (hrs)=	2.75	2.92	2.75	
RUNOFF VOLUME (mm)=	45.81	29.62	41.31	
TOTAL RAINFALL (mm)=	47.81	47.81	47.81	
RUNOFF COEFFICIENT =	0.96	0.62	0.86	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7414):		44.87	4.591	2.75	41.31
+ ID2= 2 (7415):		141.25	8.670	3.08	43.44
ID = 3 (7413):		186.12	11.927	2.83	42.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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**************************************************
** SIMULATION:3. 10 Year 6 Hour AES (Bloor, TRCA) **
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| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    6.68 | 3.250   14.48 |  4.83    1.11
     0.167    0.00 | 1.750    6.68 | 3.333    7.80 |  4.92    1.11
     0.250    0.00 | 1.833   18.94 | 3.417    7.80 |  5.00    1.11
     0.333    1.11 | 1.917   18.94 | 3.500    7.80 |  5.08    1.11
     0.417    1.11 | 2.000   18.94 | 3.583    7.80 |  5.17    1.11
     0.500    1.11 | 2.083   18.94 | 3.667    7.80 |  5.25    1.11
     0.583    1.11 | 2.167   18.94 | 3.750    7.80 |  5.33    1.11
     0.667    1.11 | 2.250   18.94 | 3.833    4.46 |  5.42    1.11
     0.750    1.11 | 2.333   51.24 | 3.917    4.46 |  5.50    1.11
     0.833    1.11 | 2.417   51.24 | 4.000    4.46 |  5.58    1.11
     0.917    1.11 | 2.500   51.24 | 4.083    4.46 |  5.67    1.11
     1.000    1.11 | 2.583   51.24 | 4.167    4.46 |  5.75    1.11
     1.083    1.11 | 2.667   51.24 | 4.250    4.46 |  5.83    1.11
     1.167    1.11 | 2.750   51.24 | 4.333    2.23 |  5.92    1.11
     1.250    1.11 | 2.833   14.48 | 4.417    2.23 |  6.00    1.11
     1.333    6.68 | 2.917   14.48 | 4.500    2.23 |  6.08    1.11
     1.417    6.68 | 3.000   14.48 | 4.583    2.23 |  6.17    1.11
     1.500    6.68 | 3.083   14.48 | 4.667    2.23 |  6.25    1.11
     1.583    6.68 | 3.167   14.48 | 4.750    2.23 |

     Max.Eff.Inten.(mm/hr)=      51.24         43.50
                over (min)       10.00         15.00
     Storage Coeff.  (min)=      8.88 (ii)     12.16 (ii)
     Unit Hyd. Tpeak (min)=     10.00         15.00
     Unit Hyd. peak  (cms)=      0.12          0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=      6.69          0.26      6.952 (iii)
     TIME TO PEAK    (hrs)=      2.75          2.83       2.75
     RUNOFF VOLUME    (mm)=     53.69         36.81      52.81
     TOTAL RAINFALL   (mm)=     55.69         55.69      55.69
     RUNOFF COEFFICIENT   =      0.96          0.66       0.95


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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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| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
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|ID= 1 DT= 5.0 min | Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	6.68	3.250	14.48	4.83	1.11
0.167	0.00	1.750	6.68	3.333	7.80	4.92	1.11
0.250	0.00	1.833	18.94	3.417	7.80	5.00	1.11
0.333	1.11	1.917	18.94	3.500	7.80	5.08	1.11
0.417	1.11	2.000	18.94	3.583	7.80	5.17	1.11
0.500	1.11	2.083	18.94	3.667	7.80	5.25	1.11
0.583	1.11	2.167	18.94	3.750	7.80	5.33	1.11
0.667	1.11	2.250	18.94	3.833	4.46	5.42	1.11
0.750	1.11	2.333	51.24	3.917	4.46	5.50	1.11
0.833	1.11	2.417	51.24	4.000	4.46	5.58	1.11
0.917	1.11	2.500	51.24	4.083	4.46	5.67	1.11
1.000	1.11	2.583	51.24	4.167	4.46	5.75	1.11
1.083	1.11	2.667	51.24	4.250	4.46	5.83	1.11
1.167	1.11	2.750	51.24	4.333	2.23	5.92	1.11
1.250	1.11	2.833	14.48	4.417	2.23	6.00	1.11
1.333	6.68	2.917	14.48	4.500	2.23	6.08	1.11
1.417	6.68	3.000	14.48	4.583	2.23	6.17	1.11
1.500	6.68	3.083	14.48	4.667	2.23	6.25	1.11
1.583	6.68	3.167	14.48	4.750	2.23		

Max.Eff.Inten.(mm/hr)=		51.24	42.86	
over (min)		5.00	20.00	
Storage Coeff. (min)=		7.24 (ii)	17.46 (ii)	
Unit Hyd. Tpeak (min)=		5.00	20.00	
Unit Hyd. peak (cms)=		0.17	0.06	
				TOTALS
PEAK FLOW	(cms)=	4.02	0.60	4.579 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	53.69	36.85	50.33
TOTAL RAINFALL	(mm)=	55.69	55.69	55.69
RUNOFF COEFFICIENT	=	0.96	0.66	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)			AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3			(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7417):		35.65	4.579	2.75	50.33
+	ID2= 2 (7419):		51.22	6.952	2.75	52.81
	ID = 3 (7669):		86.87	11.531	2.75	51.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7418)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.748E+03	0.4	0.32	32.91
0.43	231.12	.299E+04	2.4	0.50	20.73
0.64	231.33	.674E+04	7.1	0.66	15.82
0.86	231.55	.120E+05	15.3	0.80	13.06
1.07	231.76	.187E+05	27.7	0.92	11.26
1.29	231.98	.270E+05	43.0	0.99	10.47
1.50	232.19	.395E+05	55.3	0.87	11.91
1.72	232.41	.670E+05	80.6	0.75	13.86
1.93	232.62	.110E+06	152.1	0.86	12.06
2.15	232.84	.164E+06	254.6	0.97	10.75
2.36	233.05	.229E+06	418.6	1.14	9.12
2.58	233.27	.298E+06	620.1	1.30	8.00
2.79	233.48	.377E+06	831.7	1.38	7.55
3.01	233.70	.462E+06	1122.6	1.52	6.86
3.22	233.91	.553E+06	1446.6	1.63	6.37
3.44	234.13	.652E+06	1792.6	1.72	6.06
3.65	234.34	.759E+06	2189.3	1.80	5.78
3.98	234.67	.932E+06	3042.9	2.04	5.11
4.30	234.99	.112E+07	4039.2	2.26	4.61

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	11.53	2.75	51.79	0.76	0.73
OUTFLOW: ID= 1 (7418)	86.87	9.83	2.83	51.79	0.72	0.70

| ROUTE CHN(7670)|

| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

	AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7418)	86.87	9.83	2.83	51.79	0.72	0.70
OUTFLOW: ID= 1 (7670)	86.87	7.70	3.00	51.79	0.66	0.67

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	43.56	10.82

Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	6.68	3.250	14.48	4.83	1.11
0.167	0.00	1.750	6.68	3.333	7.80	4.92	1.11
0.250	0.00	1.833	18.94	3.417	7.80	5.00	1.11
0.333	1.11	1.917	18.94	3.500	7.80	5.08	1.11
0.417	1.11	2.000	18.94	3.583	7.80	5.17	1.11
0.500	1.11	2.083	18.94	3.667	7.80	5.25	1.11
0.583	1.11	2.167	18.94	3.750	7.80	5.33	1.11
0.667	1.11	2.250	18.94	3.833	4.46	5.42	1.11
0.750	1.11	2.333	51.24	3.917	4.46	5.50	1.11
0.833	1.11	2.417	51.24	4.000	4.46	5.58	1.11
0.917	1.11	2.500	51.24	4.083	4.46	5.67	1.11
1.000	1.11	2.583	51.24	4.167	4.46	5.75	1.11
1.083	1.11	2.667	51.24	4.250	4.46	5.83	1.11
1.167	1.11	2.750	51.24	4.333	2.23	5.92	1.11
1.250	1.11	2.833	14.48	4.417	2.23	6.00	1.11
1.333	6.68	2.917	14.48	4.500	2.23	6.08	1.11
1.417	6.68	3.000	14.48	4.583	2.23	6.17	1.11
1.500	6.68	3.083	14.48	4.667	2.23	6.25	1.11
1.583	6.68	3.167	14.48	4.750	2.23		

Max.Eff.Inten.(mm/hr)=	51.24	42.86		
over (min)	10.00	20.00		
Storage Coeff. (min)=	8.22 (ii)	18.44 (ii)		
Unit Hyd. Tpeak (min)=	10.00	20.00		
Unit Hyd. peak (cms)=	0.13	0.06		
			TOTALS	
PEAK FLOW (cms)=	6.04	0.91	6.873 (iii)	
TIME TO PEAK (hrs)=	2.75	2.92	2.75	
RUNOFF VOLUME (mm)=	53.69	36.85	50.33	
TOTAL RAINFALL (mm)=	55.69	55.69	55.69	
RUNOFF COEFFICIENT =	0.96	0.66	0.90	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7667):	54.38	6.873	2.75	50.33
+	ID2= 2 (7670):	86.87	7.697	3.00	51.79
	ID = 3 (7668):	141.25	13.135	2.83	51.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7415)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	7668)	141.25	13.14	2.83	51.23	0.94	0.54
OUTFLOW: ID= 1 (	7415)	141.25	10.61	3.00	51.22	0.87	0.51

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	6.68	3.250	14.48	4.83	1.11
0.167	0.00	1.750	6.68	3.333	7.80	4.92	1.11
0.250	0.00	1.833	18.94	3.417	7.80	5.00	1.11
0.333	1.11	1.917	18.94	3.500	7.80	5.08	1.11
0.417	1.11	2.000	18.94	3.583	7.80	5.17	1.11
0.500	1.11	2.083	18.94	3.667	7.80	5.25	1.11
0.583	1.11	2.167	18.94	3.750	7.80	5.33	1.11
0.667	1.11	2.250	18.94	3.833	4.46	5.42	1.11
0.750	1.11	2.333	51.24	3.917	4.46	5.50	1.11
0.833	1.11	2.417	51.24	4.000	4.46	5.58	1.11
0.917	1.11	2.500	51.24	4.083	4.46	5.67	1.11
1.000	1.11	2.583	51.24	4.167	4.46	5.75	1.11
1.083	1.11	2.667	51.24	4.250	4.46	5.83	1.11
1.167	1.11	2.750	51.24	4.333	2.23	5.92	1.11
1.250	1.11	2.833	14.48	4.417	2.23	6.00	1.11
1.333	6.68	2.917	14.48	4.500	2.23	6.08	1.11
1.417	6.68	3.000	14.48	4.583	2.23	6.17	1.11
1.500	6.68	3.083	14.48	4.667	2.23	6.25	1.11
1.583	6.68	3.167	14.48	4.750	2.23		

Max.Eff.Inten.	(mm/hr)=	51.24	42.81	
	over (min)	10.00	20.00	
Storage Coeff.	(min)=	7.85 (ii)	18.20 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	20.00	
Unit Hyd. peak	(cms)=	0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	4.51	1.04	5.474 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	53.69	36.84	49.01
TOTAL RAINFALL	(mm)=	55.69	55.69	55.69
RUNOFF COEFFICIENT	=	0.96	0.66	0.88

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7414):	44.87	5.474	2.75	49.01
	+ ID2= 2 (7415):	141.25	10.610	3.00	51.22
	ID = 3 (7413):	186.12	14.776	2.83	50.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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**************************************************
** SIMULATION:4. 25 Year 6 Hour AES (Bloor, TRCA) **
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| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56          2.66
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.31          1.31
     Length            (m)=     584.35         40.00
     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    0.00 | 1.667    7.87 | 3.250   17.06 |  4.83    1.31
              0.167    0.00 | 1.750    7.87 | 3.333    9.18 |  4.92    1.31
              0.250    0.00 | 1.833   22.30 | 3.417    9.18 |  5.00    1.31
              0.333    1.31 | 1.917   22.30 | 3.500    9.18 |  5.08    1.31
              0.417    1.31 | 2.000   22.30 | 3.583    9.18 |  5.17    1.31
              0.500    1.31 | 2.083   22.30 | 3.667    9.18 |  5.25    1.31
              0.583    1.31 | 2.167   22.30 | 3.750    9.18 |  5.33    1.31
              0.667    1.31 | 2.250   22.30 | 3.833    5.25 |  5.42    1.31
              0.750    1.31 | 2.333   60.35 | 3.917    5.25 |  5.50    1.31
              0.833    1.31 | 2.417   60.35 | 4.000    5.25 |  5.58    1.31
              0.917    1.31 | 2.500   60.35 | 4.083    5.25 |  5.67    1.31
              1.000    1.31 | 2.583   60.35 | 4.167    5.25 |  5.75    1.31
              1.083    1.31 | 2.667   60.35 | 4.250    5.25 |  5.83    1.31
              1.167    1.31 | 2.750   60.35 | 4.333    2.62 |  5.92    1.31
              1.250    1.31 | 2.833   17.06 | 4.417    2.62 |  6.00    1.31
              1.333    7.87 | 2.917   17.06 | 4.500    2.62 |  6.08    1.31
              1.417    7.87 | 3.000   17.06 | 4.583    2.62 |  6.17    1.31
              1.500    7.87 | 3.083   17.06 | 4.667    2.62 |  6.25    1.31
              1.583    7.87 | 3.167   17.06 | 4.750    2.62 |

     Max.Eff.Inten.(mm/hr)=      60.35          53.17
               over (min)        10.00          15.00
     Storage Coeff.  (min)=       8.32 (ii)     11.39 (ii)
     Unit Hyd. Tpeak (min)=      10.00          15.00
     Unit Hyd. peak  (cms)=       0.13           0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       7.93           0.33        8.259 (iii)
     TIME TO PEAK    (hrs)=       2.75           2.75         2.75
     RUNOFF VOLUME    (mm)=      63.59          46.06        62.68
     TOTAL RAINFALL   (mm)=      65.59          65.59        65.59
     RUNOFF COEFFICIENT   =       0.97           0.70         0.96


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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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| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
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|ID= 1 DT= 5.0 min | Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	7.87	3.250	17.06	4.83	1.31
0.167	0.00	1.750	7.87	3.333	9.18	4.92	1.31
0.250	0.00	1.833	22.30	3.417	9.18	5.00	1.31
0.333	1.31	1.917	22.30	3.500	9.18	5.08	1.31
0.417	1.31	2.000	22.30	3.583	9.18	5.17	1.31
0.500	1.31	2.083	22.30	3.667	9.18	5.25	1.31
0.583	1.31	2.167	22.30	3.750	9.18	5.33	1.31
0.667	1.31	2.250	22.30	3.833	5.25	5.42	1.31
0.750	1.31	2.333	60.35	3.917	5.25	5.50	1.31
0.833	1.31	2.417	60.35	4.000	5.25	5.58	1.31
0.917	1.31	2.500	60.35	4.083	5.25	5.67	1.31
1.000	1.31	2.583	60.35	4.167	5.25	5.75	1.31
1.083	1.31	2.667	60.35	4.250	5.25	5.83	1.31
1.167	1.31	2.750	60.35	4.333	2.62	5.92	1.31
1.250	1.31	2.833	17.06	4.417	2.62	6.00	1.31
1.333	7.87	2.917	17.06	4.500	2.62	6.08	1.31
1.417	7.87	3.000	17.06	4.583	2.62	6.17	1.31
1.500	7.87	3.083	17.06	4.667	2.62	6.25	1.31
1.583	7.87	3.167	17.06	4.750	2.62		

Max.Eff.Inten.(mm/hr)=		60.35	53.36	
over (min)		5.00	20.00	
Storage Coeff. (min)=		6.78 (ii)	16.15 (ii)	
Unit Hyd. Tpeak (min)=		5.00	20.00	
Unit Hyd. peak (cms)=		0.18	0.06	
				TOTALS
PEAK FLOW	(cms)=	4.75	0.78	5.476 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	63.59	46.10	60.10
TOTAL RAINFALL	(mm)=	65.59	65.59	65.59
RUNOFF COEFFICIENT	=	0.97	0.70	0.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)| 1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7417):			35.65	5.476	2.75	60.10
+ ID2= 2 (7419):			51.22	8.259	2.75	62.68
ID = 3 (7669):			86.87	13.735	2.75	61.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7418)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.748E+03	0.4	0.32	32.91
0.43	231.12	.299E+04	2.4	0.50	20.73
0.64	231.33	.674E+04	7.1	0.66	15.82
0.86	231.55	.120E+05	15.3	0.80	13.06
1.07	231.76	.187E+05	27.7	0.92	11.26
1.29	231.98	.270E+05	43.0	0.99	10.47
1.50	232.19	.395E+05	55.3	0.87	11.91
1.72	232.41	.670E+05	80.6	0.75	13.86
1.93	232.62	.110E+06	152.1	0.86	12.06
2.15	232.84	.164E+06	254.6	0.97	10.75
2.36	233.05	.229E+06	418.6	1.14	9.12
2.58	233.27	.298E+06	620.1	1.30	8.00
2.79	233.48	.377E+06	831.7	1.38	7.55
3.01	233.70	.462E+06	1122.6	1.52	6.86
3.22	233.91	.553E+06	1446.6	1.63	6.37
3.44	234.13	.652E+06	1792.6	1.72	6.06
3.65	234.34	.759E+06	2189.3	1.80	5.78
3.98	234.67	.932E+06	3042.9	2.04	5.11
4.30	234.99	.112E+07	4039.2	2.26	4.61

		AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	7669)	86.87	13.74	2.75	61.62	0.82	0.77
OUTFLOW: ID= 1 (	7418)	86.87	11.82	2.83	61.62	0.77	0.73

| ROUTE CHN(7670)|

| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7418)	86.87	11.82	2.83	61.62	0.77	0.73
OUTFLOW: ID= 1 (7670)	86.87	9.28	3.00	61.62	0.70	0.69

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	43.56	10.82

Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	7.87	3.250	17.06	4.83	1.31
0.167	0.00	1.750	7.87	3.333	9.18	4.92	1.31
0.250	0.00	1.833	22.30	3.417	9.18	5.00	1.31
0.333	1.31	1.917	22.30	3.500	9.18	5.08	1.31
0.417	1.31	2.000	22.30	3.583	9.18	5.17	1.31
0.500	1.31	2.083	22.30	3.667	9.18	5.25	1.31
0.583	1.31	2.167	22.30	3.750	9.18	5.33	1.31
0.667	1.31	2.250	22.30	3.833	5.25	5.42	1.31
0.750	1.31	2.333	60.35	3.917	5.25	5.50	1.31
0.833	1.31	2.417	60.35	4.000	5.25	5.58	1.31
0.917	1.31	2.500	60.35	4.083	5.25	5.67	1.31
1.000	1.31	2.583	60.35	4.167	5.25	5.75	1.31
1.083	1.31	2.667	60.35	4.250	5.25	5.83	1.31
1.167	1.31	2.750	60.35	4.333	2.62	5.92	1.31
1.250	1.31	2.833	17.06	4.417	2.62	6.00	1.31
1.333	7.87	2.917	17.06	4.500	2.62	6.08	1.31
1.417	7.87	3.000	17.06	4.583	2.62	6.17	1.31
1.500	7.87	3.083	17.06	4.667	2.62	6.25	1.31
1.583	7.87	3.167	17.06	4.750	2.62		

Max.Eff.Inten.(mm/hr)=		60.35	53.36	
over (min)		10.00	20.00	
Storage Coeff. (min)=		7.70 (ii)	17.06 (ii)	
Unit Hyd. Tpeak (min)=		10.00	20.00	
Unit Hyd. peak (cms)=		0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	7.15	1.16	8.239 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	63.59	46.10	60.10
TOTAL RAINFALL	(mm)=	65.59	65.59	65.59
RUNOFF COEFFICIENT	=	0.97	0.70	0.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7667):		54.38	8.239	2.75	60.10
+ ID2= 2 (7670):		86.87	9.285	3.00	61.62
ID = 3 (7668):		141.25	16.052	2.83	61.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7415)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	7668)	141.25	16.05	2.83	61.03	1.03	0.58
OUTFLOW: ID= 1 (	7415)	141.25	13.07	2.92	61.03	0.94	0.54

CALIB
STANDHYD (7414)
ID= 1 DT= 5.0 min

Area (ha)= 44.87
Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	7.87	3.250	17.06	4.83	1.31
0.167	0.00	1.750	7.87	3.333	9.18	4.92	1.31
0.250	0.00	1.833	22.30	3.417	9.18	5.00	1.31
0.333	1.31	1.917	22.30	3.500	9.18	5.08	1.31
0.417	1.31	2.000	22.30	3.583	9.18	5.17	1.31
0.500	1.31	2.083	22.30	3.667	9.18	5.25	1.31
0.583	1.31	2.167	22.30	3.750	9.18	5.33	1.31
0.667	1.31	2.250	22.30	3.833	5.25	5.42	1.31
0.750	1.31	2.333	60.35	3.917	5.25	5.50	1.31
0.833	1.31	2.417	60.35	4.000	5.25	5.58	1.31
0.917	1.31	2.500	60.35	4.083	5.25	5.67	1.31
1.000	1.31	2.583	60.35	4.167	5.25	5.75	1.31
1.083	1.31	2.667	60.35	4.250	5.25	5.83	1.31
1.167	1.31	2.750	60.35	4.333	2.62	5.92	1.31
1.250	1.31	2.833	17.06	4.417	2.62	6.00	1.31
1.333	7.87	2.917	17.06	4.500	2.62	6.08	1.31
1.417	7.87	3.000	17.06	4.583	2.62	6.17	1.31
1.500	7.87	3.083	17.06	4.667	2.62	6.25	1.31
1.583	7.87	3.167	17.06	4.750	2.62		

Max.Eff.Inten.	(mm/hr)=	60.35	53.31	
	over (min)	5.00	20.00	
Storage Coeff.	(min)=	7.35 (ii)	16.83 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	20.00	
Unit Hyd. peak	(cms)=	0.17	0.06	
				TOTALS
PEAK FLOW	(cms)=	5.37	1.34	6.630 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	63.59	46.09	58.73
TOTAL RAINFALL	(mm)=	65.59	65.59	65.59
RUNOFF COEFFICIENT	=	0.97	0.70	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7414):	44.87	6.630	2.75	58.73
	+ ID2= 2 (7415):	141.25	13.066	2.92	61.03
	ID = 3 (7413):	186.12	17.530	2.75	60.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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**************************************************
** SIMULATION:5. 50 Year 6 Hour AES (Bloor, TRCA) **
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| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    8.76 | 3.250   18.98 |  4.83    1.46
              0.167    0.00 | 1.750    8.76 | 3.333   10.22 |  4.92    1.46
              0.250    0.00 | 1.833   24.82 | 3.417   10.22 |  5.00    1.46
              0.333    1.46 | 1.917   24.82 | 3.500   10.22 |  5.08    1.46
              0.417    1.46 | 2.000   24.82 | 3.583   10.22 |  5.17    1.46
              0.500    1.46 | 2.083   24.82 | 3.667   10.22 |  5.25    1.46
              0.583    1.46 | 2.167   24.82 | 3.750   10.22 |  5.33    1.46
              0.667    1.46 | 2.250   24.82 | 3.833    5.84 |  5.42    1.46
              0.750    1.46 | 2.333   67.16 | 3.917    5.84 |  5.50    1.46
              0.833    1.46 | 2.417   67.16 | 4.000    5.84 |  5.58    1.46
              0.917    1.46 | 2.500   67.16 | 4.083    5.84 |  5.67    1.46
              1.000    1.46 | 2.583   67.16 | 4.167    5.84 |  5.75    1.46
              1.083    1.46 | 2.667   67.16 | 4.250    5.84 |  5.83    1.46
              1.167    1.46 | 2.750   67.16 | 4.333    2.92 |  5.92    1.46
              1.250    1.46 | 2.833   18.98 | 4.417    2.92 |  6.00    1.46
              1.333    8.76 | 2.917   18.98 | 4.500    2.92 |  6.08    1.46
              1.417    8.76 | 3.000   18.98 | 4.583    2.92 |  6.17    1.46
              1.500    8.76 | 3.083   18.98 | 4.667    2.92 |  6.25    1.46
              1.583    8.76 | 3.167   18.98 | 4.750    2.92 |

     Max.Eff.Inten.(mm/hr)=      67.16         60.36
                 over (min)      10.00         15.00
     Storage Coeff.  (min)=       7.97 (ii)    10.91 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.13          0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       8.86          0.38      9.237 (iii)
     TIME TO PEAK    (hrs)=       2.75          2.75       2.75
     RUNOFF VOLUME    (mm)=      71.00         53.08      70.07
     TOTAL RAINFALL   (mm)=      73.00         73.00      73.00
     RUNOFF COEFFICIENT   =       0.97          0.73       0.96


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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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| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
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|ID= 1 DT= 5.0 min | Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.(mm/hr)=		67.16	60.58	
over (min)		5.00	15.00	
Storage Coeff. (min)=		6.50 (ii)	11.39 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.18	0.09	
				TOTALS
PEAK FLOW	(cms)=	5.29	1.01	6.298 (iii)
TIME TO PEAK	(hrs)=	2.75	2.75	2.75
RUNOFF VOLUME	(mm)=	71.00	53.13	67.43
TOTAL RAINFALL	(mm)=	73.00	73.00	73.00
RUNOFF COEFFICIENT	=	0.97	0.73	0.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)| 1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7417):			35.65	6.298	2.75	67.43
+ ID2= 2 (7419):			51.22	9.237	2.75	70.07
ID = 3 (7669):			86.87	15.536	2.75	68.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7418)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.748E+03	0.4	0.32	32.91
0.43	231.12	.299E+04	2.4	0.50	20.73
0.64	231.33	.674E+04	7.1	0.66	15.82
0.86	231.55	.120E+05	15.3	0.80	13.06
1.07	231.76	.187E+05	27.7	0.92	11.26
1.29	231.98	.270E+05	43.0	0.99	10.47
1.50	232.19	.395E+05	55.3	0.87	11.91
1.72	232.41	.670E+05	80.6	0.75	13.86
1.93	232.62	.110E+06	152.1	0.86	12.06
2.15	232.84	.164E+06	254.6	0.97	10.75
2.36	233.05	.229E+06	418.6	1.14	9.12
2.58	233.27	.298E+06	620.1	1.30	8.00
2.79	233.48	.377E+06	831.7	1.38	7.55
3.01	233.70	.462E+06	1122.6	1.52	6.86
3.22	233.91	.553E+06	1446.6	1.63	6.37
3.44	234.13	.652E+06	1792.6	1.72	6.06
3.65	234.34	.759E+06	2189.3	1.80	5.78
3.98	234.67	.932E+06	3042.9	2.04	5.11
4.30	234.99	.112E+07	4039.2	2.26	4.61

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	15.54	2.75	68.99	0.86	0.80
OUTFLOW: ID= 1 (7418)	86.87	13.54	2.75	68.98	0.81	0.76

| ROUTE CHN(7670)|

| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7418)	86.87	13.54	2.75	68.98	0.81	0.76
OUTFLOW: ID= 1 (7670)	86.87	10.70	2.92	68.98	0.74	0.71

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	43.56	10.82

Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.(mm/hr)=		67.16	60.58	
over (min)		5.00	15.00	
Storage Coeff. (min)=		7.37 (ii)	12.27 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.17	0.09	
				TOTALS
PEAK FLOW	(cms)=	8.03	1.51	9.540 (iii)
TIME TO PEAK	(hrs)=	2.75	2.75	2.75
RUNOFF VOLUME	(mm)=	71.00	53.13	67.43
TOTAL RAINFALL	(mm)=	73.00	73.00	73.00
RUNOFF COEFFICIENT	=	0.97	0.73	0.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7667):		54.38	9.540	2.75	67.43
+ ID2= 2 (7670):		86.87	10.698	2.92	68.98
ID = 3 (7668):		141.25	18.486	2.75	68.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7415)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7668)	141.25	18.49	2.75	68.39	1.08	0.60
OUTFLOW: ID= 1 (7415)	141.25	14.82	2.92	68.38	0.99	0.57

CALIB
STANDHYD (7414)
ID= 1 DT= 5.0 min

Area (ha)= 44.87
Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.	(mm/hr)=	67.16	60.52	
	over (min)	5.00	20.00	
Storage Coeff.	(min)=	7.04 (ii)	16.06 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	20.00	
Unit Hyd. peak	(cms)=	0.17	0.06	
				TOTALS
PEAK FLOW	(cms)=	5.99	1.56	7.471 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	71.00	53.11	66.03
TOTAL RAINFALL	(mm)=	73.00	73.00	73.00
RUNOFF COEFFICIENT	=	0.97	0.73	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (7414):	44.87	7.471	2.75	66.03
	+ ID2= 2 (7415):	141.25	14.824	2.92	68.38
	ID = 3 (7413):	186.12	20.736	2.75	67.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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**************************************************
** SIMULATION:6. 100 Year 6 Hour AES (Bloor, TRCA) **
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| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    9.64 | 3.250   20.88 |  4.83    1.61
              0.167    0.00 | 1.750    9.64 | 3.333   11.24 |  4.92    1.61
              0.250    0.00 | 1.833   27.30 | 3.417   11.24 |  5.00    1.61
              0.333    1.61 | 1.917   27.30 | 3.500   11.24 |  5.08    1.61
              0.417    1.61 | 2.000   27.30 | 3.583   11.24 |  5.17    1.61
              0.500    1.61 | 2.083   27.30 | 3.667   11.24 |  5.25    1.61
              0.583    1.61 | 2.167   27.30 | 3.750   11.24 |  5.33    1.61
              0.667    1.61 | 2.250   27.30 | 3.833    6.42 |  5.42    1.61
              0.750    1.61 | 2.333   73.88 | 3.917    6.42 |  5.50    1.61
              0.833    1.61 | 2.417   73.88 | 4.000    6.42 |  5.58    1.61
              0.917    1.61 | 2.500   73.88 | 4.083    6.42 |  5.67    1.61
              1.000    1.61 | 2.583   73.88 | 4.167    6.42 |  5.75    1.61
              1.083    1.61 | 2.667   73.88 | 4.250    6.42 |  5.83    1.61
              1.167    1.61 | 2.750   73.88 | 4.333    3.21 |  5.92    1.61
              1.250    1.61 | 2.833   20.88 | 4.417    3.21 |  6.00    1.61
              1.333    9.64 | 2.917   20.88 | 4.500    3.21 |  6.08    1.61
              1.417    9.64 | 3.000   20.88 | 4.583    3.21 |  6.17    1.61
              1.500    9.64 | 3.083   20.88 | 4.667    3.21 |  6.25    1.61
              1.583    9.64 | 3.167   20.88 | 4.750    3.21 |

     Max.Eff.Inten.(mm/hr)=      73.88         67.43
               over (min)        10.00         15.00
     Storage Coeff.  (min)=       7.67 (ii)    10.50 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.13          0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       9.77          0.43     10.202 (iii)
     TIME TO PEAK    (hrs)=       2.75          2.75       2.75
     RUNOFF VOLUME    (mm)=      78.31         60.06      77.36
     TOTAL RAINFALL   (mm)=      80.31         80.31      80.31
     RUNOFF COEFFICIENT   =       0.98          0.75       0.96


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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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| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
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|ID= 1 DT= 5.0 min | Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)=		73.88	67.66	
over (min)		5.00	15.00	
Storage Coeff. (min)=		6.25 (ii)	10.97 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.19	0.09	
				TOTALS
PEAK FLOW	(cms)=	5.83	1.15	6.973 (iii)
TIME TO PEAK	(hrs)=	2.75	2.75	2.75
RUNOFF VOLUME	(mm)=	78.31	60.11	74.68
TOTAL RAINFALL	(mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT	=	0.98	0.75	0.93

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)			AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3			(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7417):		35.65	6.973	2.75	74.68
+	ID2= 2 (7419):		51.22	10.202	2.75	77.36
	ID = 3 (7669):		86.87	17.175	2.75	76.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7418)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.748E+03	0.4	0.32	32.91
0.43	231.12	.299E+04	2.4	0.50	20.73
0.64	231.33	.674E+04	7.1	0.66	15.82
0.86	231.55	.120E+05	15.3	0.80	13.06
1.07	231.76	.187E+05	27.7	0.92	11.26
1.29	231.98	.270E+05	43.0	0.99	10.47
1.50	232.19	.395E+05	55.3	0.87	11.91
1.72	232.41	.670E+05	80.6	0.75	13.86
1.93	232.62	.110E+06	152.1	0.86	12.06
2.15	232.84	.164E+06	254.6	0.97	10.75
2.36	233.05	.229E+06	418.6	1.14	9.12
2.58	233.27	.298E+06	620.1	1.30	8.00
2.79	233.48	.377E+06	831.7	1.38	7.55
3.01	233.70	.462E+06	1122.6	1.52	6.86
3.22	233.91	.553E+06	1446.6	1.63	6.37
3.44	234.13	.652E+06	1792.6	1.72	6.06
3.65	234.34	.759E+06	2189.3	1.80	5.78
3.98	234.67	.932E+06	3042.9	2.04	5.11
4.30	234.99	.112E+07	4039.2	2.26	4.61

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	17.18	2.75	76.26	0.89	0.81
OUTFLOW: ID= 1 (7418)	86.87	15.10	2.75	76.26	0.85	0.79

| ROUTE CHN(7670)|

| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7418)	86.87	15.10	2.75	76.26	0.85	0.79
OUTFLOW: ID= 1 (7670)	86.87	12.08	2.92	76.26	0.77	0.74

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	43.56	10.82

Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)=	73.88	67.66		
over (min)	5.00	15.00		
Storage Coeff. (min)=	7.10 (ii)	11.81 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.17	0.09		
			TOTALS	
PEAK FLOW (cms)=	8.85	1.72	10.569 (iii)	
TIME TO PEAK (hrs)=	2.75	2.75	2.75	
RUNOFF VOLUME (mm)=	78.31	60.11	74.68	
TOTAL RAINFALL (mm)=	80.31	80.31	80.31	
RUNOFF COEFFICIENT =	0.98	0.75	0.93	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7667):	54.38	10.569	2.75	74.68
+	ID2= 2 (7670):	86.87	12.085	2.92	76.26
	ID = 3 (7668):	141.25	20.749	2.75	75.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7415)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7668)	141.25	20.75	2.75	75.65	1.12	0.61
OUTFLOW: ID= 1 (7415)	141.25	16.73	2.92	75.65	1.04	0.59

CALIB
STANDHYD (7414)
ID= 1 DT= 5.0 min

Area (ha)= 44.87
Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.	(mm/hr)=	73.88	67.59	
	over (min)	5.00	20.00	
Storage Coeff.	(min)=	6.78 (ii)	15.40 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	20.00	
Unit Hyd. peak	(cms)=	0.18	0.07	
				TOTALS
PEAK FLOW	(cms)=	6.60	1.79	8.305 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	78.31	60.10	73.25
TOTAL RAINFALL	(mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT	=	0.98	0.75	0.91

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7414):	44.87	8.305	2.75	73.25
	+ ID2= 2 (7415):	141.25	16.725	2.92	75.65
	ID = 3 (7413):	186.12	23.415	2.75	75.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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**********************************
** SIMULATION:Hazel1000       **
**********************************
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| CALIB              |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56          2.66
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.31          1.31
     Length            (m)=     584.35         40.00
     Mannings n             =     0.013         0.250

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

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     Max.Eff.Inten.(mm/hr)=      53.00          52.33
                 over (min)      10.00          15.00
     Storage Coeff.  (min)=       8.76 (ii)     11.99 (ii)
     Unit Hyd. Tpeak (min)=      10.00          15.00
     Unit Hyd. peak  (cms)=       0.12           0.09
                                                      *TOTALS*
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PEAK FLOW (cms)=	7.14	0.38	7.523 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.50	208.93
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.99

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB	
STANDHYD (7417)	Area (ha)= 35.65
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	52.50	
over (min)	5.00	20.00	
Storage Coeff. (min)=	7.14 (ii)	16.57 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.17	0.06	
			TOTALS
PEAK FLOW (cms)=	4.20	0.99	5.195 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.56	205.92
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7417):		35.65	5.195	10.00	205.92
+ ID2= 2 (7419):		51.22	7.523	10.00	208.93
ID = 3 (7669):		86.87	12.718	10.00	207.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(7418)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.748E+03	0.4	0.32	32.91
0.43	231.12	.299E+04	2.4	0.50	20.73
0.64	231.33	.674E+04	7.1	0.66	15.82
0.86	231.55	.120E+05	15.3	0.80	13.06
1.07	231.76	.187E+05	27.7	0.92	11.26
1.29	231.98	.270E+05	43.0	0.99	10.47
1.50	232.19	.395E+05	55.3	0.87	11.91
1.72	232.41	.670E+05	80.6	0.75	13.86
1.93	232.62	.110E+06	152.1	0.86	12.06
2.15	232.84	.164E+06	254.6	0.97	10.75
2.36	233.05	.229E+06	418.6	1.14	9.12
2.58	233.27	.298E+06	620.1	1.30	8.00
2.79	233.48	.377E+06	831.7	1.38	7.55
3.01	233.70	.462E+06	1122.6	1.52	6.86
3.22	233.91	.553E+06	1446.6	1.63	6.37
3.44	234.13	.652E+06	1792.6	1.72	6.06
3.65	234.34	.759E+06	2189.3	1.80	5.78
3.98	234.67	.932E+06	3042.9	2.04	5.11
4.30	234.99	.112E+07	4039.2	2.26	4.61

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	12.72	10.00	207.70	0.79	0.75
OUTFLOW: ID= 1 (7418)	86.87	12.46	10.00	207.70	0.78	0.74

ROUTE CHN(7670)|
IN= 2---> OUT= 1	

Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84

0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7418)	86.87	12.46	10.00	207.70	0.78	0.74
OUTFLOW: ID= 1 (7670)	86.87	11.55	10.17	207.69	0.76	0.73

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	52.50	
over (min)	10.00	20.00	
Storage Coeff. (min)=	8.11 (ii)	17.53 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.13	0.06	
			TOTALS
PEAK FLOW (cms)=	6.40	1.51	7.910 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.56	205.92
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7667):	54.38	7.910	10.00	205.92
+ ID2= 2 (7670):	86.87	11.550	10.17	207.69
ID = 3 (7668):	141.25	19.018	10.00	207.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(7415)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel

382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7668)	141.25	19.02	10.00	207.01	1.09	0.60
OUTFLOW: ID= 1 (7415)	141.25	17.84	10.17	207.01	1.06	0.59

CALIB STANDHYD (7414) ID= 1 DT= 5.0 min	Area (ha)= 44.87 Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	52.45	
over (min)	10.00	20.00	
Storage Coeff. (min)=	7.74 (ii)	17.29 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.13	0.06	
			TOTALS
PEAK FLOW (cms)=	4.77	1.73	6.502 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.54	204.32
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.96

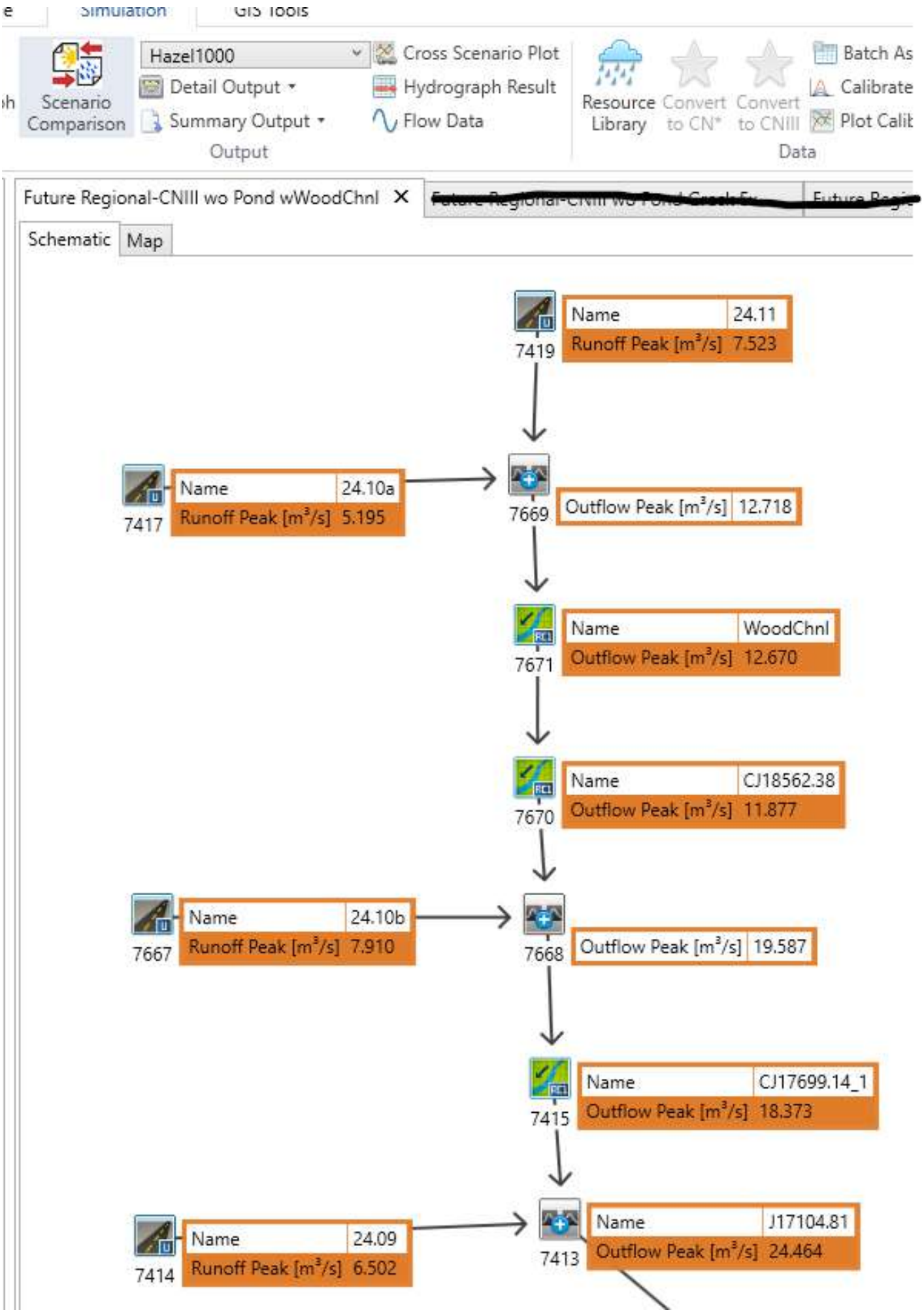
(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7413)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7414):	44.87	6.502	10.00	204.32
+ ID2= 2 (7415):	141.25	17.841	10.17	207.01
	==========	==========	==========	==========

ID = 3 (7413): 186.12 23.837 10.08 206.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

VO Modeling Results Alternative Flow Routing
Scenario 3: Future Conditions – Proposed Natural Channel by Wood



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**************************************************
** SIMULATION:100 Year 6 Hour AES (Bloor, TRCA) **
**************************************************
--------------------
| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
|ID= 1 DT= 5.0 min |   Total Imp(%)=  80.10   Dir. Conn.(%)=  80.04
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      28.56          7.09
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.80          1.80
     Length            (m)=     487.51         40.00
     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    0.00 | 1.667    9.64 | 3.250   20.88 |  4.83    1.61
              0.167    0.00 | 1.750    9.64 | 3.333   11.24 |  4.92    1.61
              0.250    0.00 | 1.833   27.30 | 3.417   11.24 |  5.00    1.61
              0.333    1.61 | 1.917   27.30 | 3.500   11.24 |  5.08    1.61
              0.417    1.61 | 2.000   27.30 | 3.583   11.24 |  5.17    1.61
              0.500    1.61 | 2.083   27.30 | 3.667   11.24 |  5.25    1.61
              0.583    1.61 | 2.167   27.30 | 3.750   11.24 |  5.33    1.61
              0.667    1.61 | 2.250   27.30 | 3.833    6.42 |  5.42    1.61
              0.750    1.61 | 2.333   73.88 | 3.917    6.42 |  5.50    1.61
              0.833    1.61 | 2.417   73.88 | 4.000    6.42 |  5.58    1.61
              0.917    1.61 | 2.500   73.88 | 4.083    6.42 |  5.67    1.61
              1.000    1.61 | 2.583   73.88 | 4.167    6.42 |  5.75    1.61
              1.083    1.61 | 2.667   73.88 | 4.250    6.42 |  5.83    1.61
              1.167    1.61 | 2.750   73.88 | 4.333    3.21 |  5.92    1.61
              1.250    1.61 | 2.833   20.88 | 4.417    3.21 |  6.00    1.61
              1.333    9.64 | 2.917   20.88 | 4.500    3.21 |  6.08    1.61
              1.417    9.64 | 3.000   20.88 | 4.583    3.21 |  6.17    1.61
              1.500    9.64 | 3.083   20.88 | 4.667    3.21 |  6.25    1.61
              1.583    9.64 | 3.167   20.88 | 4.750    3.21 |

     Max.Eff.Inten.(mm/hr)=      73.88          67.66
                 over (min)       5.00          15.00
     Storage Coeff.  (min)=       6.25 (ii)     10.97 (ii)
     Unit Hyd. Tpeak (min)=       5.00          15.00
     Unit Hyd. peak  (cms)=       0.19           0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       5.83           1.15          6.973 (iii)
     TIME TO PEAK    (hrs)=       2.75           2.75           2.75
     RUNOFF VOLUME    (mm)=      78.31          60.11          74.68
     TOTAL RAINFALL   (mm)=      80.31          80.31          80.31
     RUNOFF COEFFICIENT   =       0.98           0.75           0.93


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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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| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
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|ID= 1 DT= 5.0 min | Total Imp(%)= 94.80 Dir. Conn.(%)= 94.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	48.56	2.66
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.31	1.31
Length	(m)=	584.35	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)=		73.88	67.43	
over (min)		10.00	15.00	
Storage Coeff. (min)=		7.67 (ii)	10.50 (ii)	
Unit Hyd. Tpeak (min)=		10.00	15.00	
Unit Hyd. peak (cms)=		0.13	0.09	
				TOTALS
PEAK FLOW	(cms)=	9.77	0.43	10.202 (iii)
TIME TO PEAK	(hrs)=	2.75	2.75	2.75
RUNOFF VOLUME	(mm)=	78.31	60.06	77.36
TOTAL RAINFALL	(mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT	=	0.98	0.75	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7417):		35.65	6.973	2.75	74.68
+ ID2= 2 (7419):		51.22	10.202	2.75	77.36
ID = 3 (7669):		86.87	17.175	2.75	76.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7671)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	100.00	0.0350	Main Channel
3.00	99.00	0.0350	Main Channel
42.00	99.00	0.0350	Main Channel
45.00	100.00	0.0350	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.05	99.05	.115E+04	0.6	0.31	30.12
0.11	99.11	.232E+04	2.0	0.49	19.03
0.16	99.16	.349E+04	4.0	0.64	14.56
0.21	99.21	.467E+04	6.5	0.77	12.06
0.26	99.26	.586E+04	9.4	0.90	10.42
0.32	99.32	.706E+04	12.7	1.01	9.25
0.37	99.37	.827E+04	16.5	1.11	8.37
0.42	99.42	.949E+04	20.6	1.22	7.68
0.47	99.47	.107E+05	25.1	1.31	7.12
0.53	99.53	.120E+05	30.0	1.40	6.65
0.58	99.58	.132E+05	35.2	1.49	6.26
0.63	99.63	.145E+05	40.7	1.58	5.92
0.68	99.68	.157E+05	46.6	1.66	5.63
0.74	99.74	.170E+05	52.8	1.74	5.37
0.79	99.79	.183E+05	59.3	1.81	5.14
0.84	99.84	.196E+05	66.1	1.89	4.94
0.89	99.89	.209E+05	73.2	1.96	4.76
0.95	99.95	.222E+05	80.6	2.03	4.59
1.00	100.00	.235E+05	88.3	2.10	4.44

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	17.18	2.75	76.26	0.38	1.13
OUTFLOW: ID= 1 (7671)	86.87	16.52	2.75	76.26	0.37	1.11

| ROUTE CHN(7670)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel

552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7671)	86.87	16.52	2.75	76.26	0.88	0.81
OUTFLOW: ID= 1 (7670)	86.87	13.08	2.92	76.26	0.80	0.75

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61

0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

			TOTALS
Max.Eff.Inten.(mm/hr)=	73.88	67.66	
over (min)	5.00	15.00	
Storage Coeff. (min)=	7.10 (ii)	11.81 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.17	0.09	
PEAK FLOW (cms)=	8.85	1.72	10.569 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	78.31	60.11	74.68
TOTAL RAINFALL (mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT =	0.98	0.75	0.93

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7667):		54.38	10.569	2.75	74.68
+ ID2= 2 (7670):		86.87	13.078	2.92	76.26
ID = 3 (7668):		141.25	22.278	2.75	75.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(7415)
IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel

546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7668)	141.25	22.28	2.75	75.65	1.15	0.62
OUTFLOW: ID= 1 (7415)	141.25	17.89	2.92	75.65	1.06	0.59

CALIB STANDHYD (7414) ID= 1 DT= 5.0 min	Area (ha)= 44.87 Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61

0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)=	73.88	67.59	
over (min)	5.00	20.00	
Storage Coeff. (min)=	6.78 (ii)	15.40 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.18	0.07	
			TOTALS
PEAK FLOW (cms)=	6.60	1.79	8.305 (iii)
TIME TO PEAK (hrs)=	2.75	2.83	2.75
RUNOFF VOLUME (mm)=	78.31	60.10	73.25
TOTAL RAINFALL (mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT =	0.98	0.75	0.91

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
1 + 2 = 3	ID1= 1 (7414):	44.87	8.305	2.75	73.25
	+ ID2= 2 (7415):	141.25	17.893	2.92	75.65
	ID = 3 (7413):	186.12	24.632	2.75	75.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Hazel1000 **
****

CALIB / STANDHYD (7417) / ID= 1 DT= 5.0 min	Area (ha)= 35.65	Total Imp(%)= 80.10	Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	52.50	
over (min)	5.00	20.00	
Storage Coeff. (min)=	7.14 (ii)	16.57 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.17	0.06	
			TOTALS
PEAK FLOW (cms)=	4.20	0.99	5.195 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.56	205.92
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB

| STANDHYD (7419)| Area (ha)= 51.22
|ID= 1 DT= 5.0 min | Total Imp(%)= 94.80 Dir. Conn.(%)= 94.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	48.56	2.66
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.31	1.31
Length	(m)=	584.35	40.00
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	52.33	
over (min)		10.00	15.00	
Storage Coeff. (min)=		8.76 (ii)	11.99 (ii)	
Unit Hyd. Tpeak (min)=		10.00	15.00	
Unit Hyd. peak (cms)=		0.12	0.09	
				TOTALS
PEAK FLOW	(cms)=	7.14	0.38	7.523 (iii)
TIME TO PEAK	(hrs)=	10.00	10.00	10.00
RUNOFF VOLUME	(mm)=	210.00	189.50	208.93
TOTAL RAINFALL	(mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT	=	0.99	0.89	0.99

```
      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7417):    35.65   5.195    10.00   205.92
     + ID2= 2 (  7419):    51.22   7.523    10.00   208.93
       ================================================
       ID = 3 (  7669):    86.87  12.718    10.00   207.70

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7671)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
              <------ DATA FOR SECTION (   1.1) ------>
              Distance      Elevation       Manning
                  0.00         100.00        0.0350      Main Channel
                  3.00          99.00        0.0350      Main Channel
                 42.00          99.00        0.0350      Main Channel
                 45.00         100.00        0.0350      Main Channel

     <---------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV       VOLUME     FLOW RATE     VELOCITY   TRAV.TIME
       (m)       (m)      (cu.m.)       (cms)         (m/s)      (min)
      0.05     99.05     .115E+04        0.6          0.31       30.12
      0.11     99.11     .232E+04        2.0          0.49       19.03
      0.16     99.16     .349E+04        4.0          0.64       14.56
      0.21     99.21     .467E+04        6.5          0.77       12.06
      0.26     99.26     .586E+04        9.4          0.90       10.42
      0.32     99.32     .706E+04       12.7          1.01        9.25
      0.37     99.37     .827E+04       16.5          1.11        8.37
      0.42     99.42     .949E+04       20.6          1.22        7.68
      0.47     99.47     .107E+05       25.1          1.31        7.12
      0.53     99.53     .120E+05       30.0          1.40        6.65
      0.58     99.58     .132E+05       35.2          1.49        6.26
      0.63     99.63     .145E+05       40.7          1.58        5.92
      0.68     99.68     .157E+05       46.6          1.66        5.63
      0.74     99.74     .170E+05       52.8          1.74        5.37
      0.79     99.79     .183E+05       59.3          1.81        5.14
      0.84     99.84     .196E+05       66.1          1.89        4.94
      0.89     99.89     .209E+05       73.2          1.96        4.76
      0.95     99.95     .222E+05       80.6          2.03        4.59
      1.00    100.00     .235E+05       88.3          2.10        4.44

                                      <---- hydrograph ---->   <-pipe / channel->
                              AREA    QPEAK   TPEAK   R.V.    MAX DEPTH  MAX VEL
                              (ha)    (cms)   (hrs)   (mm)       (m)      (m/s)
   INFLOW : ID= 2 (  7669)   86.87    12.72   10.00 207.70       0.32       1.01
   OUTFLOW: ID= 1 (  7671)   86.87    12.67   10.00 207.70       0.31       1.00

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--------------------
| ROUTE CHN(  7670)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00        234.99        0.0600
                  53.06        234.75        0.0600      Main Channel
                  92.06        234.34        0.0600      Main Channel
                 232.28        233.82        0.0600      Main Channel
                 292.28        232.94        0.0600      Main Channel
                 316.40        232.30        0.0600      Main Channel
                 332.40        232.58        0.0600      Main Channel
                 356.40        232.15        0.0600      Main Channel
                 418.83        232.34        0.0600      Main Channel
                 474.52        231.93        0.0600      Main Channel
                 505.94        230.69        0.0600      Main Channel
                 541.95        232.04        0.0600      Main Channel
                 552.73        232.23        0.0600      Main Channel
                 739.23        232.86        0.0600      Main Channel
                 759.44        232.76        0.0600      Main Channel
                 799.56        233.26        0.0600      Main Channel
                 859.79        233.36        0.0600      Main Channel
                 906.16        233.77        0.0600      Main Channel
                 940.38        234.79    0.0600 /0.0600  Main Channel
                 960.79        235.04        0.0600

     <---------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
        (m)      (m)     (cu.m.)      (cms)        (m/s)      (min)
       0.21   230.90    .104E+04        0.4         0.32      45.78
       0.43   231.12    .416E+04        2.4         0.50      28.84
       0.64   231.33    .937E+04        7.1         0.66      22.01
       0.86   231.55    .167E+05       15.3         0.80      18.17
       1.07   231.76    .260E+05       27.7         0.92      15.66
       1.29   231.98    .376E+05       43.0         0.99      14.56
       1.50   232.19    .549E+05       55.3         0.87      16.57
       1.72   232.41    .933E+05       80.6         0.75      19.28
       1.93   232.62    .153E+06      152.1         0.86      16.78
       2.15   232.84    .228E+06      254.6         0.97      14.96
       2.36   233.05    .318E+06      418.6         1.14      12.68
       2.58   233.27    .414E+06      620.1         1.30      11.13
       2.79   233.48    .524E+06      831.7         1.38      10.50
       3.01   233.70    .643E+06     1122.6         1.52       9.55
       3.22   233.91    .769E+06     1446.6         1.63       8.86
       3.44   234.13    .906E+06     1792.6         1.72       8.43
       3.65   234.34    .106E+07     2189.3         1.80       8.04
       3.98   234.67    .130E+07     3042.9         2.04       7.10
       4.30   234.99    .155E+07     4039.2         2.26       6.41

                                  <---- hydrograph ---->   <-pipe / channel->
                           AREA     QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                           (ha)     (cms)   (hrs)   (mm)       (m)      (m/s)
  INFLOW : ID= 2 (  7671)  86.87    12.67   10.00 207.70       0.79      0.75
  OUTFLOW: ID= 1 (  7670)  86.87    11.88   10.08 207.69       0.77      0.73



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| CALIB            |
| STANDHYD (  7667)|   Area    (ha)=  54.38
|ID= 1 DT= 5.0 min |   Total Imp(%)=  80.10   Dir. Conn.(%)=  80.04
--------------------
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		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	52.50	
over	(min)	10.00	20.00	
Storage Coeff.	(min)=	8.11 (ii)	17.53 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	20.00	
Unit Hyd. peak	(cms)=	0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	6.40	1.51	7.910 (iii)
TIME TO PEAK	(hrs)=	10.00	10.00	10.00
RUNOFF VOLUME	(mm)=	210.00	189.56	205.92
TOTAL RAINFALL	(mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT	=	0.99	0.89	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

```
          CN*  =  93.0    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  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7667):    54.38   7.910    10.00   205.92
     + ID2= 2 (  7670):    86.87  11.877    10.08   207.69
       ==========================================================
       ID = 3 (  7668):   141.25  19.587    10.00   207.01

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7415)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00         228.37        0.0600
                  37.24         228.58        0.0600      Main Channel
                 103.47         228.14        0.0600      Main Channel
                 128.49         227.50        0.0600      Main Channel
                 165.99         227.25        0.0600      Main Channel
                 207.42         227.13        0.0600      Main Channel
                 269.17         227.55        0.0600      Main Channel
                 330.99         227.38        0.0600      Main Channel
                 382.77         226.05        0.0600      Main Channel
                 435.35         225.42        0.0600      Main Channel
                 499.95         223.27        0.0600      Main Channel
                 546.11         225.36        0.0600      Main Channel
                 624.78         225.07        0.0600      Main Channel
                 738.92         226.66        0.0600      Main Channel
                 765.34         227.40        0.0600      Main Channel
                 846.93         228.42        0.0600      Main Channel
                 904.88         228.21        0.0600      Main Channel
                 958.92         229.00        0.0600      Main Channel
                 983.38         229.86    0.0600 /0.0600  Main Channel
                 999.71         230.75        0.0600

     <--------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
       (m)       (m)     (cu.m.)      (cms)        (m/s)      (min)
      0.26   223.53    .100E+04        0.4         0.23       42.43
      0.51   223.78    .402E+04        2.5         0.37       26.73
      0.77   224.04    .904E+04        7.4         0.48       20.40
      1.03   224.30    .161E+05       15.9         0.58       16.84
      1.28   224.55    .251E+05       28.9         0.67       14.51
      1.54   224.81    .362E+05       46.9         0.76       12.85
      1.79   225.06    .492E+05       70.8         0.84       11.60
      2.05   225.32    .706E+05       79.7         0.66       14.76
      2.31   225.58    .104E+06      130.9         0.74       13.19
      2.56   225.83    .143E+06      201.0         0.83       11.82
      2.82   226.09    .187E+06      291.3         0.91       10.72
      3.08   226.35    .237E+06      407.3         1.01        9.70
      3.33   226.60    .291E+06      544.1         1.10        8.92
      3.59   226.86    .349E+06      709.4         1.19        8.20
      3.84   227.11    .410E+06      898.3         1.29        7.61
      4.10   227.37    .481E+06      997.4         1.22        8.04
```

4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7668)	141.25	19.59	10.00	207.01	1.10	0.60
OUTFLOW: ID= 1 (7415)	141.25	18.37	10.17	207.01	1.07	0.60

CALIB		
STANDHYD (7414)	Area (ha)=	44.87
ID= 1 DT= 5.0 min	Total Imp(%)=	72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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

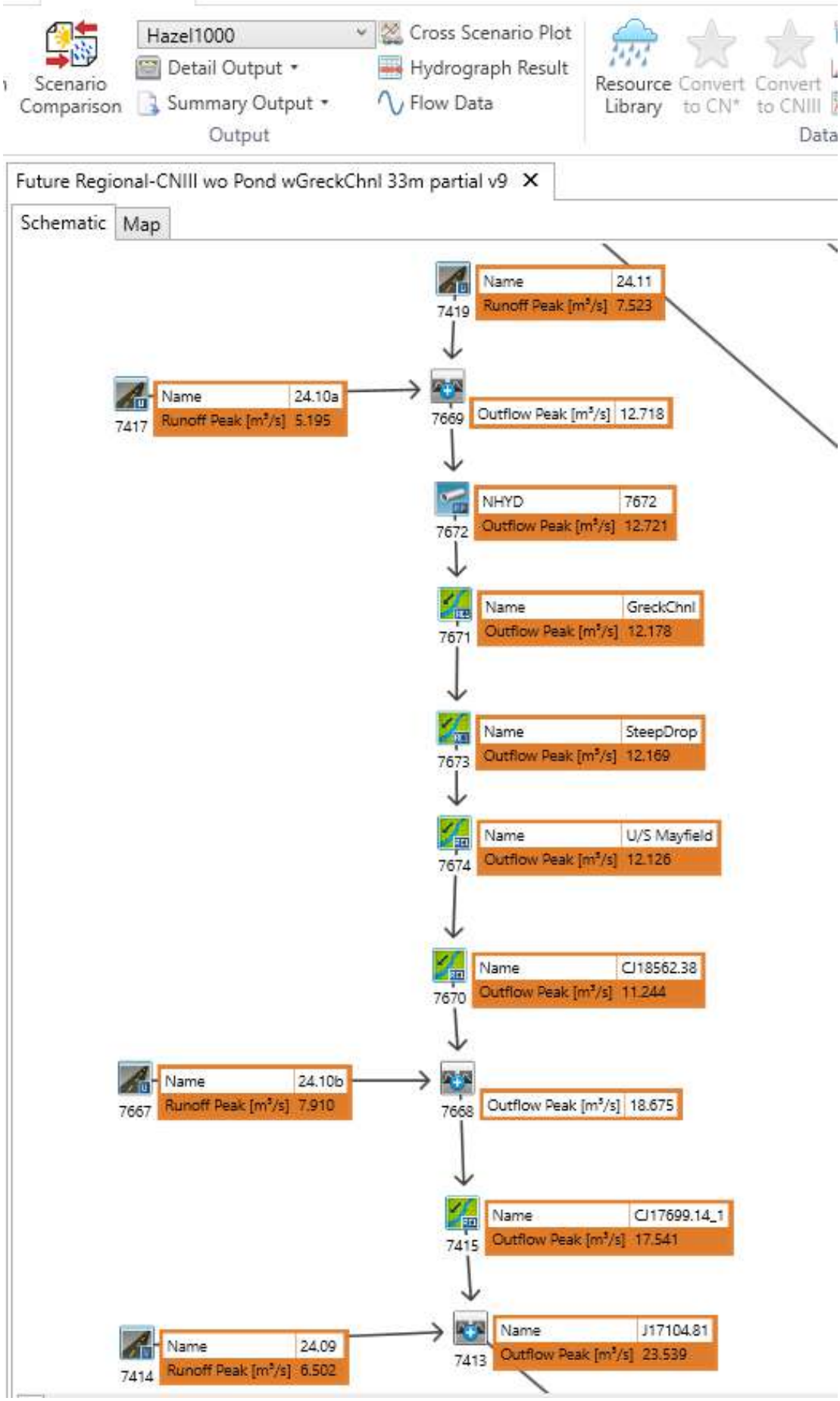
Max.Eff.Inten.(mm/hr)=	53.00	52.45	
over (min)	10.00	20.00	
Storage Coeff. (min)=	7.74 (ii)	17.29 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.13	0.06	
			TOTALS
PEAK FLOW (cms)=	4.77	1.73	6.502 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.54	204.32
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7414):		44.87	6.502	10.00	204.32
+ ID2= 2 (7415):		141.25	18.373	10.17	207.01
ID = 3 (7413):		186.12	24.464	10.08	206.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

VO Modeling Results Alternative Flow Routing
Scenario 4: Future Conditions – Proposed Natural Channel by Greck



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**************************************************
** SIMULATION:1. 2 Year 6 Hour AES (Bloor, TRCA) **
**************************************************
--------------------
| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    4.32 | 3.250    9.36 |  4.83    0.72
              0.167    0.00 | 1.750    4.32 | 3.333    5.04 |  4.92    0.72
              0.250    0.00 | 1.833   12.24 | 3.417    5.04 |  5.00    0.72
              0.333    0.72 | 1.917   12.24 | 3.500    5.04 |  5.08    0.72
              0.417    0.72 | 2.000   12.24 | 3.583    5.04 |  5.17    0.72
              0.500    0.72 | 2.083   12.24 | 3.667    5.04 |  5.25    0.72
              0.583    0.72 | 2.167   12.24 | 3.750    5.04 |  5.33    0.72
              0.667    0.72 | 2.250   12.24 | 3.833    2.88 |  5.42    0.72
              0.750    0.72 | 2.333   33.12 | 3.917    2.88 |  5.50    0.72
              0.833    0.72 | 2.417   33.12 | 4.000    2.88 |  5.58    0.72
              0.917    0.72 | 2.500   33.12 | 4.083    2.88 |  5.67    0.72
              1.000    0.72 | 2.583   33.12 | 4.167    2.88 |  5.75    0.72
              1.083    0.72 | 2.667   33.12 | 4.250    2.88 |  5.83    0.72
              1.167    0.72 | 2.750   33.12 | 4.333    1.44 |  5.92    0.72
              1.250    0.72 | 2.833    9.36 | 4.417    1.44 |  6.00    0.72
              1.333    4.32 | 2.917    9.36 | 4.500    1.44 |  6.08    0.72
              1.417    4.32 | 3.000    9.36 | 4.583    1.44 |  6.17    0.72
              1.500    4.32 | 3.083    9.36 | 4.667    1.44 |  6.25    0.72
              1.583    4.32 | 3.167    9.36 | 4.750    1.44 |

     Max.Eff.Inten.(mm/hr)=      33.12         24.19
               over (min)        10.00         15.00
     Storage Coeff.  (min)=      10.57 (ii)    14.47 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.11          0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       4.24          0.13      4.363 (iii)
     TIME TO PEAK    (hrs)=       2.75          2.83       2.75
     RUNOFF VOLUME    (mm)=      34.00         19.17      33.23
     TOTAL RAINFALL   (mm)=      36.00         36.00      36.00
     RUNOFF COEFFICIENT   =       0.94          0.53       0.92


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  7417)|   Area    (ha)=  35.65
```

|ID= 1 DT= 5.0 min | Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	4.32	3.250	9.36	4.83	0.72
0.167	0.00	1.750	4.32	3.333	5.04	4.92	0.72
0.250	0.00	1.833	12.24	3.417	5.04	5.00	0.72
0.333	0.72	1.917	12.24	3.500	5.04	5.08	0.72
0.417	0.72	2.000	12.24	3.583	5.04	5.17	0.72
0.500	0.72	2.083	12.24	3.667	5.04	5.25	0.72
0.583	0.72	2.167	12.24	3.750	5.04	5.33	0.72
0.667	0.72	2.250	12.24	3.833	2.88	5.42	0.72
0.750	0.72	2.333	33.12	3.917	2.88	5.50	0.72
0.833	0.72	2.417	33.12	4.000	2.88	5.58	0.72
0.917	0.72	2.500	33.12	4.083	2.88	5.67	0.72
1.000	0.72	2.583	33.12	4.167	2.88	5.75	0.72
1.083	0.72	2.667	33.12	4.250	2.88	5.83	0.72
1.167	0.72	2.750	33.12	4.333	1.44	5.92	0.72
1.250	0.72	2.833	9.36	4.417	1.44	6.00	0.72
1.333	4.32	2.917	9.36	4.500	1.44	6.08	0.72
1.417	4.32	3.000	9.36	4.583	1.44	6.17	0.72
1.500	4.32	3.083	9.36	4.667	1.44	6.25	0.72
1.583	4.32	3.167	9.36	4.750	1.44		

				TOTALS
Max.Eff.Inten.(mm/hr)=		33.12	23.51	
over (min)		10.00	25.00	
Storage Coeff. (min)=		8.62 (ii)	21.62 (ii)	
Unit Hyd. Tpeak (min)=		10.00	25.00	
Unit Hyd. peak (cms)=		0.12	0.05	
PEAK FLOW	(cms)=	2.55	0.28	2.765 (iii)
TIME TO PEAK	(hrs)=	2.75	3.00	2.75
RUNOFF VOLUME	(mm)=	34.00	19.21	31.05
TOTAL RAINFALL	(mm)=	36.00	36.00	36.00
RUNOFF COEFFICIENT	=	0.94	0.53	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7417):		35.65	2.765	2.75	31.05
+ ID2= 2 (7419):		51.22	4.363	2.75	33.23
ID = 3 (7669):		86.87	7.129	2.75	32.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTEPIPE(7672)| IN= 2---> OUT= 1 | DT= 5.0 min |

PIPE Number = 1.00
Width (mm)=2400.00 Height (mm)=1800.00
Length (m)= 90.00
Slope (m/m)= 0.017
Manning n = 0.013

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.09	.205E+02	0.5	1.98	0.76
0.19	.409E+02	1.4	3.00	0.50
0.28	.614E+02	2.6	3.77	0.40
0.38	.819E+02	4.0	4.38	0.34
0.47	.102E+03	5.6	4.89	0.31
0.57	.123E+03	7.3	5.32	0.28
0.66	.143E+03	9.1	5.69	0.26
0.76	.164E+03	11.0	6.02	0.25
0.85	.184E+03	12.9	6.31	0.24
0.95	.205E+03	14.9	6.57	0.23
1.04	.225E+03	17.0	6.80	0.22
1.14	.246E+03	19.1	7.01	0.21
1.23	.266E+03	21.3	7.20	0.21
1.33	.286E+03	23.5	7.38	0.20
1.42	.307E+03	25.7	7.54	0.20
1.52	.327E+03	28.0	7.68	0.20
1.61	.348E+03	30.2	7.82	0.19
1.71	.368E+03	32.5	7.95	0.19
1.80	.389E+03	34.8	8.06	0.19

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	7.13	2.75	32.33	0.56	5.28
OUTFLOW: ID= 1 (7672)	86.87	7.10	2.75	32.33	0.56	5.28

| ROUTE CHN(7671)| IN= 2---> OUT= 1 |

Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.524E+02	0.0	0.18	34.47

0.22	0.22	.124E+03	0.1	0.27	23.53
0.34	0.34	.215E+03	0.2	0.33	18.93
0.45	0.45	.325E+03	0.3	0.39	16.23
0.58	0.58	.789E+03	0.7	0.33	19.48
0.70	0.70	.131E+04	1.2	0.34	18.37
0.83	0.83	.186E+04	1.8	0.38	16.82
0.96	0.96	.244E+04	2.6	0.41	15.47
1.08	1.08	.305E+04	3.5	0.44	14.36
1.21	1.21	.370E+04	4.6	0.47	13.45
1.34	1.34	.453E+04	4.9	0.41	15.49
1.46	1.46	.589E+04	6.6	0.42	14.93
1.59	1.59	.728E+04	8.5	0.45	14.22
1.72	1.72	.870E+04	10.7	0.47	13.50
1.84	1.84	.101E+05	13.2	0.49	12.83
1.97	1.97	.116E+05	15.8	0.52	12.23
2.10	2.10	.131E+05	18.7	0.54	11.68
2.22	2.22	.147E+05	21.9	0.57	11.19
2.35	2.35	.163E+05	25.2	0.59	10.75

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7672)	86.87	7.10	2.75	32.33	1.50	0.43
OUTFLOW: ID= 1 (7671)	86.87	5.74	2.83	32.33	1.40	0.42

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7673)| | IN= 2---> OUT= 1 |	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.620E+01	0.2	1.16	0.65
0.22	0.22	.147E+02	0.6	1.70	0.44
0.34	0.34	.254E+02	1.2	2.12	0.35
0.45	0.45	.385E+02	2.1	2.47	0.30
0.58	0.58	.934E+02	4.3	2.06	0.36
0.70	0.70	.155E+03	7.5	2.18	0.34
0.83	0.83	.220E+03	11.6	2.38	0.31
0.96	0.96	.289E+03	16.6	2.59	0.29
1.08	1.08	.361E+03	22.4	2.79	0.27
1.21	1.21	.438E+03	29.0	2.98	0.25
1.34	1.34	.537E+03	30.9	2.59	0.29
1.46	1.46	.698E+03	41.6	2.68	0.28
1.59	1.59	.862E+03	54.0	2.82	0.27

1.72	1.72	.103E+04	67.9	2.97	0.25
1.84	1.84	.120E+04	83.3	3.12	0.24
1.97	1.97	.138E+04	100.2	3.28	0.23
2.10	2.10	.156E+04	118.6	3.43	0.22
2.22	2.22	.174E+04	138.3	3.58	0.21
2.35	2.35	.192E+04	159.4	3.73	0.20

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7671)	86.87	5.74	2.83	32.33	0.63	2.11
OUTFLOW: ID= 1 (7673)	86.87	5.81	2.83	32.33	0.64	2.11

ROUTE CHN(7674)|
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.220E+01	0.0	0.26	1.03
0.22	0.22	.522E+01	0.1	0.38	0.70
0.34	0.34	.905E+01	0.3	0.47	0.56
0.45	0.45	.137E+02	0.5	0.55	0.48
0.58	0.58	.332E+02	1.0	0.46	0.58
0.70	0.70	.551E+02	1.7	0.49	0.55
0.83	0.83	.782E+02	2.6	0.53	0.50
0.96	0.96	.103E+03	3.7	0.58	0.46
1.08	1.08	.128E+03	5.0	0.62	0.43
1.21	1.21	.156E+03	6.5	0.67	0.40
1.34	1.34	.191E+03	6.9	0.58	0.46
1.46	1.46	.248E+03	9.3	0.60	0.44
1.59	1.59	.306E+03	12.1	0.63	0.42
1.72	1.72	.366E+03	15.2	0.66	0.40
1.84	1.84	.427E+03	18.6	0.70	0.38
1.97	1.97	.490E+03	22.4	0.73	0.36
2.10	2.10	.553E+03	26.5	0.77	0.35
2.22	2.22	.618E+03	30.9	0.80	0.33
2.35	2.35	.684E+03	35.6	0.83	0.32

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7673)	86.87	5.81	2.83	32.33	1.15	0.65
OUTFLOW: ID= 1 (7674)	86.87	5.82	2.83	32.33	1.16	0.65

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

| ROUTE CHN(7670)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7674)	86.87	5.82	2.83	32.33	0.59	0.61
OUTFLOW: ID= 1 (7670)	86.87	4.31	3.08	32.33	0.52	0.56

CALIB	
STANDHYD (7667)	Area (ha)= 54.38
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	4.32	3.250	9.36	4.83	0.72
0.167	0.00	1.750	4.32	3.333	5.04	4.92	0.72
0.250	0.00	1.833	12.24	3.417	5.04	5.00	0.72
0.333	0.72	1.917	12.24	3.500	5.04	5.08	0.72
0.417	0.72	2.000	12.24	3.583	5.04	5.17	0.72
0.500	0.72	2.083	12.24	3.667	5.04	5.25	0.72
0.583	0.72	2.167	12.24	3.750	5.04	5.33	0.72
0.667	0.72	2.250	12.24	3.833	2.88	5.42	0.72
0.750	0.72	2.333	33.12	3.917	2.88	5.50	0.72
0.833	0.72	2.417	33.12	4.000	2.88	5.58	0.72
0.917	0.72	2.500	33.12	4.083	2.88	5.67	0.72
1.000	0.72	2.583	33.12	4.167	2.88	5.75	0.72
1.083	0.72	2.667	33.12	4.250	2.88	5.83	0.72
1.167	0.72	2.750	33.12	4.333	1.44	5.92	0.72
1.250	0.72	2.833	9.36	4.417	1.44	6.00	0.72
1.333	4.32	2.917	9.36	4.500	1.44	6.08	0.72
1.417	4.32	3.000	9.36	4.583	1.44	6.17	0.72
1.500	4.32	3.083	9.36	4.667	1.44	6.25	0.72
1.583	4.32	3.167	9.36	4.750	1.44		

Max.Eff.Inten.	(mm/hr)=	33.12	23.51	
	over (min)	10.00	25.00	
Storage Coeff.	(min)=	9.78 (ii)	22.78 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	25.00	
Unit Hyd. peak	(cms)=	0.11	0.05	
				TOTALS
PEAK FLOW	(cms)=	3.84	0.42	4.157 (iii)
TIME TO PEAK	(hrs)=	2.75	3.00	2.75
RUNOFF VOLUME	(mm)=	34.00	19.21	31.05
TOTAL RAINFALL	(mm)=	36.00	36.00	36.00
RUNOFF COEFFICIENT	=	0.94	0.53	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)	
1 + 2 = 3	

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7667):	54.38	4.157	2.75	31.05
+ ID2= 2 (7670):	86.87	4.307	3.08	32.33

```
      ==================================================
      ID = 3 (  7668):   141.25   7.513     2.83    31.84

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7415)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00         228.37        0.0600
                  37.24         228.58        0.0600      Main Channel
                 103.47         228.14        0.0600      Main Channel
                 128.49         227.50        0.0600      Main Channel
                 165.99         227.25        0.0600      Main Channel
                 207.42         227.13        0.0600      Main Channel
                 269.17         227.55        0.0600      Main Channel
                 330.99         227.38        0.0600      Main Channel
                 382.77         226.05        0.0600      Main Channel
                 435.35         225.42        0.0600      Main Channel
                 499.95         223.27        0.0600      Main Channel
                 546.11         225.36        0.0600      Main Channel
                 624.78         225.07        0.0600      Main Channel
                 738.92         226.66        0.0600      Main Channel
                 765.34         227.40        0.0600      Main Channel
                 846.93         228.42        0.0600      Main Channel
                 904.88         228.21        0.0600      Main Channel
                 958.92         229.00        0.0600      Main Channel
                 983.38         229.86    0.0600 /0.0600  Main Channel
                 999.71         230.75        0.0600

     <---------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV       VOLUME     FLOW RATE     VELOCITY    TRAV.TIME
       (m)       (m)      (cu.m.)       (cms)         (m/s)       (min)
      0.26    223.53     .100E+04        0.4          0.23       42.43
      0.51    223.78     .402E+04        2.5          0.37       26.73
      0.77    224.04     .904E+04        7.4          0.48       20.40
      1.03    224.30     .161E+05       15.9          0.58       16.84
      1.28    224.55     .251E+05       28.9          0.67       14.51
      1.54    224.81     .362E+05       46.9          0.76       12.85
      1.79    225.06     .492E+05       70.8          0.84       11.60
      2.05    225.32     .706E+05       79.7          0.66       14.76
      2.31    225.58     .104E+06      130.9          0.74       13.19
      2.56    225.83     .143E+06      201.0          0.83       11.82
      2.82    226.09     .187E+06      291.3          0.91       10.72
      3.08    226.35     .237E+06      407.3          1.01        9.70
      3.33    226.60     .291E+06      544.1          1.10        8.92
      3.59    226.86     .349E+06      709.4          1.19        8.20
      3.84    227.11     .410E+06      898.3          1.29        7.61
      4.10    227.37     .481E+06      997.4          1.22        8.04
      4.36    227.63     .573E+06     1149.4          1.18        8.31
      4.61    227.88     .674E+06     1464.0          1.27        7.68
      4.87    228.14     .781E+06     1814.9          1.36        7.17

                                    <---- hydrograph ---->   <-pipe / channel->
                              AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                              (ha)    (cms)   (hrs)   (mm)      (m)       (m/s)
   INFLOW : ID= 2 (  7668)  141.25     7.51    2.83  31.84      0.77       0.48
   OUTFLOW: ID= 1 (  7415)  141.25     5.93    3.08  31.83      0.69       0.44



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--------------------
| CALIB            |
| STANDHYD (  7414)|   Area    (ha)=  44.87
|ID= 1 DT= 5.0 min |   Total Imp(%)=  72.29   Dir. Conn.(%)=  72.23
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      32.44         12.43
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.73          1.73
     Length            (m)=     546.93         40.00
     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    0.00 | 1.667    4.32 | 3.250    9.36 |  4.83    0.72
              0.167    0.00 | 1.750    4.32 | 3.333    5.04 |  4.92    0.72
              0.250    0.00 | 1.833   12.24 | 3.417    5.04 |  5.00    0.72
              0.333    0.72 | 1.917   12.24 | 3.500    5.04 |  5.08    0.72
              0.417    0.72 | 2.000   12.24 | 3.583    5.04 |  5.17    0.72
              0.500    0.72 | 2.083   12.24 | 3.667    5.04 |  5.25    0.72
              0.583    0.72 | 2.167   12.24 | 3.750    5.04 |  5.33    0.72
              0.667    0.72 | 2.250   12.24 | 3.833    2.88 |  5.42    0.72
              0.750    0.72 | 2.333   33.12 | 3.917    2.88 |  5.50    0.72
              0.833    0.72 | 2.417   33.12 | 4.000    2.88 |  5.58    0.72
              0.917    0.72 | 2.500   33.12 | 4.083    2.88 |  5.67    0.72
              1.000    0.72 | 2.583   33.12 | 4.167    2.88 |  5.75    0.72
              1.083    0.72 | 2.667   33.12 | 4.250    2.88 |  5.83    0.72
              1.167    0.72 | 2.750   33.12 | 4.333    1.44 |  5.92    0.72
              1.250    0.72 | 2.833    9.36 | 4.417    1.44 |  6.00    0.72
              1.333    4.32 | 2.917    9.36 | 4.500    1.44 |  6.08    0.72
              1.417    4.32 | 3.000    9.36 | 4.583    1.44 |  6.17    0.72
              1.500    4.32 | 3.083    9.36 | 4.667    1.44 |  6.25    0.72
              1.583    4.32 | 3.167    9.36 | 4.750    1.44 |

     Max.Eff.Inten.(mm/hr)=      33.12         23.48
               over (min)        10.00         25.00
     Storage Coeff.  (min)=       9.35 (ii)    22.51 (ii)
     Unit Hyd. Tpeak (min)=      10.00         25.00
     Unit Hyd. peak  (cms)=       0.12          0.05
                                                          *TOTALS*
     PEAK FLOW       (cms)=       2.87          0.49        3.242 (iii)
     TIME TO PEAK    (hrs)=       2.75          3.00         2.75
     RUNOFF VOLUME    (mm)=      34.00         19.20        29.89
     TOTAL RAINFALL   (mm)=      36.00         36.00        36.00
     RUNOFF COEFFICIENT   =       0.94          0.53         0.83


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   3.242     2.75    29.89
```

```
 + ID2= 2 (  7415):   141.25   5.930     3.08    31.83
   ==================================================
   ID = 3 (  7413):   186.12   8.269     2.83    31.37

  NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
************************************************
** SIMULATION:2. 5 Year 6 Hour AES (Bloor, TRCA) **
************************************************
--------------------
| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                            IMPERVIOUS    PERVIOUS (i)
  Surface Area     (ha)=      48.56         2.66
  Dep. Storage     (mm)=       2.00         5.00
  Average Slope     (%)=       1.31         1.31
  Length            (m)=     584.35        40.00
  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    0.00 | 1.667    5.74 | 3.250   12.43 |  4.83    0.96
  0.167    0.00 | 1.750    5.74 | 3.333    6.69 |  4.92    0.96
  0.250    0.00 | 1.833   16.25 | 3.417    6.69 |  5.00    0.96
  0.333    0.96 | 1.917   16.25 | 3.500    6.69 |  5.08    0.96
  0.417    0.96 | 2.000   16.25 | 3.583    6.69 |  5.17    0.96
  0.500    0.96 | 2.083   16.25 | 3.667    6.69 |  5.25    0.96
  0.583    0.96 | 2.167   16.25 | 3.750    6.69 |  5.33    0.96
  0.667    0.96 | 2.250   16.25 | 3.833    3.82 |  5.42    0.96
  0.750    0.96 | 2.333   43.98 | 3.917    3.82 |  5.50    0.96
  0.833    0.96 | 2.417   43.98 | 4.000    3.82 |  5.58    0.96
  0.917    0.96 | 2.500   43.98 | 4.083    3.82 |  5.67    0.96
  1.000    0.96 | 2.583   43.98 | 4.167    3.82 |  5.75    0.96
  1.083    0.96 | 2.667   43.98 | 4.250    3.82 |  5.83    0.96
  1.167    0.96 | 2.750   43.98 | 4.333    1.91 |  5.92    0.96
  1.250    0.96 | 2.833   12.43 | 4.417    1.91 |  6.00    0.96
  1.333    5.74 | 2.917   12.43 | 4.500    1.91 |  6.08    0.96
  1.417    5.74 | 3.000   12.43 | 4.583    1.91 |  6.17    0.96
  1.500    5.74 | 3.083   12.43 | 4.667    1.91 |  6.25    0.96
  1.583    5.74 | 3.167   12.43 | 4.750    1.91 |

  Max.Eff.Inten.(mm/hr)=      43.98        35.77
            over (min)        10.00        15.00
  Storage Coeff.  (min)=       9.44 (ii)   12.92 (ii)
  Unit Hyd. Tpeak (min)=      10.00        15.00
  Unit Hyd. peak  (cms)=       0.12         0.08
                                                    *TOTALS*
  PEAK FLOW       (cms)=       5.71         0.21       5.912 (iii)
  TIME TO PEAK    (hrs)=       2.75         2.83        2.75
  RUNOFF VOLUME    (mm)=      45.81        29.59       44.97
  TOTAL RAINFALL   (mm)=      47.81        47.81       47.81
  RUNOFF COEFFICIENT   =       0.96         0.62        0.94


    (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
         CN*  =  93.0    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.

CALIB	
STANDHYD (7417)	Area (ha)= 35.65
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	5.74	3.250	12.43	4.83	0.96
0.167	0.00	1.750	5.74	3.333	6.69	4.92	0.96
0.250	0.00	1.833	16.25	3.417	6.69	5.00	0.96
0.333	0.96	1.917	16.25	3.500	6.69	5.08	0.96
0.417	0.96	2.000	16.25	3.583	6.69	5.17	0.96
0.500	0.96	2.083	16.25	3.667	6.69	5.25	0.96
0.583	0.96	2.167	16.25	3.750	6.69	5.33	0.96
0.667	0.96	2.250	16.25	3.833	3.82	5.42	0.96
0.750	0.96	2.333	43.98	3.917	3.82	5.50	0.96
0.833	0.96	2.417	43.98	4.000	3.82	5.58	0.96
0.917	0.96	2.500	43.98	4.083	3.82	5.67	0.96
1.000	0.96	2.583	43.98	4.167	3.82	5.75	0.96
1.083	0.96	2.667	43.98	4.250	3.82	5.83	0.96
1.167	0.96	2.750	43.98	4.333	1.91	5.92	0.96
1.250	0.96	2.833	12.43	4.417	1.91	6.00	0.96
1.333	5.74	2.917	12.43	4.500	1.91	6.08	0.96
1.417	5.74	3.000	12.43	4.583	1.91	6.17	0.96
1.500	5.74	3.083	12.43	4.667	1.91	6.25	0.96
1.583	5.74	3.167	12.43	4.750	1.91		

				TOTALS
Max.Eff.Inten.(mm/hr)=		43.98	35.10	
over (min)		10.00	20.00	
Storage Coeff. (min)=		7.70 (ii)	18.77 (ii)	
Unit Hyd. Tpeak (min)=		10.00	20.00	
Unit Hyd. peak (cms)=		0.13	0.06	
PEAK FLOW	(cms)=	3.42	0.48	3.845 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	45.81	29.63	42.58
TOTAL RAINFALL	(mm)=	47.81	47.81	47.81
RUNOFF COEFFICIENT	=	0.96	0.62	0.89

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)

1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (7417):	35.65	3.845	2.75	42.58
	+ ID2= 2 (7419):	51.22	5.912	2.75	44.97
	ID = 3 (7669):	86.87	9.757	2.75	43.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTEPIPE(7672) / IN= 2---> OUT= 1 / DT= 5.0 min			
	PIPE Number	= 1.00	
	Width (mm)	=2400.00	Height (mm)=1800.00
	Length (m)	= 90.00	
	Slope (m/m)	= 0.017	
	Manning n	= 0.013	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.09	.205E+02	0.5	1.98	0.76
0.19	.409E+02	1.4	3.00	0.50
0.28	.614E+02	2.6	3.77	0.40
0.38	.819E+02	4.0	4.38	0.34
0.47	.102E+03	5.6	4.89	0.31
0.57	.123E+03	7.3	5.32	0.28
0.66	.143E+03	9.1	5.69	0.26
0.76	.164E+03	11.0	6.02	0.25
0.85	.184E+03	12.9	6.31	0.24
0.95	.205E+03	14.9	6.57	0.23
1.04	.225E+03	17.0	6.80	0.22
1.14	.246E+03	19.1	7.01	0.21
1.23	.266E+03	21.3	7.20	0.21
1.33	.286E+03	23.5	7.38	0.20
1.42	.307E+03	25.7	7.54	0.20
1.52	.327E+03	28.0	7.68	0.20
1.61	.348E+03	30.2	7.82	0.19
1.71	.368E+03	32.5	7.95	0.19
1.80	.389E+03	34.8	8.06	0.19

		<---- hydrograph ----> AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW :	ID= 2 (7669)	86.87	9.76	2.75	43.99	0.70	5.81
OUTFLOW:	ID= 1 (7672)	86.87	9.72	2.75	43.99	0.70	5.80

ROUTE CHN(7671) / IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel

33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.524E+02	0.0	0.18	34.47
0.22	0.22	.124E+03	0.1	0.27	23.53
0.34	0.34	.215E+03	0.2	0.33	18.93
0.45	0.45	.325E+03	0.3	0.39	16.23
0.58	0.58	.789E+03	0.7	0.33	19.48
0.70	0.70	.131E+04	1.2	0.34	18.37
0.83	0.83	.186E+04	1.8	0.38	16.82
0.96	0.96	.244E+04	2.6	0.41	15.47
1.08	1.08	.305E+04	3.5	0.44	14.36
1.21	1.21	.370E+04	4.6	0.47	13.45
1.34	1.34	.453E+04	4.9	0.41	15.49
1.46	1.46	.589E+04	6.6	0.42	14.93
1.59	1.59	.728E+04	8.5	0.45	14.22
1.72	1.72	.870E+04	10.7	0.47	13.50
1.84	1.84	.101E+05	13.2	0.49	12.83
1.97	1.97	.116E+05	15.8	0.52	12.23
2.10	2.10	.131E+05	18.7	0.54	11.68
2.22	2.22	.147E+05	21.9	0.57	11.19
2.35	2.35	.163E+05	25.2	0.59	10.75

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7672)	86.87	9.72	2.75	43.99	1.66	0.46
OUTFLOW: ID= 1 (7671)	86.87	8.05	2.83	43.99	1.56	0.44

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7673)|
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.620E+01	0.2	1.16	0.65
0.22	0.22	.147E+02	0.6	1.70	0.44
0.34	0.34	.254E+02	1.2	2.12	0.35
0.45	0.45	.385E+02	2.1	2.47	0.30
0.58	0.58	.934E+02	4.3	2.06	0.36
0.70	0.70	.155E+03	7.5	2.18	0.34
0.83	0.83	.220E+03	11.6	2.38	0.31

0.96	0.96	.289E+03	16.6	2.59	0.29
1.08	1.08	.361E+03	22.4	2.79	0.27
1.21	1.21	.438E+03	29.0	2.98	0.25
1.34	1.34	.537E+03	30.9	2.59	0.29
1.46	1.46	.698E+03	41.6	2.68	0.28
1.59	1.59	.862E+03	54.0	2.82	0.27
1.72	1.72	.103E+04	67.9	2.97	0.25
1.84	1.84	.120E+04	83.3	3.12	0.24
1.97	1.97	.138E+04	100.2	3.28	0.23
2.10	2.10	.156E+04	118.6	3.43	0.22
2.22	2.22	.174E+04	138.3	3.58	0.21
2.35	2.35	.192E+04	159.4	3.73	0.20

		<---- hydrograph ---->		<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7671)	86.87	8.05	2.83	43.99	0.72	2.21
OUTFLOW: ID= 1 (7673)	86.87	8.06	2.83	43.99	0.72	2.21

ROUTE CHN(7674)
IN= 2---> OUT= 1

Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.220E+01	0.0	0.26	1.03
0.22	0.22	.522E+01	0.1	0.38	0.70
0.34	0.34	.905E+01	0.3	0.47	0.56
0.45	0.45	.137E+02	0.5	0.55	0.48
0.58	0.58	.332E+02	1.0	0.46	0.58
0.70	0.70	.551E+02	1.7	0.49	0.55
0.83	0.83	.782E+02	2.6	0.53	0.50
0.96	0.96	.103E+03	3.7	0.58	0.46
1.08	1.08	.128E+03	5.0	0.62	0.43
1.21	1.21	.156E+03	6.5	0.67	0.40
1.34	1.34	.191E+03	6.9	0.58	0.46
1.46	1.46	.248E+03	9.3	0.60	0.44
1.59	1.59	.306E+03	12.1	0.63	0.42
1.72	1.72	.366E+03	15.2	0.66	0.40
1.84	1.84	.427E+03	18.6	0.70	0.38
1.97	1.97	.490E+03	22.4	0.73	0.36
2.10	2.10	.553E+03	26.5	0.77	0.35
2.22	2.22	.618E+03	30.9	0.80	0.33
2.35	2.35	.684E+03	35.6	0.83	0.32

		<---- hydrograph ---->		<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7673)	86.87	8.06	2.83	43.99	1.40	0.59
OUTFLOW: ID= 1 (7674)	86.87	8.07	2.83	43.99	1.40	0.59

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7670)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->		<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7674)	86.87	8.07	2.83	43.99	0.67	0.67

OUTFLOW: ID= 1 (7670) 86.87 6.11 3.00 43.98 0.60 0.62

CALIB	
STANDHYD (7667)	Area (ha)= 54.38
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	5.74	3.250	12.43	4.83	0.96
0.167	0.00	1.750	5.74	3.333	6.69	4.92	0.96
0.250	0.00	1.833	16.25	3.417	6.69	5.00	0.96
0.333	0.96	1.917	16.25	3.500	6.69	5.08	0.96
0.417	0.96	2.000	16.25	3.583	6.69	5.17	0.96
0.500	0.96	2.083	16.25	3.667	6.69	5.25	0.96
0.583	0.96	2.167	16.25	3.750	6.69	5.33	0.96
0.667	0.96	2.250	16.25	3.833	3.82	5.42	0.96
0.750	0.96	2.333	43.98	3.917	3.82	5.50	0.96
0.833	0.96	2.417	43.98	4.000	3.82	5.58	0.96
0.917	0.96	2.500	43.98	4.083	3.82	5.67	0.96
1.000	0.96	2.583	43.98	4.167	3.82	5.75	0.96
1.083	0.96	2.667	43.98	4.250	3.82	5.83	0.96
1.167	0.96	2.750	43.98	4.333	1.91	5.92	0.96
1.250	0.96	2.833	12.43	4.417	1.91	6.00	0.96
1.333	5.74	2.917	12.43	4.500	1.91	6.08	0.96
1.417	5.74	3.000	12.43	4.583	1.91	6.17	0.96
1.500	5.74	3.083	12.43	4.667	1.91	6.25	0.96
1.583	5.74	3.167	12.43	4.750	1.91		

Max.Eff.Inten.	(mm/hr)=	43.98	35.10	
	over (min)	10.00	20.00	
Storage Coeff.	(min)=	8.73 (ii)	19.81 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	20.00	
Unit Hyd. peak	(cms)=	0.12	0.06	
				TOTALS
PEAK FLOW	(cms)=	5.16	0.71	5.794 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	45.81	29.63	42.58
TOTAL RAINFALL	(mm)=	47.81	47.81	47.81
RUNOFF COEFFICIENT	=	0.96	0.62	0.89

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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  (  7668)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7667):     54.38    5.794      2.75     42.58
      + ID2= 2 (  7670):     86.87    6.110      3.00     43.98
        ==========================================================
        ID = 3 (  7668):    141.25   10.766      2.83     43.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7415)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
                <------ DATA FOR SECTION (   1.1) ------>
                Distance      Elevation       Manning
                    0.00         228.37        0.0600
                   37.24         228.58        0.0600      Main Channel
                  103.47         228.14        0.0600      Main Channel
                  128.49         227.50        0.0600      Main Channel
                  165.99         227.25        0.0600      Main Channel
                  207.42         227.13        0.0600      Main Channel
                  269.17         227.55        0.0600      Main Channel
                  330.99         227.38        0.0600      Main Channel
                  382.77         226.05        0.0600      Main Channel
                  435.35         225.42        0.0600      Main Channel
                  499.95         223.27        0.0600      Main Channel
                  546.11         225.36        0.0600      Main Channel
                  624.78         225.07        0.0600      Main Channel
                  738.92         226.66        0.0600      Main Channel
                  765.34         227.40        0.0600      Main Channel
                  846.93         228.42        0.0600      Main Channel
                  904.88         228.21        0.0600      Main Channel
                  958.92         229.00        0.0600      Main Channel
                  983.38         229.86    0.0600 /0.0600  Main Channel
                  999.71         230.75        0.0600

      <--------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
        (m)       (m)     (cu.m.)      (cms)        (m/s)      (min)
       0.26   223.53    .100E+04        0.4         0.23       42.43
       0.51   223.78    .402E+04        2.5         0.37       26.73
       0.77   224.04    .904E+04        7.4         0.48       20.40
       1.03   224.30    .161E+05       15.9         0.58       16.84
       1.28   224.55    .251E+05       28.9         0.67       14.51
       1.54   224.81    .362E+05       46.9         0.76       12.85
       1.79   225.06    .492E+05       70.8         0.84       11.60
       2.05   225.32    .706E+05       79.7         0.66       14.76
       2.31   225.58    .104E+06      130.9         0.74       13.19
       2.56   225.83    .143E+06      201.0         0.83       11.82
       2.82   226.09    .187E+06      291.3         0.91       10.72
       3.08   226.35    .237E+06      407.3         1.01        9.70
       3.33   226.60    .291E+06      544.1         1.10        8.92
       3.59   226.86    .349E+06      709.4         1.19        8.20
       3.84   227.11    .410E+06      898.3         1.29        7.61
       4.10   227.37    .481E+06      997.4         1.22        8.04
       4.36   227.63    .573E+06     1149.4         1.18        8.31
       4.61   227.88    .674E+06     1464.0         1.27        7.68
       4.87   228.14    .781E+06     1814.9         1.36        7.17

                                    <---- hydrograph ---->   <-pipe / channel->
                              AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                              (ha)    (cms)   (hrs)   (mm)      (m)       (m/s)
```

INFLOW : ID= 2 (7668)	141.25	10.77	2.83	43.44	0.87	0.52
OUTFLOW: ID= 1 (7415)	141.25	8.66	3.00	43.44	0.81	0.49

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	5.74	3.250	12.43	4.83	0.96
0.167	0.00	1.750	5.74	3.333	6.69	4.92	0.96
0.250	0.00	1.833	16.25	3.417	6.69	5.00	0.96
0.333	0.96	1.917	16.25	3.500	6.69	5.08	0.96
0.417	0.96	2.000	16.25	3.583	6.69	5.17	0.96
0.500	0.96	2.083	16.25	3.667	6.69	5.25	0.96
0.583	0.96	2.167	16.25	3.750	6.69	5.33	0.96
0.667	0.96	2.250	16.25	3.833	3.82	5.42	0.96
0.750	0.96	2.333	43.98	3.917	3.82	5.50	0.96
0.833	0.96	2.417	43.98	4.000	3.82	5.58	0.96
0.917	0.96	2.500	43.98	4.083	3.82	5.67	0.96
1.000	0.96	2.583	43.98	4.167	3.82	5.75	0.96
1.083	0.96	2.667	43.98	4.250	3.82	5.83	0.96
1.167	0.96	2.750	43.98	4.333	1.91	5.92	0.96
1.250	0.96	2.833	12.43	4.417	1.91	6.00	0.96
1.333	5.74	2.917	12.43	4.500	1.91	6.08	0.96
1.417	5.74	3.000	12.43	4.583	1.91	6.17	0.96
1.500	5.74	3.083	12.43	4.667	1.91	6.25	0.96
1.583	5.74	3.167	12.43	4.750	1.91		

Max.Eff.Inten.(mm/hr)=		43.98	35.06	
over (min)		10.00	20.00	
Storage Coeff. (min)=		8.34 (ii)	19.56 (ii)	
Unit Hyd. Tpeak (min)=		10.00	20.00	
Unit Hyd. peak (cms)=		0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	3.86	0.82	4.591 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	45.81	29.62	41.31
TOTAL RAINFALL	(mm)=	47.81	47.81	47.81
RUNOFF COEFFICIENT	=	0.96	0.62	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   4.591     2.75    41.31
      + ID2= 2 (  7415):   141.25   8.664     3.00    43.44
        ==========================================================
        ID = 3 (  7413):   186.12  12.149     2.83    42.93

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
**********************************************************
** SIMULATION:3. 10 Year 6 Hour AES (Bloor, TRCA) **
**********************************************************
--------------------
| CALIB              |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    6.68 | 3.250   14.48 |  4.83    1.11
              0.167    0.00 | 1.750    6.68 | 3.333    7.80 |  4.92    1.11
              0.250    0.00 | 1.833   18.94 | 3.417    7.80 |  5.00    1.11
              0.333    1.11 | 1.917   18.94 | 3.500    7.80 |  5.08    1.11
              0.417    1.11 | 2.000   18.94 | 3.583    7.80 |  5.17    1.11
              0.500    1.11 | 2.083   18.94 | 3.667    7.80 |  5.25    1.11
              0.583    1.11 | 2.167   18.94 | 3.750    7.80 |  5.33    1.11
              0.667    1.11 | 2.250   18.94 | 3.833    4.46 |  5.42    1.11
              0.750    1.11 | 2.333   51.24 | 3.917    4.46 |  5.50    1.11
              0.833    1.11 | 2.417   51.24 | 4.000    4.46 |  5.58    1.11
              0.917    1.11 | 2.500   51.24 | 4.083    4.46 |  5.67    1.11
              1.000    1.11 | 2.583   51.24 | 4.167    4.46 |  5.75    1.11
              1.083    1.11 | 2.667   51.24 | 4.250    4.46 |  5.83    1.11
              1.167    1.11 | 2.750   51.24 | 4.333    2.23 |  5.92    1.11
              1.250    1.11 | 2.833   14.48 | 4.417    2.23 |  6.00    1.11
              1.333    6.68 | 2.917   14.48 | 4.500    2.23 |  6.08    1.11
              1.417    6.68 | 3.000   14.48 | 4.583    2.23 |  6.17    1.11
              1.500    6.68 | 3.083   14.48 | 4.667    2.23 |  6.25    1.11
              1.583    6.68 | 3.167   14.48 | 4.750    2.23 |

     Max.Eff.Inten.(mm/hr)=      51.24         43.50
               over (min)        10.00         15.00
     Storage Coeff.  (min)=       8.88 (ii)    12.16 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.12          0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       6.69          0.26        6.952 (iii)
     TIME TO PEAK    (hrs)=       2.75          2.83         2.75
     RUNOFF VOLUME    (mm)=      53.69         36.81        52.81
     TOTAL RAINFALL   (mm)=      55.69         55.69        55.69
     RUNOFF COEFFICIENT   =       0.96          0.66         0.95
```

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB	
STANDHYD (7417)	Area (ha)= 35.65
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	6.68	3.250	14.48	4.83	1.11
0.167	0.00	1.750	6.68	3.333	7.80	4.92	1.11
0.250	0.00	1.833	18.94	3.417	7.80	5.00	1.11
0.333	1.11	1.917	18.94	3.500	7.80	5.08	1.11
0.417	1.11	2.000	18.94	3.583	7.80	5.17	1.11
0.500	1.11	2.083	18.94	3.667	7.80	5.25	1.11
0.583	1.11	2.167	18.94	3.750	7.80	5.33	1.11
0.667	1.11	2.250	18.94	3.833	4.46	5.42	1.11
0.750	1.11	2.333	51.24	3.917	4.46	5.50	1.11
0.833	1.11	2.417	51.24	4.000	4.46	5.58	1.11
0.917	1.11	2.500	51.24	4.083	4.46	5.67	1.11
1.000	1.11	2.583	51.24	4.167	4.46	5.75	1.11
1.083	1.11	2.667	51.24	4.250	4.46	5.83	1.11
1.167	1.11	2.750	51.24	4.333	2.23	5.92	1.11
1.250	1.11	2.833	14.48	4.417	2.23	6.00	1.11
1.333	6.68	2.917	14.48	4.500	2.23	6.08	1.11
1.417	6.68	3.000	14.48	4.583	2.23	6.17	1.11
1.500	6.68	3.083	14.48	4.667	2.23	6.25	1.11
1.583	6.68	3.167	14.48	4.750	2.23		

				TOTALS
Max.Eff.Inten.	(mm/hr)=	51.24	42.86	
over	(min)	5.00	20.00	
Storage Coeff.	(min)=	7.24 (ii)	17.46 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	20.00	
Unit Hyd. peak	(cms)=	0.17	0.06	
PEAK FLOW	(cms)=	4.02	0.60	4.579 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	53.69	36.85	50.33
TOTAL RAINFALL	(mm)=	55.69	55.69	55.69
RUNOFF COEFFICIENT	=	0.96	0.66	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)| 1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7417):		35.65	4.579	2.75	50.33
+ ID2= 2 (7419):		51.22	6.952	2.75	52.81
ID = 3 (7669):		86.87	11.531	2.75	51.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTEPIPE(7672)| IN= 2---> OUT= 1	DT= 5.0 min

PIPE Number = 1.00
Width (mm)=2400.00 Height (mm)=1800.00
Length (m)= 90.00
Slope (m/m)= 0.017
Manning n = 0.013

TRAVEL TIME TABLE

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.09	.205E+02	0.5	1.98	0.76
0.19	.409E+02	1.4	3.00	0.50
0.28	.614E+02	2.6	3.77	0.40
0.38	.819E+02	4.0	4.38	0.34
0.47	.102E+03	5.6	4.89	0.31
0.57	.123E+03	7.3	5.32	0.28
0.66	.143E+03	9.1	5.69	0.26
0.76	.164E+03	11.0	6.02	0.25
0.85	.184E+03	12.9	6.31	0.24
0.95	.205E+03	14.9	6.57	0.23
1.04	.225E+03	17.0	6.80	0.22
1.14	.246E+03	19.1	7.01	0.21
1.23	.266E+03	21.3	7.20	0.21
1.33	.286E+03	23.5	7.38	0.20
1.42	.307E+03	25.7	7.54	0.20
1.52	.327E+03	28.0	7.68	0.20
1.61	.348E+03	30.2	7.82	0.19
1.71	.368E+03	32.5	7.95	0.19
1.80	.389E+03	34.8	8.06	0.19

	<---- hydrograph ----> AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	11.53	2.75	51.79	0.79	6.10
OUTFLOW: ID= 1 (7672)	86.87	11.55	2.75	51.79	0.79	6.11

ROUTE CHN(7671)| IN= 2---> OUT= 1

Routing time step (min)'= 5.00

DATA FOR SECTION (1.1)

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel

16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.524E+02	0.0	0.18	34.47
0.22	0.22	.124E+03	0.1	0.27	23.53
0.34	0.34	.215E+03	0.2	0.33	18.93
0.45	0.45	.325E+03	0.3	0.39	16.23
0.58	0.58	.789E+03	0.7	0.33	19.48
0.70	0.70	.131E+04	1.2	0.34	18.37
0.83	0.83	.186E+04	1.8	0.38	16.82
0.96	0.96	.244E+04	2.6	0.41	15.47
1.08	1.08	.305E+04	3.5	0.44	14.36
1.21	1.21	.370E+04	4.6	0.47	13.45
1.34	1.34	.453E+04	4.9	0.41	15.49
1.46	1.46	.589E+04	6.6	0.42	14.93
1.59	1.59	.728E+04	8.5	0.45	14.22
1.72	1.72	.870E+04	10.7	0.47	13.50
1.84	1.84	.101E+05	13.2	0.49	12.83
1.97	1.97	.116E+05	15.8	0.52	12.23
2.10	2.10	.131E+05	18.7	0.54	11.68
2.22	2.22	.147E+05	21.9	0.57	11.19
2.35	2.35	.163E+05	25.2	0.59	10.75

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7672)	86.87	11.55	2.75	51.79	1.76	0.48
OUTFLOW: ID= 1 (7671)	86.87	9.66	2.75	51.79	1.65	0.46

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7673)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.620E+01	0.2	1.16	0.65

0.22	0.22	.147E+02	0.6	1.70	0.44
0.34	0.34	.254E+02	1.2	2.12	0.35
0.45	0.45	.385E+02	2.1	2.47	0.30
0.58	0.58	.934E+02	4.3	2.06	0.36
0.70	0.70	.155E+03	7.5	2.18	0.34
0.83	0.83	.220E+03	11.6	2.38	0.31
0.96	0.96	.289E+03	16.6	2.59	0.29
1.08	1.08	.361E+03	22.4	2.79	0.27
1.21	1.21	.438E+03	29.0	2.98	0.25
1.34	1.34	.537E+03	30.9	2.59	0.29
1.46	1.46	.698E+03	41.6	2.68	0.28
1.59	1.59	.862E+03	54.0	2.82	0.27
1.72	1.72	.103E+04	67.9	2.97	0.25
1.84	1.84	.120E+04	83.3	3.12	0.24
1.97	1.97	.138E+04	100.2	3.28	0.23
2.10	2.10	.156E+04	118.6	3.43	0.22
2.22	2.22	.174E+04	138.3	3.58	0.21
2.35	2.35	.192E+04	159.4	3.73	0.20

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7671)	86.87	9.66	2.75	51.79	0.77	2.28
OUTFLOW: ID= 1 (7673)	86.87	9.62	2.75	51.79	0.77	2.28

ROUTE CHN(7674)
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.220E+01	0.0	0.26	1.03
0.22	0.22	.522E+01	0.1	0.38	0.70
0.34	0.34	.905E+01	0.3	0.47	0.56
0.45	0.45	.137E+02	0.5	0.55	0.48
0.58	0.58	.332E+02	1.0	0.46	0.58
0.70	0.70	.551E+02	1.7	0.49	0.55
0.83	0.83	.782E+02	2.6	0.53	0.50
0.96	0.96	.103E+03	3.7	0.58	0.46
1.08	1.08	.128E+03	5.0	0.62	0.43
1.21	1.21	.156E+03	6.5	0.67	0.40
1.34	1.34	.191E+03	6.9	0.58	0.46
1.46	1.46	.248E+03	9.3	0.60	0.44
1.59	1.59	.306E+03	12.1	0.63	0.42
1.72	1.72	.366E+03	15.2	0.66	0.40

1.84	1.84	.427E+03	18.6	0.70	0.38
1.97	1.97	.490E+03	22.4	0.73	0.36
2.10	2.10	.553E+03	26.5	0.77	0.35
2.22	2.22	.618E+03	30.9	0.80	0.33
2.35	2.35	.684E+03	35.6	0.83	0.32

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7673)	86.87	9.62	2.75	51.79	1.48	0.60
OUTFLOW: ID= 1 (7674)	86.87	9.87	2.75	51.79	1.72	0.66

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7670) IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10

4.30	234.99	.155E+07	4039.2	2.26	6.41	

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7674)	86.87	9.87	2.75	51.79	0.72	0.70
OUTFLOW: ID= 1 (7670)	86.87	7.34	3.00	51.79	0.65	0.66

CALIB	STANDHYD (7667)	ID= 1 DT= 5.0 min

Area (ha)= 54.38
Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	6.68	3.250	14.48	4.83	1.11
0.167	0.00	1.750	6.68	3.333	7.80	4.92	1.11
0.250	0.00	1.833	18.94	3.417	7.80	5.00	1.11
0.333	1.11	1.917	18.94	3.500	7.80	5.08	1.11
0.417	1.11	2.000	18.94	3.583	7.80	5.17	1.11
0.500	1.11	2.083	18.94	3.667	7.80	5.25	1.11
0.583	1.11	2.167	18.94	3.750	7.80	5.33	1.11
0.667	1.11	2.250	18.94	3.833	4.46	5.42	1.11
0.750	1.11	2.333	51.24	3.917	4.46	5.50	1.11
0.833	1.11	2.417	51.24	4.000	4.46	5.58	1.11
0.917	1.11	2.500	51.24	4.083	4.46	5.67	1.11
1.000	1.11	2.583	51.24	4.167	4.46	5.75	1.11
1.083	1.11	2.667	51.24	4.250	4.46	5.83	1.11
1.167	1.11	2.750	51.24	4.333	2.23	5.92	1.11
1.250	1.11	2.833	14.48	4.417	2.23	6.00	1.11
1.333	6.68	2.917	14.48	4.500	2.23	6.08	1.11
1.417	6.68	3.000	14.48	4.583	2.23	6.17	1.11
1.500	6.68	3.083	14.48	4.667	2.23	6.25	1.11
1.583	6.68	3.167	14.48	4.750	2.23		

Max.Eff.Inten.	(mm/hr)=	51.24	42.86	
over	(min)	10.00	20.00	
Storage Coeff.	(min)=	8.22 (ii)	18.44 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	20.00	
Unit Hyd. peak	(cms)=	0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	6.04	0.91	6.873 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	53.69	36.85	50.33
TOTAL RAINFALL	(mm)=	55.69	55.69	55.69
RUNOFF COEFFICIENT	=	0.96	0.66	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7668)|
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7667):		54.38	6.873	2.75	50.33
+ ID2= 2 (7670):		86.87	7.342	3.00	51.79
ID = 3 (7668):		141.25	12.834	2.83	51.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ROUTE CHN(7415)|
| IN= 2---> OUT= 1 | Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	228.37	0.0600	
37.24	228.58	0.0600	Main Channel
103.47	228.14	0.0600	Main Channel
128.49	227.50	0.0600	Main Channel
165.99	227.25	0.0600	Main Channel
207.42	227.13	0.0600	Main Channel
269.17	227.55	0.0600	Main Channel
330.99	227.38	0.0600	Main Channel
382.77	226.05	0.0600	Main Channel
435.35	225.42	0.0600	Main Channel
499.95	223.27	0.0600	Main Channel
546.11	225.36	0.0600	Main Channel
624.78	225.07	0.0600	Main Channel
738.92	226.66	0.0600	Main Channel
765.34	227.40	0.0600	Main Channel
846.93	228.42	0.0600	Main Channel
904.88	228.21	0.0600	Main Channel
958.92	229.00	0.0600	Main Channel
983.38	229.86	0.0600 /0.0600	Main Channel
999.71	230.75	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31

4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
		<---- hydrograph ---->			<-pipe / channel->	
INFLOW : ID= 2 (7668)	141.25	12.83	2.83	51.23	0.93	0.54
OUTFLOW: ID= 1 (7415)	141.25	10.42	3.00	51.22	0.86	0.51

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	6.68	3.250	14.48	4.83	1.11
0.167	0.00	1.750	6.68	3.333	7.80	4.92	1.11
0.250	0.00	1.833	18.94	3.417	7.80	5.00	1.11
0.333	1.11	1.917	18.94	3.500	7.80	5.08	1.11
0.417	1.11	2.000	18.94	3.583	7.80	5.17	1.11
0.500	1.11	2.083	18.94	3.667	7.80	5.25	1.11
0.583	1.11	2.167	18.94	3.750	7.80	5.33	1.11
0.667	1.11	2.250	18.94	3.833	4.46	5.42	1.11
0.750	1.11	2.333	51.24	3.917	4.46	5.50	1.11
0.833	1.11	2.417	51.24	4.000	4.46	5.58	1.11
0.917	1.11	2.500	51.24	4.083	4.46	5.67	1.11
1.000	1.11	2.583	51.24	4.167	4.46	5.75	1.11
1.083	1.11	2.667	51.24	4.250	4.46	5.83	1.11
1.167	1.11	2.750	51.24	4.333	2.23	5.92	1.11
1.250	1.11	2.833	14.48	4.417	2.23	6.00	1.11
1.333	6.68	2.917	14.48	4.500	2.23	6.08	1.11
1.417	6.68	3.000	14.48	4.583	2.23	6.17	1.11
1.500	6.68	3.083	14.48	4.667	2.23	6.25	1.11
1.583	6.68	3.167	14.48	4.750	2.23		

Max.Eff.Inten.	(mm/hr)=	51.24	42.81	
	over (min)	10.00	20.00	
Storage Coeff.	(min)=	7.85 (ii)	18.20 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	20.00	
Unit Hyd. peak	(cms)=	0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	4.51	1.04	5.474 (iii)
TIME TO PEAK	(hrs)=	2.75	2.92	2.75
RUNOFF VOLUME	(mm)=	53.69	36.84	49.01
TOTAL RAINFALL	(mm)=	55.69	55.69	55.69
RUNOFF COEFFICIENT	=	0.96	0.66	0.88

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

```
          CN*  =  93.0    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  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   5.474     2.75    49.01
      + ID2= 2 (  7415):   141.25  10.417     3.00    51.22
        ==========================================================
        ID = 3 (  7413):   186.12  14.678     2.83    50.69

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
**************************************************
** SIMULATION:4. 25 Year 6 Hour AES (Bloor, TRCA) **
**************************************************
--------------------
| CALIB            |
| STANDHYD (  7419)|   Area    (ha)=  51.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  94.80   Dir. Conn.(%)=  94.80
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      48.56         2.66
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.31         1.31
     Length            (m)=     584.35        40.00
     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    0.00 | 1.667    7.87 | 3.250   17.06 |  4.83    1.31
              0.167    0.00 | 1.750    7.87 | 3.333    9.18 |  4.92    1.31
              0.250    0.00 | 1.833   22.30 | 3.417    9.18 |  5.00    1.31
              0.333    1.31 | 1.917   22.30 | 3.500    9.18 |  5.08    1.31
              0.417    1.31 | 2.000   22.30 | 3.583    9.18 |  5.17    1.31
              0.500    1.31 | 2.083   22.30 | 3.667    9.18 |  5.25    1.31
              0.583    1.31 | 2.167   22.30 | 3.750    9.18 |  5.33    1.31
              0.667    1.31 | 2.250   22.30 | 3.833    5.25 |  5.42    1.31
              0.750    1.31 | 2.333   60.35 | 3.917    5.25 |  5.50    1.31
              0.833    1.31 | 2.417   60.35 | 4.000    5.25 |  5.58    1.31
              0.917    1.31 | 2.500   60.35 | 4.083    5.25 |  5.67    1.31
              1.000    1.31 | 2.583   60.35 | 4.167    5.25 |  5.75    1.31
              1.083    1.31 | 2.667   60.35 | 4.250    5.25 |  5.83    1.31
              1.167    1.31 | 2.750   60.35 | 4.333    2.62 |  5.92    1.31
              1.250    1.31 | 2.833   17.06 | 4.417    2.62 |  6.00    1.31
              1.333    7.87 | 2.917   17.06 | 4.500    2.62 |  6.08    1.31
              1.417    7.87 | 3.000   17.06 | 4.583    2.62 |  6.17    1.31
              1.500    7.87 | 3.083   17.06 | 4.667    2.62 |  6.25    1.31
              1.583    7.87 | 3.167   17.06 | 4.750    2.62 |

     Max.Eff.Inten.(mm/hr)=      60.35         53.17
               over (min)        10.00         15.00
     Storage Coeff.  (min)=       8.32 (ii)    11.39 (ii)
     Unit Hyd. Tpeak (min)=      10.00         15.00
     Unit Hyd. peak  (cms)=       0.13          0.09
```

				TOTALS
PEAK FLOW	(cms)=	7.93	0.33	8.259 (iii)
TIME TO PEAK	(hrs)=	2.75	2.75	2.75
RUNOFF VOLUME	(mm)=	63.59	46.06	62.68
TOTAL RAINFALL	(mm)=	65.59	65.59	65.59
RUNOFF COEFFICIENT	=	0.97	0.70	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB			
STANDHYD (7417)	Area (ha)=	35.65	
ID= 1 DT= 5.0 min	Total Imp(%)=	80.10	Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	7.87	3.250	17.06	4.83	1.31
0.167	0.00	1.750	7.87	3.333	9.18	4.92	1.31
0.250	0.00	1.833	22.30	3.417	9.18	5.00	1.31
0.333	1.31	1.917	22.30	3.500	9.18	5.08	1.31
0.417	1.31	2.000	22.30	3.583	9.18	5.17	1.31
0.500	1.31	2.083	22.30	3.667	9.18	5.25	1.31
0.583	1.31	2.167	22.30	3.750	9.18	5.33	1.31
0.667	1.31	2.250	22.30	3.833	5.25	5.42	1.31
0.750	1.31	2.333	60.35	3.917	5.25	5.50	1.31
0.833	1.31	2.417	60.35	4.000	5.25	5.58	1.31
0.917	1.31	2.500	60.35	4.083	5.25	5.67	1.31
1.000	1.31	2.583	60.35	4.167	5.25	5.75	1.31
1.083	1.31	2.667	60.35	4.250	5.25	5.83	1.31
1.167	1.31	2.750	60.35	4.333	2.62	5.92	1.31
1.250	1.31	2.833	17.06	4.417	2.62	6.00	1.31
1.333	7.87	2.917	17.06	4.500	2.62	6.08	1.31
1.417	7.87	3.000	17.06	4.583	2.62	6.17	1.31
1.500	7.87	3.083	17.06	4.667	2.62	6.25	1.31
1.583	7.87	3.167	17.06	4.750	2.62		

Max.Eff.Inten.(mm/hr)=		60.35	53.36	
over (min)		5.00	20.00	
Storage Coeff. (min)=		6.78 (ii)	16.15 (ii)	
Unit Hyd. Tpeak (min)=		5.00	20.00	
Unit Hyd. peak (cms)=		0.18	0.06	
				TOTALS
PEAK FLOW	(cms)=	4.75	0.78	5.476 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	63.59	46.10	60.10
TOTAL RAINFALL	(mm)=	65.59	65.59	65.59
RUNOFF COEFFICIENT	=	0.97	0.70	0.92

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  93.0    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  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   5.476     2.75    60.10
      + ID2= 2 (  7419):    51.22   8.259     2.75    62.68
        ================================================
        ID = 3 (  7669):    86.87  13.735     2.75    61.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  7672)|     PIPE Number      =   1.00
| IN= 2---> OUT= 1 |     Width       (mm)=2400.00     Height   (mm)=1800.00
| DT=  5.0 min     |     Length       (m)=  90.00
--------------------     Slope      (m/m)=  0.017
                         Manning n        =  0.013

     <----------------- TRAVEL TIME TABLE ------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.09     .205E+02       0.5          1.98         0.76
       0.19     .409E+02       1.4          3.00         0.50
       0.28     .614E+02       2.6          3.77         0.40
       0.38     .819E+02       4.0          4.38         0.34
       0.47     .102E+03       5.6          4.89         0.31
       0.57     .123E+03       7.3          5.32         0.28
       0.66     .143E+03       9.1          5.69         0.26
       0.76     .164E+03      11.0          6.02         0.25
       0.85     .184E+03      12.9          6.31         0.24
       0.95     .205E+03      14.9          6.57         0.23
       1.04     .225E+03      17.0          6.80         0.22
       1.14     .246E+03      19.1          7.01         0.21
       1.23     .266E+03      21.3          7.20         0.21
       1.33     .286E+03      23.5          7.38         0.20
       1.42     .307E+03      25.7          7.54         0.20
       1.52     .327E+03      28.0          7.68         0.20
       1.61     .348E+03      30.2          7.82         0.19
       1.71     .368E+03      32.5          7.95         0.19
       1.80     .389E+03      34.8          8.06         0.19
                                    <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                               (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  7669)   86.87    13.74    2.75  61.62      0.89      6.41
   OUTFLOW: ID= 1 (  7672)   86.87    13.76    2.75  61.62      0.89      6.42



--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7671)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
              <------ DATA FOR SECTION (   1.1) ------>
```

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.524E+02	0.0	0.18	34.47
0.22	0.22	.124E+03	0.1	0.27	23.53
0.34	0.34	.215E+03	0.2	0.33	18.93
0.45	0.45	.325E+03	0.3	0.39	16.23
0.58	0.58	.789E+03	0.7	0.33	19.48
0.70	0.70	.131E+04	1.2	0.34	18.37
0.83	0.83	.186E+04	1.8	0.38	16.82
0.96	0.96	.244E+04	2.6	0.41	15.47
1.08	1.08	.305E+04	3.5	0.44	14.36
1.21	1.21	.370E+04	4.6	0.47	13.45
1.34	1.34	.453E+04	4.9	0.41	15.49
1.46	1.46	.589E+04	6.6	0.42	14.93
1.59	1.59	.728E+04	8.5	0.45	14.22
1.72	1.72	.870E+04	10.7	0.47	13.50
1.84	1.84	.101E+05	13.2	0.49	12.83
1.97	1.97	.116E+05	15.8	0.52	12.23
2.10	2.10	.131E+05	18.7	0.54	11.68
2.22	2.22	.147E+05	21.9	0.57	11.19
2.35	2.35	.163E+05	25.2	0.59	10.75

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7672)	86.87	13.76	2.75	61.62	1.87	0.50
OUTFLOW: ID= 1 (7671)	86.87	11.73	2.75	61.62	1.77	0.48

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7673)|
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel

33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.620E+01	0.2	1.16	0.65
0.22	0.22	.147E+02	0.6	1.70	0.44
0.34	0.34	.254E+02	1.2	2.12	0.35
0.45	0.45	.385E+02	2.1	2.47	0.30
0.58	0.58	.934E+02	4.3	2.06	0.36
0.70	0.70	.155E+03	7.5	2.18	0.34
0.83	0.83	.220E+03	11.6	2.38	0.31
0.96	0.96	.289E+03	16.6	2.59	0.29
1.08	1.08	.361E+03	22.4	2.79	0.27
1.21	1.21	.438E+03	29.0	2.98	0.25
1.34	1.34	.537E+03	30.9	2.59	0.29
1.46	1.46	.698E+03	41.6	2.68	0.28
1.59	1.59	.862E+03	54.0	2.82	0.27
1.72	1.72	.103E+04	67.9	2.97	0.25
1.84	1.84	.120E+04	83.3	3.12	0.24
1.97	1.97	.138E+04	100.2	3.28	0.23
2.10	2.10	.156E+04	118.6	3.43	0.22
2.22	2.22	.174E+04	138.3	3.58	0.21
2.35	2.35	.192E+04	159.4	3.73	0.20

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7671)	86.87	11.73	2.75	61.62	0.83	2.38
OUTFLOW: ID= 1 (7673)	86.87	11.72	2.75	61.62	0.83	2.38

ROUTE CHN(7674)|
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.220E+01	0.0	0.26	1.03
0.22	0.22	.522E+01	0.1	0.38	0.70
0.34	0.34	.905E+01	0.3	0.47	0.56
0.45	0.45	.137E+02	0.5	0.55	0.48
0.58	0.58	.332E+02	1.0	0.46	0.58
0.70	0.70	.551E+02	1.7	0.49	0.55
0.83	0.83	.782E+02	2.6	0.53	0.50
0.96	0.96	.103E+03	3.7	0.58	0.46

1.08	1.08	.128E+03	5.0	0.62	0.43
1.21	1.21	.156E+03	6.5	0.67	0.40
1.34	1.34	.191E+03	6.9	0.58	0.46
1.46	1.46	.248E+03	9.3	0.60	0.44
1.59	1.59	.306E+03	12.1	0.63	0.42
1.72	1.72	.366E+03	15.2	0.66	0.40
1.84	1.84	.427E+03	18.6	0.70	0.38
1.97	1.97	.490E+03	22.4	0.73	0.36
2.10	2.10	.553E+03	26.5	0.77	0.35
2.22	2.22	.618E+03	30.9	0.80	0.33
2.35	2.35	.684E+03	35.6	0.83	0.32

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7673)	86.87	11.72	2.75	61.62	1.57	0.63
OUTFLOW: ID= 1 (7674)	86.87	11.68	2.75	61.62	1.57	0.62

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7670)
IN= 2---> OUT= 1

Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13

2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7674)	86.87	11.68	2.75	61.62	0.76	0.73
OUTFLOW: ID= 1 (7670)	86.87	9.02	2.92	61.61	0.69	0.69

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	7.87	3.250	17.06	4.83	1.31
0.167	0.00	1.750	7.87	3.333	9.18	4.92	1.31
0.250	0.00	1.833	22.30	3.417	9.18	5.00	1.31
0.333	1.31	1.917	22.30	3.500	9.18	5.08	1.31
0.417	1.31	2.000	22.30	3.583	9.18	5.17	1.31
0.500	1.31	2.083	22.30	3.667	9.18	5.25	1.31
0.583	1.31	2.167	22.30	3.750	9.18	5.33	1.31
0.667	1.31	2.250	22.30	3.833	5.25	5.42	1.31
0.750	1.31	2.333	60.35	3.917	5.25	5.50	1.31
0.833	1.31	2.417	60.35	4.000	5.25	5.58	1.31
0.917	1.31	2.500	60.35	4.083	5.25	5.67	1.31
1.000	1.31	2.583	60.35	4.167	5.25	5.75	1.31
1.083	1.31	2.667	60.35	4.250	5.25	5.83	1.31
1.167	1.31	2.750	60.35	4.333	2.62	5.92	1.31
1.250	1.31	2.833	17.06	4.417	2.62	6.00	1.31
1.333	7.87	2.917	17.06	4.500	2.62	6.08	1.31
1.417	7.87	3.000	17.06	4.583	2.62	6.17	1.31
1.500	7.87	3.083	17.06	4.667	2.62	6.25	1.31
1.583	7.87	3.167	17.06	4.750	2.62		

Max.Eff.Inten.(mm/hr)=		60.35	53.36	
over (min)		10.00	20.00	
Storage Coeff. (min)=		7.70 (ii)	17.06 (ii)	
Unit Hyd. Tpeak (min)=		10.00	20.00	
Unit Hyd. peak (cms)=		0.13	0.06	
				TOTALS
PEAK FLOW	(cms)=	7.15	1.16	8.239 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75
RUNOFF VOLUME	(mm)=	63.59	46.10	60.10

```
     TOTAL RAINFALL   (mm)=      65.59        65.59          65.59
     RUNOFF COEFFICIENT   =       0.97         0.70           0.92


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   8.239     2.75    60.10
      + ID2= 2 (  7670):    86.87   9.021     2.92    61.61
        ================================================
        ID = 3 (  7668):   141.25  16.066     2.83    61.03

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7415)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00        228.37        0.0600
                  37.24        228.58        0.0600      Main Channel
                 103.47        228.14        0.0600      Main Channel
                 128.49        227.50        0.0600      Main Channel
                 165.99        227.25        0.0600      Main Channel
                 207.42        227.13        0.0600      Main Channel
                 269.17        227.55        0.0600      Main Channel
                 330.99        227.38        0.0600      Main Channel
                 382.77        226.05        0.0600      Main Channel
                 435.35        225.42        0.0600      Main Channel
                 499.95        223.27        0.0600      Main Channel
                 546.11        225.36        0.0600      Main Channel
                 624.78        225.07        0.0600      Main Channel
                 738.92        226.66        0.0600      Main Channel
                 765.34        227.40        0.0600      Main Channel
                 846.93        228.42        0.0600      Main Channel
                 904.88        228.21        0.0600      Main Channel
                 958.92        229.00        0.0600      Main Channel
                 983.38        229.86    0.0600 /0.0600  Main Channel
                 999.71        230.75        0.0600

      <---------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
        (m)       (m)     (cu.m.)      (cms)        (m/s)      (min)
       0.26   223.53    .100E+04        0.4          0.23      42.43
       0.51   223.78    .402E+04        2.5          0.37      26.73
       0.77   224.04    .904E+04        7.4          0.48      20.40
       1.03   224.30    .161E+05       15.9          0.58      16.84
       1.28   224.55    .251E+05       28.9          0.67      14.51
       1.54   224.81    .362E+05       46.9          0.76      12.85
       1.79   225.06    .492E+05       70.8          0.84      11.60
       2.05   225.32    .706E+05       79.7          0.66      14.76
       2.31   225.58    .104E+06      130.9          0.74      13.19
       2.56   225.83    .143E+06      201.0          0.83      11.82
       2.82   226.09    .187E+06      291.3          0.91      10.72
```

3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7668)	141.25	16.07	2.83	61.03	1.03	0.58
OUTFLOW: ID= 1 (7415)	141.25	13.16	2.92	61.03	0.94	0.54

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	7.87	3.250	17.06	4.83	1.31
0.167	0.00	1.750	7.87	3.333	9.18	4.92	1.31
0.250	0.00	1.833	22.30	3.417	9.18	5.00	1.31
0.333	1.31	1.917	22.30	3.500	9.18	5.08	1.31
0.417	1.31	2.000	22.30	3.583	9.18	5.17	1.31
0.500	1.31	2.083	22.30	3.667	9.18	5.25	1.31
0.583	1.31	2.167	22.30	3.750	9.18	5.33	1.31
0.667	1.31	2.250	22.30	3.833	5.25	5.42	1.31
0.750	1.31	2.333	60.35	3.917	5.25	5.50	1.31
0.833	1.31	2.417	60.35	4.000	5.25	5.58	1.31
0.917	1.31	2.500	60.35	4.083	5.25	5.67	1.31
1.000	1.31	2.583	60.35	4.167	5.25	5.75	1.31
1.083	1.31	2.667	60.35	4.250	5.25	5.83	1.31
1.167	1.31	2.750	60.35	4.333	2.62	5.92	1.31
1.250	1.31	2.833	17.06	4.417	2.62	6.00	1.31
1.333	7.87	2.917	17.06	4.500	2.62	6.08	1.31
1.417	7.87	3.000	17.06	4.583	2.62	6.17	1.31
1.500	7.87	3.083	17.06	4.667	2.62	6.25	1.31
1.583	7.87	3.167	17.06	4.750	2.62		

Max.Eff.Inten.	(mm/hr)=	60.35	53.31	
over	(min)	5.00	20.00	
Storage Coeff.	(min)=	7.35 (ii)	16.83 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	20.00	
Unit Hyd. peak	(cms)=	0.17	0.06	
				TOTALS
PEAK FLOW	(cms)=	5.37	1.34	6.630 (iii)
TIME TO PEAK	(hrs)=	2.75	2.83	2.75

RUNOFF VOLUME (mm)=	63.59	46.09	58.73
TOTAL RAINFALL (mm)=	65.59	65.59	65.59
RUNOFF COEFFICIENT =	0.97	0.70	0.90

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7414):	44.87	6.630	2.75	58.73
	+ ID2= 2 (7415):	141.25	13.157	2.92	61.03
	ID = 3 (7413):	186.12	17.814	2.75	60.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:5. 50 Year 6 Hour AES (Bloor, TRCA) **
****

CALIB STANDHYD (7419) ID= 1 DT= 5.0 min	Area (ha)= 51.22	Total Imp(%)= 94.80	Dir. Conn.(%)= 94.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	48.56	2.66
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.31	1.31
Length	(m)=	584.35	40.00
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	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.(mm/hr)=	67.16	60.36	
over (min)	10.00	15.00	
Storage Coeff. (min)=	7.97 (ii)	10.91 (ii)	
Unit Hyd. Tpeak (min)=	10.00	15.00	
Unit Hyd. peak (cms)=	0.13	0.09	
			TOTALS
PEAK FLOW (cms)=	8.86	0.38	9.237 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	71.00	53.08	70.07
TOTAL RAINFALL (mm)=	73.00	73.00	73.00
RUNOFF COEFFICIENT =	0.97	0.73	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB	
STANDHYD (7417)	Area (ha)= 35.65
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.(mm/hr)=	67.16	60.58	
over (min)	5.00	15.00	
Storage Coeff. (min)=	6.50 (ii)	11.39 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.18	0.09	

			TOTALS
PEAK FLOW (cms)=	5.29	1.01	6.298 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	71.00	53.13	67.43
TOTAL RAINFALL (mm)=	73.00	73.00	73.00
RUNOFF COEFFICIENT =	0.97	0.73	0.92

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (7417):	35.65	6.298	2.75	67.43
	+ ID2= 2 (7419):	51.22	9.237	2.75	70.07
	ID = 3 (7669):	86.87	15.536	2.75	68.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTEPIPE(7672)	PIPE Number = 1.00		
IN= 2---> OUT= 1	Width (mm)=2400.00	Height (mm)=1800.00	
DT= 5.0 min	Length (m)= 90.00		
	Slope (m/m)= 0.017		
	Manning n = 0.013		

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.09	.205E+02	0.5	1.98	0.76
0.19	.409E+02	1.4	3.00	0.50
0.28	.614E+02	2.6	3.77	0.40
0.38	.819E+02	4.0	4.38	0.34
0.47	.102E+03	5.6	4.89	0.31
0.57	.123E+03	7.3	5.32	0.28
0.66	.143E+03	9.1	5.69	0.26
0.76	.164E+03	11.0	6.02	0.25
0.85	.184E+03	12.9	6.31	0.24
0.95	.205E+03	14.9	6.57	0.23
1.04	.225E+03	17.0	6.80	0.22
1.14	.246E+03	19.1	7.01	0.21
1.23	.266E+03	21.3	7.20	0.21
1.33	.286E+03	23.5	7.38	0.20
1.42	.307E+03	25.7	7.54	0.20
1.52	.327E+03	28.0	7.68	0.20
1.61	.348E+03	30.2	7.82	0.19
1.71	.368E+03	32.5	7.95	0.19
1.80	.389E+03	34.8	8.06	0.19

	<---- hydrograph ---->				<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7669)	86.87	15.54	2.75	68.99	0.97	6.63
OUTFLOW: ID= 1 (7672)	86.87	15.57	2.75	68.99	0.98	6.64

```
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7671)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
              <------ DATA FOR SECTION (   1.1) ------>
              Distance      Elevation       Manning
                  0.00          2.35        0.0800      Main Channel
                  2.60          1.32        0.0800      Main Channel
                  9.50          1.29        0.0800      Main Channel
                 11.60          0.47        0.0800      Main Channel
                 15.10          0.45    0.0800 /0.0350  Main Channel
                 16.00          0.00        0.0350      Main Channel
                 17.00          0.00        0.0350      Main Channel
                 17.90          0.45    0.0350 /0.0800  Main Channel
                 21.50          0.47        0.0800      Main Channel
                 23.60          1.29        0.0800      Main Channel
                 30.40          1.32        0.0800      Main Channel
                 33.00          2.35        0.0800      Main Channel

     <-------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
       (m)       (m)     (cu.m.)      (cms)        (m/s)      (min)
      0.11      0.11    .524E+02       0.0         0.18       34.47
      0.22      0.22    .124E+03       0.1         0.27       23.53
      0.34      0.34    .215E+03       0.2         0.33       18.93
      0.45      0.45    .325E+03       0.3         0.39       16.23
      0.58      0.58    .789E+03       0.7         0.33       19.48
      0.70      0.70    .131E+04       1.2         0.34       18.37
      0.83      0.83    .186E+04       1.8         0.38       16.82
      0.96      0.96    .244E+04       2.6         0.41       15.47
      1.08      1.08    .305E+04       3.5         0.44       14.36
      1.21      1.21    .370E+04       4.6         0.47       13.45
      1.34      1.34    .453E+04       4.9         0.41       15.49
      1.46      1.46    .589E+04       6.6         0.42       14.93
      1.59      1.59    .728E+04       8.5         0.45       14.22
      1.72      1.72    .870E+04      10.7         0.47       13.50
      1.84      1.84    .101E+05      13.2         0.49       12.83
      1.97      1.97    .116E+05      15.8         0.52       12.23
      2.10      2.10    .131E+05      18.7         0.54       11.68
      2.22      2.22    .147E+05      21.9         0.57       11.19
      2.35      2.35    .163E+05      25.2         0.59       10.75

                                    <---- hydrograph ---->   <-pipe / channel->
                              AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                              (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  7672)   86.87    15.57    2.75  68.99      1.96      0.52
   OUTFLOW: ID= 1 (  7671)   86.87    13.42    2.75  68.98      1.85      0.50


     **** WARNING:  COMPUTATIONS FAILED TO CONVERGE.

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--------------------
| ROUTE CHN(  7673)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
              <------ DATA FOR SECTION (   1.1) ------>
              Distance      Elevation       Manning
                  0.00          2.35        0.0800      Main Channel
                  2.60          1.32        0.0800      Main Channel
                  9.50          1.29        0.0800      Main Channel
                 11.60          0.47        0.0800      Main Channel
                 15.10          0.45    0.0800 /0.0350  Main Channel
```

16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.620E+01	0.2	1.16	0.65
0.22	0.22	.147E+02	0.6	1.70	0.44
0.34	0.34	.254E+02	1.2	2.12	0.35
0.45	0.45	.385E+02	2.1	2.47	0.30
0.58	0.58	.934E+02	4.3	2.06	0.36
0.70	0.70	.155E+03	7.5	2.18	0.34
0.83	0.83	.220E+03	11.6	2.38	0.31
0.96	0.96	.289E+03	16.6	2.59	0.29
1.08	1.08	.361E+03	22.4	2.79	0.27
1.21	1.21	.438E+03	29.0	2.98	0.25
1.34	1.34	.537E+03	30.9	2.59	0.29
1.46	1.46	.698E+03	41.6	2.68	0.28
1.59	1.59	.862E+03	54.0	2.82	0.27
1.72	1.72	.103E+04	67.9	2.97	0.25
1.84	1.84	.120E+04	83.3	3.12	0.24
1.97	1.97	.138E+04	100.2	3.28	0.23
2.10	2.10	.156E+04	118.6	3.43	0.22
2.22	2.22	.174E+04	138.3	3.58	0.21
2.35	2.35	.192E+04	159.4	3.73	0.20

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7671)	86.87	13.42	2.75	68.98	0.88	2.45
OUTFLOW: ID= 1 (7673)	86.87	13.38	2.75	68.98	0.87	2.45

ROUTE CHN(7674)|
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.220E+01	0.0	0.26	1.03
0.22	0.22	.522E+01	0.1	0.38	0.70

0.34	0.34	.905E+01	0.3	0.47	0.56
0.45	0.45	.137E+02	0.5	0.55	0.48
0.58	0.58	.332E+02	1.0	0.46	0.58
0.70	0.70	.551E+02	1.7	0.49	0.55
0.83	0.83	.782E+02	2.6	0.53	0.50
0.96	0.96	.103E+03	3.7	0.58	0.46
1.08	1.08	.128E+03	5.0	0.62	0.43
1.21	1.21	.156E+03	6.5	0.67	0.40
1.34	1.34	.191E+03	6.9	0.58	0.46
1.46	1.46	.248E+03	9.3	0.60	0.44
1.59	1.59	.306E+03	12.1	0.63	0.42
1.72	1.72	.366E+03	15.2	0.66	0.40
1.84	1.84	.427E+03	18.6	0.70	0.38
1.97	1.97	.490E+03	22.4	0.73	0.36
2.10	2.10	.553E+03	26.5	0.77	0.35
2.22	2.22	.618E+03	30.9	0.80	0.33
2.35	2.35	.684E+03	35.6	0.83	0.32

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7673)	86.87	13.38	2.75	68.98	1.64	0.64
OUTFLOW: ID= 1 (7674)	86.87	13.25	2.75	68.98	1.64	0.64

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7670)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56

1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7674)	86.87	13.25	2.75	68.98	0.81	0.76
OUTFLOW: ID= 1 (7670)	86.87	10.37	2.92	68.98	0.73	0.71

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.(mm/hr)=		67.16	60.58
	over (min)	5.00	15.00
Storage Coeff.	(min)=	7.37 (ii)	12.27 (ii)

```
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.17         0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       8.03         1.51         9.540 (iii)
     TIME TO PEAK    (hrs)=       2.75         2.75          2.75
     RUNOFF VOLUME    (mm)=      71.00        53.13         67.43
     TOTAL RAINFALL   (mm)=      73.00        73.00         73.00
     RUNOFF COEFFICIENT   =       0.97         0.73          0.92


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   9.540     2.75    67.43
      + ID2= 2 (  7670):    86.87  10.368     2.92    68.98
        ================================================
        ID = 3 (  7668):   141.25  18.627     2.75    68.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7415)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00        228.37        0.0600
                  37.24        228.58        0.0600      Main Channel
                 103.47        228.14        0.0600      Main Channel
                 128.49        227.50        0.0600      Main Channel
                 165.99        227.25        0.0600      Main Channel
                 207.42        227.13        0.0600      Main Channel
                 269.17        227.55        0.0600      Main Channel
                 330.99        227.38        0.0600      Main Channel
                 382.77        226.05        0.0600      Main Channel
                 435.35        225.42        0.0600      Main Channel
                 499.95        223.27        0.0600      Main Channel
                 546.11        225.36        0.0600      Main Channel
                 624.78        225.07        0.0600      Main Channel
                 738.92        226.66        0.0600      Main Channel
                 765.34        227.40        0.0600      Main Channel
                 846.93        228.42        0.0600      Main Channel
                 904.88        228.21        0.0600      Main Channel
                 958.92        229.00        0.0600      Main Channel
                 983.38        229.86    0.0600 /0.0600  Main Channel
                 999.71        230.75        0.0600

      <--------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
        (m)       (m)     (cu.m.)      (cms)        (m/s)      (min)
       0.26    223.53    .100E+04        0.4         0.23      42.43
       0.51    223.78    .402E+04        2.5         0.37      26.73
       0.77    224.04    .904E+04        7.4         0.48      20.40
       1.03    224.30    .161E+05       15.9         0.58      16.84
       1.28    224.55    .251E+05       28.9         0.67      14.51
```

1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7668)	141.25	18.63	2.75	68.39	1.08	0.60
OUTFLOW: ID= 1 (7415)	141.25	14.87	2.92	68.38	0.99	0.57

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.(mm/hr)=		67.16	60.52
	over (min)	5.00	20.00

Storage Coeff. (min)=	7.04 (ii)	16.06 (ii)		
Unit Hyd. Tpeak (min)=	5.00	20.00		
Unit Hyd. peak (cms)=	0.17	0.06		
			TOTALS	
PEAK FLOW (cms)=	5.99	1.56	7.471 (iii)	
TIME TO PEAK (hrs)=	2.75	2.83	2.75	
RUNOFF VOLUME (mm)=	71.00	53.11	66.03	
TOTAL RAINFALL (mm)=	73.00	73.00	73.00	
RUNOFF COEFFICIENT =	0.97	0.73	0.90	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7414):	44.87	7.471	2.75	66.03
+	ID2= 2 (7415):	141.25	14.868	2.92	68.38
	ID = 3 (7413):	186.12	21.026	2.75	67.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:6. 100 Year 6 Hour AES (Bloor, TRCA) **
****

CALIB STANDHYD (7419) ID= 1 DT= 5.0 min			
	Area (ha)=	51.22	
	Total Imp(%)=	94.80	Dir. Conn.(%)= 94.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	48.56	2.66
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.31	1.31
Length	(m)=	584.35	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61

1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)=	73.88	67.43	
over (min)	10.00	15.00	
Storage Coeff. (min)=	7.67 (ii)	10.50 (ii)	
Unit Hyd. Tpeak (min)=	10.00	15.00	
Unit Hyd. peak (cms)=	0.13	0.09	
			TOTALS
PEAK FLOW (cms)=	9.77	0.43	10.202 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	78.31	60.06	77.36
TOTAL RAINFALL (mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT =	0.98	0.75	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB	
STANDHYD (7417)	Area (ha)= 35.65
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)=	73.88	67.66	
over (min)	5.00	15.00	
Storage Coeff. (min)=	6.25 (ii)	10.97 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.19	0.09	
			TOTALS
PEAK FLOW (cms)=	5.83	1.15	6.973 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	78.31	60.11	74.68
TOTAL RAINFALL (mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT =	0.98	0.75	0.93

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (7417):		35.65	6.973	2.75	74.68
+ ID2= 2 (7419):		51.22	10.202	2.75	77.36
ID = 3 (7669):		86.87	17.175	2.75	76.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTEPIPE(7672)	PIPE Number = 1.00		
IN= 2---> OUT= 1	Width (mm)=4200.00	Height (mm)=1500.00	
DT= 5.0 min	Length (m)= 120.00		
	Slope (m/m)= 0.017		
	Manning n = 0.013		

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.08	.398E+02	0.6	1.80	1.11
0.16	.796E+02	1.9	2.79	0.72
0.24	.119E+03	3.6	3.58	0.56
0.32	.159E+03	5.6	4.24	0.47
0.39	.199E+03	8.0	4.82	0.42
0.47	.239E+03	10.6	5.33	0.38
0.55	.279E+03	13.4	5.78	0.35
0.63	.318E+03	16.4	6.20	0.32
0.71	.358E+03	19.6	6.58	0.30
0.79	.398E+03	23.0	6.93	0.29
0.87	.438E+03	26.5	7.25	0.28
0.95	.477E+03	30.1	7.55	0.26
1.03	.517E+03	33.8	7.83	0.26
1.11	.557E+03	37.6	8.09	0.25
1.18	.597E+03	41.5	8.34	0.24
1.26	.637E+03	45.5	8.57	0.23
1.34	.676E+03	49.5	8.78	0.23
1.42	.716E+03	53.7	8.99	0.22
1.50	.756E+03	57.9	9.18	0.22

	<---- hydrograph ---->				<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	(m)	(m/s)
INFLOW : ID= 2 (7669)		86.87	17.18	2.75	76.26	0.65	6.28
OUTFLOW: ID= 1 (7672)		86.87	17.20	2.75	76.26	0.65	6.29

ROUTE CHN(7671) IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.524E+02	0.0	0.18	34.47
0.22	0.22	.124E+03	0.1	0.27	23.53
0.34	0.34	.215E+03	0.2	0.33	18.93
0.45	0.45	.325E+03	0.3	0.39	16.23
0.58	0.58	.789E+03	0.7	0.33	19.48
0.70	0.70	.131E+04	1.2	0.34	18.37
0.83	0.83	.186E+04	1.8	0.38	16.82
0.96	0.96	.244E+04	2.6	0.41	15.47
1.08	1.08	.305E+04	3.5	0.44	14.36
1.21	1.21	.370E+04	4.6	0.47	13.45
1.34	1.34	.453E+04	4.9	0.41	15.49
1.46	1.46	.589E+04	6.6	0.42	14.93
1.59	1.59	.728E+04	8.5	0.45	14.22
1.72	1.72	.870E+04	10.7	0.47	13.50
1.84	1.84	.101E+05	13.2	0.49	12.83
1.97	1.97	.116E+05	15.8	0.52	12.23
2.10	2.10	.131E+05	18.7	0.54	11.68
2.22	2.22	.147E+05	21.9	0.57	11.19
2.35	2.35	.163E+05	25.2	0.59	10.75

		<---- hydrograph ----> AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7672)		86.87	17.20	2.75	76.26	2.03	0.53
OUTFLOW: ID= 1 (7671)		86.87	14.96	2.75	76.26	1.92	0.51

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7673) IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.620E+01	0.1	1.02	0.73
0.22	0.22	.147E+02	0.5	1.50	0.50
0.34	0.34	.254E+02	1.1	1.87	0.40
0.45	0.45	.385E+02	1.9	2.18	0.34
0.58	0.58	.934E+02	3.8	1.81	0.41
0.70	0.70	.155E+03	6.6	1.92	0.39
0.83	0.83	.220E+03	10.3	2.10	0.36
0.96	0.96	.289E+03	14.7	2.28	0.33
1.08	1.08	.361E+03	19.7	2.46	0.30
1.21	1.21	.438E+03	25.5	2.63	0.29
1.34	1.34	.537E+03	27.2	2.28	0.33
1.46	1.46	.698E+03	36.7	2.37	0.32
1.59	1.59	.862E+03	47.6	2.48	0.30
1.72	1.72	.103E+04	59.9	2.62	0.29
1.84	1.84	.120E+04	73.5	2.75	0.27
1.97	1.97	.138E+04	88.4	2.89	0.26
2.10	2.10	.156E+04	104.5	3.02	0.25
2.22	2.22	.174E+04	121.9	3.16	0.24
2.35	2.35	.192E+04	140.5	3.29	0.23

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7671)	86.87	14.96	2.75	76.26	0.96	2.29
OUTFLOW: ID= 1 (7673)	86.87	14.89	2.75	76.26	0.96	2.29

ROUTE CHN(7674)|
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.220E+01	0.0	0.18	1.45
0.22	0.22	.522E+01	0.1	0.27	0.99
0.34	0.34	.905E+01	0.2	0.33	0.80
0.45	0.45	.137E+02	0.3	0.39	0.68
0.58	0.58	.332E+02	0.7	0.33	0.82
0.70	0.70	.551E+02	1.2	0.34	0.77
0.83	0.83	.782E+02	1.8	0.38	0.71
0.96	0.96	.103E+03	2.6	0.41	0.65
1.08	1.08	.128E+03	3.5	0.44	0.60
1.21	1.21	.156E+03	4.6	0.47	0.57
1.34	1.34	.191E+03	4.9	0.41	0.65
1.46	1.46	.248E+03	6.6	0.42	0.63
1.59	1.59	.306E+03	8.5	0.45	0.60
1.72	1.72	.366E+03	10.7	0.47	0.57
1.84	1.84	.427E+03	13.2	0.49	0.54
1.97	1.97	.490E+03	15.8	0.52	0.51
2.10	2.10	.553E+03	18.7	0.54	0.49
2.22	2.22	.618E+03	21.9	0.57	0.47
2.35	2.35	.684E+03	25.2	0.59	0.45

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7673)	86.87	14.89	2.75	76.26	1.92	0.51
OUTFLOW: ID= 1 (7674)	86.87	14.85	2.75	76.26	2.00	0.52

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7670)| | IN= 2---> OUT= 1 |	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)

0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7674)	86.87	14.85	2.75	76.26	0.85	0.79
OUTFLOW: ID= 1 (7670)	86.87	11.67	2.92	76.26	0.76	0.73

CALIB STANDHYD (7667) ID= 1 DT= 5.0 min	Area (ha)= 54.38 Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61

```
             1.500    9.64 | 3.083   20.88 | 4.667    3.21 |  6.25    1.61
             1.583    9.64 | 3.167   20.88 | 4.750    3.21 |

     Max.Eff.Inten.(mm/hr)=      73.88        67.66
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       7.10 (ii)   11.81 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.17         0.09
                                                          *TOTALS*
     PEAK FLOW       (cms)=       8.85         1.72        10.569 (iii)
     TIME TO PEAK    (hrs)=       2.75         2.75         2.75
     RUNOFF VOLUME    (mm)=      78.31        60.11        74.68
     TOTAL RAINFALL   (mm)=      80.31        80.31        80.31
     RUNOFF COEFFICIENT   =       0.98         0.75         0.93


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38  10.569     2.75    74.68
      + ID2= 2 (  7670):    86.87  11.667     2.92    76.26
        ==========================================================
        ID = 3 (  7668):   141.25  20.836     2.75    75.65

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7415)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00        228.37        0.0600
                  37.24        228.58        0.0600      Main Channel
                 103.47        228.14        0.0600      Main Channel
                 128.49        227.50        0.0600      Main Channel
                 165.99        227.25        0.0600      Main Channel
                 207.42        227.13        0.0600      Main Channel
                 269.17        227.55        0.0600      Main Channel
                 330.99        227.38        0.0600      Main Channel
                 382.77        226.05        0.0600      Main Channel
                 435.35        225.42        0.0600      Main Channel
                 499.95        223.27        0.0600      Main Channel
                 546.11        225.36        0.0600      Main Channel
                 624.78        225.07        0.0600      Main Channel
                 738.92        226.66        0.0600      Main Channel
                 765.34        227.40        0.0600      Main Channel
                 846.93        228.42        0.0600      Main Channel
                 904.88        228.21        0.0600      Main Channel
                 958.92        229.00        0.0600      Main Channel
                 983.38        229.86    0.0600 /0.0600  Main Channel
                 999.71        230.75        0.0600

      <--------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
```

(m)	(m)	(cu.m.)	(cms)	(m/s)	(min)
0.26	223.53	.100E+04	0.4	0.23	42.43
0.51	223.78	.402E+04	2.5	0.37	26.73
0.77	224.04	.904E+04	7.4	0.48	20.40
1.03	224.30	.161E+05	15.9	0.58	16.84
1.28	224.55	.251E+05	28.9	0.67	14.51
1.54	224.81	.362E+05	46.9	0.76	12.85
1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7668)	141.25	20.84	2.75	75.65	1.12	0.61
OUTFLOW: ID= 1 (7415)	141.25	16.71	2.92	75.65	1.04	0.58

CALIB STANDHYD (7414) ID= 1 DT= 5.0 min	Area (ha)= 44.87 Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61

1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

			TOTALS
Max.Eff.Inten.(mm/hr)=	73.88	67.59	
over (min)	5.00	20.00	
Storage Coeff. (min)=	6.78 (ii)	15.40 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.18	0.07	
PEAK FLOW (cms)=	6.60	1.79	8.305 (iii)
TIME TO PEAK (hrs)=	2.75	2.83	2.75
RUNOFF VOLUME (mm)=	78.31	60.10	73.25
TOTAL RAINFALL (mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT =	0.98	0.75	0.91

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7414):	44.87	8.305	2.75	73.25
+ ID2= 2 (7415):	141.25	16.712	2.92	75.65
ID = 3 (7413):	186.12	23.650	2.75	75.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:Hazel1000 **
****

CALIB
STANDHYD (7419)
ID= 1 DT= 5.0 min

Area (ha)= 51.22
Total Imp(%)= 94.80 Dir. Conn.(%)= 94.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	48.56	2.66
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.31	1.31
Length	(m)=	584.35	40.00
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	52.33	
over (min)	10.00	15.00	
Storage Coeff. (min)=	8.76 (ii)	11.99 (ii)	
Unit Hyd. Tpeak (min)=	10.00	15.00	
Unit Hyd. peak (cms)=	0.12	0.09	
			TOTALS
PEAK FLOW (cms)=	7.14	0.38	7.523 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.50	208.93
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.99

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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.

CALIB		
STANDHYD (7417)	Area (ha)=	35.65
ID= 1 DT= 5.0 min	Total Imp(%)=	80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	28.56	7.09
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	487.51	40.00
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	52.50	
over (min)	5.00	20.00	
Storage Coeff. (min)=	7.14 (ii)	16.57 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.17	0.06	
			TOTALS
PEAK FLOW (cms)=	4.20	0.99	5.195 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.56	205.92
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7669)

```
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK      R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
        ID1= 1 (  7417):    35.65   5.195    10.00   205.92
      + ID2= 2 (  7419):    51.22   7.523    10.00   208.93
        ================================================
        ID = 3 (  7669):    86.87  12.718    10.00   207.70

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  7672)|     PIPE Number      =   1.00
| IN= 2---> OUT= 1 |     Width       (mm)=4200.00     Height   (mm)=1500.00
| DT=  5.0 min     |     Length       (m)= 120.00
--------------------     Slope      (m/m)=  0.017
                         Manning n        =  0.013

     <------------------ TRAVEL TIME TABLE --------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.08     .398E+02       0.6         1.80         1.11
       0.16     .796E+02       1.9         2.79         0.72
       0.24     .119E+03       3.6         3.58         0.56
       0.32     .159E+03       5.6         4.24         0.47
       0.39     .199E+03       8.0         4.82         0.42
       0.47     .239E+03      10.6         5.33         0.38
       0.55     .279E+03      13.4         5.78         0.35
       0.63     .318E+03      16.4         6.20         0.32
       0.71     .358E+03      19.6         6.58         0.30
       0.79     .398E+03      23.0         6.93         0.29
       0.87     .438E+03      26.5         7.25         0.28
       0.95     .477E+03      30.1         7.55         0.26
       1.03     .517E+03      33.8         7.83         0.26
       1.11     .557E+03      37.6         8.09         0.25
       1.18     .597E+03      41.5         8.34         0.24
       1.26     .637E+03      45.5         8.57         0.23
       1.34     .676E+03      49.5         8.78         0.23
       1.42     .716E+03      53.7         8.99         0.22
       1.50     .756E+03      57.9         9.18         0.22
                                    <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                               (ha)    (cms)   (hrs)   (mm)      (m)       (m/s)
   INFLOW : ID= 2 (  7669)   86.87    12.72   10.00 207.70      0.53       5.66
   OUTFLOW: ID= 1 (  7672)   86.87    12.72   10.00 207.70      0.53       5.65



--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7671)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
              <------ DATA FOR SECTION (   1.1) ------>
              Distance      Elevation       Manning
                  0.00          2.35        0.0800      Main Channel
                  2.60          1.32        0.0800      Main Channel
                  9.50          1.29        0.0800      Main Channel
                 11.60          0.47        0.0800      Main Channel
                 15.10          0.45    0.0800 /0.0350  Main Channel
                 16.00          0.00        0.0350      Main Channel
                 17.00          0.00        0.0350      Main Channel
                 17.90          0.45    0.0350 /0.0800  Main Channel
                 21.50          0.47        0.0800      Main Channel
                 23.60          1.29        0.0800      Main Channel
                 30.40          1.32        0.0800      Main Channel
```

```
            33.00          2.35        0.0800      Main Channel
```

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.524E+02	0.0	0.18	34.47
0.22	0.22	.124E+03	0.1	0.27	23.53
0.34	0.34	.215E+03	0.2	0.33	18.93
0.45	0.45	.325E+03	0.3	0.39	16.23
0.58	0.58	.789E+03	0.7	0.33	19.48
0.70	0.70	.131E+04	1.2	0.34	18.37
0.83	0.83	.186E+04	1.8	0.38	16.82
0.96	0.96	.244E+04	2.6	0.41	15.47
1.08	1.08	.305E+04	3.5	0.44	14.36
1.21	1.21	.370E+04	4.6	0.47	13.45
1.34	1.34	.453E+04	4.9	0.41	15.49
1.46	1.46	.589E+04	6.6	0.42	14.93
1.59	1.59	.728E+04	8.5	0.45	14.22
1.72	1.72	.870E+04	10.7	0.47	13.50
1.84	1.84	.101E+05	13.2	0.49	12.83
1.97	1.97	.116E+05	15.8	0.52	12.23
2.10	2.10	.131E+05	18.7	0.54	11.68
2.22	2.22	.147E+05	21.9	0.57	11.19
2.35	2.35	.163E+05	25.2	0.59	10.75

		<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (7672)	86.87	12.72	10.00	207.70	1.82	0.49
OUTFLOW: ID= 1 (7671)	86.87	12.18	10.00	207.70	1.79	0.48

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

```
| ROUTE CHN(  7673)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
```

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.620E+01	0.1	1.02	0.73
0.22	0.22	.147E+02	0.5	1.50	0.50
0.34	0.34	.254E+02	1.1	1.87	0.40
0.45	0.45	.385E+02	1.9	2.18	0.34
0.58	0.58	.934E+02	3.8	1.81	0.41
0.70	0.70	.155E+03	6.6	1.92	0.39
0.83	0.83	.220E+03	10.3	2.10	0.36

0.96	0.96	.289E+03	14.7	2.28	0.33
1.08	1.08	.361E+03	19.7	2.46	0.30
1.21	1.21	.438E+03	25.5	2.63	0.29
1.34	1.34	.537E+03	27.2	2.28	0.33
1.46	1.46	.698E+03	36.7	2.37	0.32
1.59	1.59	.862E+03	47.6	2.48	0.30
1.72	1.72	.103E+04	59.9	2.62	0.29
1.84	1.84	.120E+04	73.5	2.75	0.27
1.97	1.97	.138E+04	88.4	2.89	0.26
2.10	2.10	.156E+04	104.5	3.02	0.25
2.22	2.22	.174E+04	121.9	3.16	0.24
2.35	2.35	.192E+04	140.5	3.29	0.23

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7671)	86.87	12.18	10.00	207.70	0.89	2.18
OUTFLOW: ID= 1 (7673)	86.87	12.17	10.00	207.70	0.88	2.18

ROUTE CHN(7674)
IN= 2---> OUT= 1

Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	2.35	0.0800	Main Channel
2.60	1.32	0.0800	Main Channel
9.50	1.29	0.0800	Main Channel
11.60	0.47	0.0800	Main Channel
15.10	0.45	0.0800 /0.0350	Main Channel
16.00	0.00	0.0350	Main Channel
17.00	0.00	0.0350	Main Channel
17.90	0.45	0.0350 /0.0800	Main Channel
21.50	0.47	0.0800	Main Channel
23.60	1.29	0.0800	Main Channel
30.40	1.32	0.0800	Main Channel
33.00	2.35	0.0800	Main Channel

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.11	0.11	.220E+01	0.0	0.18	1.45
0.22	0.22	.522E+01	0.1	0.27	0.99
0.34	0.34	.905E+01	0.2	0.33	0.80
0.45	0.45	.137E+02	0.3	0.39	0.68
0.58	0.58	.332E+02	0.7	0.33	0.82
0.70	0.70	.551E+02	1.2	0.34	0.77
0.83	0.83	.782E+02	1.8	0.38	0.71
0.96	0.96	.103E+03	2.6	0.41	0.65
1.08	1.08	.128E+03	3.5	0.44	0.60
1.21	1.21	.156E+03	4.6	0.47	0.57
1.34	1.34	.191E+03	4.9	0.41	0.65
1.46	1.46	.248E+03	6.6	0.42	0.63
1.59	1.59	.306E+03	8.5	0.45	0.60
1.72	1.72	.366E+03	10.7	0.47	0.57
1.84	1.84	.427E+03	13.2	0.49	0.54
1.97	1.97	.490E+03	15.8	0.52	0.51
2.10	2.10	.553E+03	18.7	0.54	0.49
2.22	2.22	.618E+03	21.9	0.57	0.47
2.35	2.35	.684E+03	25.2	0.59	0.45

		<---- hydrograph ---->		<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7673)	86.87	12.17	10.00	207.70	1.79	0.48
OUTFLOW: ID= 1 (7674)	86.87	12.13	10.00	207.70	2.02	0.53

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

ROUTE CHN(7670)	
IN= 2---> OUT= 1	Routing time step (min)'= 5.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	234.99	0.0600	
53.06	234.75	0.0600	Main Channel
92.06	234.34	0.0600	Main Channel
232.28	233.82	0.0600	Main Channel
292.28	232.94	0.0600	Main Channel
316.40	232.30	0.0600	Main Channel
332.40	232.58	0.0600	Main Channel
356.40	232.15	0.0600	Main Channel
418.83	232.34	0.0600	Main Channel
474.52	231.93	0.0600	Main Channel
505.94	230.69	0.0600	Main Channel
541.95	232.04	0.0600	Main Channel
552.73	232.23	0.0600	Main Channel
739.23	232.86	0.0600	Main Channel
759.44	232.76	0.0600	Main Channel
799.56	233.26	0.0600	Main Channel
859.79	233.36	0.0600	Main Channel
906.16	233.77	0.0600	Main Channel
940.38	234.79	0.0600 /0.0600	Main Channel
960.79	235.04	0.0600	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.21	230.90	.104E+04	0.4	0.32	45.78
0.43	231.12	.416E+04	2.4	0.50	28.84
0.64	231.33	.937E+04	7.1	0.66	22.01
0.86	231.55	.167E+05	15.3	0.80	18.17
1.07	231.76	.260E+05	27.7	0.92	15.66
1.29	231.98	.376E+05	43.0	0.99	14.56
1.50	232.19	.549E+05	55.3	0.87	16.57
1.72	232.41	.933E+05	80.6	0.75	19.28
1.93	232.62	.153E+06	152.1	0.86	16.78
2.15	232.84	.228E+06	254.6	0.97	14.96
2.36	233.05	.318E+06	418.6	1.14	12.68
2.58	233.27	.414E+06	620.1	1.30	11.13
2.79	233.48	.524E+06	831.7	1.38	10.50
3.01	233.70	.643E+06	1122.6	1.52	9.55
3.22	233.91	.769E+06	1446.6	1.63	8.86
3.44	234.13	.906E+06	1792.6	1.72	8.43
3.65	234.34	.106E+07	2189.3	1.80	8.04
3.98	234.67	.130E+07	3042.9	2.04	7.10
4.30	234.99	.155E+07	4039.2	2.26	6.41

		<---- hydrograph ---->		<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7674)	86.87	12.13	10.00	207.70	0.78	0.74

OUTFLOW: ID= 1 (7670) 86.87 11.24 10.17 207.69 0.75 0.72

CALIB	
STANDHYD (7667)	Area (ha)= 54.38
ID= 1 DT= 5.0 min	Total Imp(%)= 80.10 Dir. Conn.(%)= 80.04

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	43.56	10.82
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.80	1.80
Length	(m)=	602.11	40.00
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	52.50
over (min)		10.00	20.00
Storage Coeff. (min)=		8.11 (ii)	17.53 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00

```
     Unit Hyd. peak  (cms)=       0.13         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       6.40         1.51          7.910 (iii)
     TIME TO PEAK    (hrs)=      10.00        10.00         10.00
     RUNOFF VOLUME    (mm)=     210.00       189.56        205.92
     TOTAL RAINFALL   (mm)=     212.00       212.00        212.00
     RUNOFF COEFFICIENT   =       0.99         0.89          0.97


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  93.0    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  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   7.910    10.00   205.92
      + ID2= 2 (  7670):    86.87  11.244    10.17   207.69
        ================================================
        ID = 3 (  7668):   141.25  18.675    10.08   207.01

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  7415)|
| IN= 2---> OUT= 1 |     Routing time step (min)'=  5.00
--------------------
               <------ DATA FOR SECTION (   1.1) ------>
               Distance      Elevation       Manning
                   0.00        228.37        0.0600
                  37.24        228.58        0.0600      Main Channel
                 103.47        228.14        0.0600      Main Channel
                 128.49        227.50        0.0600      Main Channel
                 165.99        227.25        0.0600      Main Channel
                 207.42        227.13        0.0600      Main Channel
                 269.17        227.55        0.0600      Main Channel
                 330.99        227.38        0.0600      Main Channel
                 382.77        226.05        0.0600      Main Channel
                 435.35        225.42        0.0600      Main Channel
                 499.95        223.27        0.0600      Main Channel
                 546.11        225.36        0.0600      Main Channel
                 624.78        225.07        0.0600      Main Channel
                 738.92        226.66        0.0600      Main Channel
                 765.34        227.40        0.0600      Main Channel
                 846.93        228.42        0.0600      Main Channel
                 904.88        228.21        0.0600      Main Channel
                 958.92        229.00        0.0600      Main Channel
                 983.38        229.86    0.0600 /0.0600  Main Channel
                 999.71        230.75        0.0600

      <--------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH    ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
        (m)      (m)     (cu.m.)      (cms)        (m/s)      (min)
       0.26   223.53    .100E+04       0.4          0.23      42.43
       0.51   223.78    .402E+04       2.5          0.37      26.73
       0.77   224.04    .904E+04       7.4          0.48      20.40
       1.03   224.30    .161E+05      15.9          0.58      16.84
       1.28   224.55    .251E+05      28.9          0.67      14.51
       1.54   224.81    .362E+05      46.9          0.76      12.85
```

1.79	225.06	.492E+05	70.8	0.84	11.60
2.05	225.32	.706E+05	79.7	0.66	14.76
2.31	225.58	.104E+06	130.9	0.74	13.19
2.56	225.83	.143E+06	201.0	0.83	11.82
2.82	226.09	.187E+06	291.3	0.91	10.72
3.08	226.35	.237E+06	407.3	1.01	9.70
3.33	226.60	.291E+06	544.1	1.10	8.92
3.59	226.86	.349E+06	709.4	1.19	8.20
3.84	227.11	.410E+06	898.3	1.29	7.61
4.10	227.37	.481E+06	997.4	1.22	8.04
4.36	227.63	.573E+06	1149.4	1.18	8.31
4.61	227.88	.674E+06	1464.0	1.27	7.68
4.87	228.14	.781E+06	1814.9	1.36	7.17

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (7668)	141.25	18.67	10.08	207.01	1.08	0.60
OUTFLOW: ID= 1 (7415)	141.25	17.54	10.17	207.01	1.06	0.59

CALIB	
STANDHYD (7414)	Area (ha)= 44.87
ID= 1 DT= 5.0 min	Total Imp(%)= 72.29 Dir. Conn.(%)= 72.23

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	32.44	12.43
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.73	1.73
Length	(m)=	546.93	40.00
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	52.45	
over (min)	10.00	20.00	
Storage Coeff. (min)=	7.74 (ii)	17.29 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.13	0.06	
			TOTALS
PEAK FLOW (cms)=	4.77	1.73	6.502 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	189.54	204.32
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.89	0.96

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 93.0 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 (7413)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7414):	44.87	6.502	10.00	204.32
+ ID2= 2 (7415):	141.25	17.541	10.17	207.01
ID = 3 (7413):	186.12	23.539	10.08	206.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

VO Modeling Results Downstream Flows
Scenario 1: Future Conditions – Original Civica Model

```
**************************************************
** SIMULATION:100 Year 12 Hour AES (Bloor, TRCA) **
**************************************************

--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   4.849     5.25    81.40
      + ID2= 2 (  7415):    51.22   4.479     5.42    85.56
        ==================================================
        ID = 3 (  7413):    96.09   9.031     5.25    83.62

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

--------------------
| ADD HYD  (  7413)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  7413):    96.09   9.031     5.25    83.62
      + ID2= 2 (  7417):    90.03   9.779     5.25    82.85
        ==================================================
        ID = 1 (  7413):   186.12  18.810     5.25    83.24

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

--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  15.055     5.25    80.26
      + ID2= 2 (  7410):   186.12  14.131     5.67    83.24
        ==================================================
        ID = 3 (  7408):   329.97  25.863     5.33    81.94

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

--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  19.607     5.25    80.29
      + ID2= 2 (  7405):   329.97  20.173     6.00    81.94
        ==================================================
        ID = 3 (  7403):   517.74  31.167     5.42    81.34

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

--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  26.946     6.25    81.34
      + ID2= 2 (  7399):    77.10   8.571     5.25    83.65
        ==================================================
        ID = 3 (  7581):   594.84  29.419     6.25    81.64

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

```
--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  29.419     6.25    81.64
      + ID2= 2 (  7582):   556.86  45.780     5.33    81.14
        ================================================
        ID = 3 (  7396):  1151.70  66.682     5.33    81.40

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
*************************************************
** SIMULATION:100 Year 24 Hour AES (Bloor, TRCA) **
*************************************************

--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   2.682    10.25    88.71
      + ID2= 2 (  7415):    51.22   2.957    10.33    92.93
        ================================================
        ID = 3 (  7413):    96.09   5.620    10.25    90.96

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

--------------------
| ADD HYD  (  7413)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  7413):    96.09   5.620    10.25    90.96
      + ID2= 2 (  7417):    90.03   5.408    10.25    90.18
        ================================================
        ID = 1 (  7413):   186.12  11.029    10.25    90.58

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

--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85   8.475    10.25    87.55
      + ID2= 2 (  7410):   186.12   9.901    10.58    90.58
        ================================================
        ID = 3 (  7408):   329.97  17.863    10.25    89.26

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

--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  11.098    10.25    87.60
      + ID2= 2 (  7405):   329.97  15.390    10.83    89.26
        ================================================
        ID = 3 (  7403):   517.74  24.222    10.33    88.65

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

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

```
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7397):   517.74  21.340    11.00    88.65
     + ID2= 2 (  7399):    77.10   4.664    10.25    90.99
       ================================================
       ID = 3 (  7581):   594.84  22.869    10.92    88.96

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


-------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7581):   594.84  22.869    10.92    88.96
     + ID2= 2 (  7582):   556.86  31.193    10.33    88.45
       ================================================
       ID = 3 (  7396):  1151.70  52.823    10.33    88.71

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
************************************************
** SIMULATION:100 Year 6 Hour AES (Bloor, TRCA) **
************************************************


-------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7414):    44.87   8.305     2.75    73.25
     + ID2= 2 (  7415):    51.22   5.772     3.00    77.35
       ================================================
       ID = 3 (  7413):    96.09  12.441     2.75    75.44

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


-------------------
| ADD HYD  (  7413)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  7413):    96.09  12.441     2.75    75.44
     + ID2= 2 (  7417):    90.03  17.190     2.75    74.68
       ================================================
       ID = 1 (  7413):   186.12  29.632     2.75    75.07

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


-------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7409):   143.85  24.988     2.75    72.14
     + ID2= 2 (  7410):   186.12  17.156     3.42    75.07
       ================================================
       ID = 3 (  7408):   329.97  32.124     2.83    73.79

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


-------------------
| ADD HYD  (  7403)|
```

```
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7404):   187.77  32.246     2.75    72.16
     + ID2= 2 (  7405):   329.97  23.584     3.75    73.79
       ================================================
       ID = 3 (  7403):   517.74  36.074     2.75    73.20

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


------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7397):   517.74  29.564     4.00    73.20
     + ID2= 2 (  7399):    77.10  15.193     2.75    75.47
       ================================================
       ID = 3 (  7581):   594.84  31.185     3.92    73.49

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


------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7581):   594.84  31.185     3.92    73.49
     + ID2= 2 (  7582):   556.86  55.475     3.08    73.00
       ================================================
       ID = 3 (  7396):  1151.70  79.358     3.25    73.25

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
**********************************
** SIMULATION:Hazel1000       **
**********************************


------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7414):    44.87   6.502    10.00   204.32
     + ID2= 2 (  7415):    51.22   6.297    10.25   208.92
       ================================================
       ID = 3 (  7413):    96.09  12.288    10.08   206.77

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


------------------
| ADD HYD  (  7413)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  7413):    96.09  12.288    10.08   206.77
     + ID2= 2 (  7417):    90.03  13.059    10.00   205.92
       ================================================
       ID = 1 (  7413):   186.12  25.316    10.00   206.36

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


------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
```

```
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  20.475    10.00   202.96
      + ID2= 2 (  7410):   186.12  21.486    10.75   206.36
        ==============================================
        ID = 3 (  7408):   329.97  37.666    10.08   204.88

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


--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  26.627    10.00   203.14
      + ID2= 2 (  7405):   329.97  36.098    11.17   204.88
        ==============================================
        ID = 3 (  7403):   517.74  55.870    11.00   204.25

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


--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  52.763    11.33   204.25
      + ID2= 2 (  7399):    77.10  11.304    10.00   206.82
        ==============================================
        ID = 3 (  7581):   594.84  59.011    11.00   204.58

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  59.011    11.00   204.58
      + ID2= 2 (  7582):   556.86  67.694    10.33   204.04
        ==============================================
        ID = 3 (  7396):  1151.70 122.150    11.00   204.32

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

VO Modeling Results Downstream Flows
Scenario 2: Future Conditions – Civica Model with Greck

```
**************************************************
** SIMULATION:1. 2 Year 6 Hour AES (Bloor, TRCA) **
**************************************************

--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7417):    35.65   2.765     2.75    31.05
     + ID2= 2 (  7419):    51.22   4.363     2.75    33.23
       ================================================
       ID = 3 (  7669):    86.87   7.129     2.75    32.33

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

--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7667):    54.38   4.157     2.75    31.05
     + ID2= 2 (  7670):    86.87   4.301     3.08    32.33
       ================================================
       ID = 3 (  7668):   141.25   7.387     2.83    31.84

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

--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7414):    44.87   3.242     2.75    29.89
     + ID2= 2 (  7415):   141.25   5.832     3.17    31.83
       ================================================
       ID = 3 (  7413):   186.12   8.019     2.83    31.37

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

--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7409):   143.85   9.051     2.83    29.11
     + ID2= 2 (  7410):   186.12   5.262     4.25    31.36
       ================================================
       ID = 3 (  7408):   329.97   9.700     2.83    30.38

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

--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7404):   187.77  11.485     2.83    28.95
     + ID2= 2 (  7405):   329.97   6.417     4.83    30.38
       ================================================
       ID = 3 (  7403):   517.74  12.341     2.83    29.86

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

```
--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7397):   517.74   8.064     4.75    29.86
     + ID2= 2 (  7399):    77.10   6.105     2.75    31.67
       ==================================================
       ID = 3 (  7581):   594.84   8.438     4.33    30.09

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7581):   594.84   8.438     4.33    30.09
     + ID2= 2 (  7582):   556.86  17.773     3.33    29.69
       ==================================================
       ID = 3 (  7396):  1151.70  24.390     3.58    29.90

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
*************************************************
** SIMULATION:2. 5 Year 6 Hour AES (Bloor, TRCA) **
*************************************************


--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7417):    35.65   3.845     2.75    42.58
     + ID2= 2 (  7419):    51.22   5.912     2.75    44.97
       ==================================================
       ID = 3 (  7669):    86.87   9.757     2.75    43.99

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


--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7667):    54.38   5.794     2.75    42.58
     + ID2= 2 (  7670):    86.87   6.361     3.00    43.98
       ==================================================
       ID = 3 (  7668):   141.25  10.699     2.83    43.44

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


--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7414):    44.87   4.591     2.75    41.31
     + ID2= 2 (  7415):   141.25   8.670     3.08    43.44
       ==================================================
       ID = 3 (  7413):   186.12  11.927     2.83    42.93

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


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

| ADD HYD (7408)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7409):	143.85	13.280	2.75	40.41
+ ID2= 2 (7410):	186.12	7.511	4.00	42.93
ID = 3 (7408):	329.97	14.105	2.75	41.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7403)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7404):	187.77	16.666	2.83	40.31
+ ID2= 2 (7405):	329.97	9.400	4.58	41.83
ID = 3 (7403):	517.74	18.293	2.83	41.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7581)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7397):	517.74	12.049	4.42	41.27
+ ID2= 2 (7399):	77.10	8.638	2.75	43.27
ID = 3 (7581):	594.84	12.864	4.25	41.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7396)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7581):	594.84	12.864	4.25	41.53
+ ID2= 2 (7582):	556.86	27.480	3.25	41.09
ID = 3 (7396):	1151.70	37.299	3.33	41.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:3. 10 Year 6 Hour AES (Bloor, TRCA) **
****

| ADD HYD (7669)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7417):	35.65	4.579	2.75	50.33
+ ID2= 2 (7419):	51.22	6.952	2.75	52.81
ID = 3 (7669):	86.87	11.531	2.75	51.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7668)|

```
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
------------------           (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7667):     54.38    6.873      2.75     50.33
      + ID2= 2 (  7670):     86.87    7.697      3.00     51.79
        ================================================
        ID = 3 (  7668):    141.25   13.135      2.83     51.23

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


--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
------------------           (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7414):     44.87    5.474      2.75     49.01
      + ID2= 2 (  7415):    141.25   10.610      3.00     51.22
        ================================================
        ID = 3 (  7413):    186.12   14.776      2.83     50.69

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


--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
------------------           (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7409):    143.85   15.946      2.75     48.04
      + ID2= 2 (  7410):    186.12    9.228      3.92     50.69
        ================================================
        ID = 3 (  7408):    329.97   17.078      2.75     49.53

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


--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
------------------           (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7404):    187.77   20.383      2.75     47.98
      + ID2= 2 (  7405):    329.97   11.730      4.42     49.53
        ================================================
        ID = 3 (  7403):    517.74   22.008      2.75     48.97

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


--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
------------------           (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7397):    517.74   14.995      4.33     48.97
      + ID2= 2 (  7399):     77.10   10.208      2.75     51.05
        ================================================
        ID = 3 (  7581):    594.84   15.970      4.25     49.24

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
------------------           (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7581):    594.84   15.970      4.25     49.24
      + ID2= 2 (  7582):    556.86   34.119      3.25     48.78
```

```
        ==========================================================
        ID = 3 (  7396):  1151.70  46.861     3.33    49.01

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
**********************************************************
** SIMULATION:4. 25 Year 6 Hour AES (Bloor, TRCA) **
**********************************************************

--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   5.476     2.75    60.10
      + ID2= 2 (  7419):    51.22   8.259     2.75    62.68
        ==========================================================
        ID = 3 (  7669):    86.87  13.735     2.75    61.62

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

--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   8.239     2.75    60.10
      + ID2= 2 (  7670):    86.87   9.285     3.00    61.62
        ==========================================================
        ID = 3 (  7668):   141.25  16.052     2.83    61.03

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

--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   6.630     2.75    58.73
      + ID2= 2 (  7415):   141.25  13.066     2.92    61.03
        ==========================================================
        ID = 3 (  7413):   186.12  17.530     2.75    60.48

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

--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  19.359     2.75    57.70
      + ID2= 2 (  7410):   186.12  11.590     3.75    60.47
        ==========================================================
        ID = 3 (  7408):   329.97  21.116     2.75    59.26

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

--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  24.816     2.75    57.67
      + ID2= 2 (  7405):   329.97  14.983     4.17    59.26
        ==========================================================
```

```
        ID = 3 (  7403):   517.74  27.076     2.75    58.68

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


--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  19.318     4.25    58.68
      + ID2= 2 (  7399):    77.10  12.183     2.75    60.85
        ================================================
        ID = 3 (  7581):   594.84  20.487     4.17    58.96

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  20.487     4.17    58.96
      + ID2= 2 (  7582):   556.86  42.661     3.17    58.49
        ================================================
        ID = 3 (  7396):  1151.70  59.152     3.33    58.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
**********************************************
** SIMULATION:5. 50 Year 6 Hour AES (Bloor, TRCA) **
**********************************************


--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   6.298     2.75    67.43
      + ID2= 2 (  7419):    51.22   9.237     2.75    70.07
        ================================================
        ID = 3 (  7669):    86.87  15.536     2.75    68.99

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


--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   9.540     2.75    67.43
      + ID2= 2 (  7670):    86.87  10.698     2.92    68.98
        ================================================
        ID = 3 (  7668):   141.25  18.486     2.75    68.39

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


--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   7.471     2.75    66.03
      + ID2= 2 (  7415):   141.25  14.824     2.92    68.38
        ================================================
        ID = 3 (  7413):   186.12  20.736     2.75    67.82
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7408)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7409):	143.85	22.374	2.75	64.96
	+ ID2= 2 (7410):	186.12	13.591	3.67	67.81
	ID = 3 (7408):	329.97	24.769	2.75	66.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7403)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7404):	187.77	28.840	2.75	64.95
	+ ID2= 2 (7405):	329.97	17.801	4.00	66.57
	ID = 3 (7403):	517.74	31.741	2.75	65.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7581)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7397):	517.74	23.127	4.08	65.98
	+ ID2= 2 (7399):	77.10	13.734	2.75	68.20
	ID = 3 (7581):	594.84	24.642	3.75	66.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7396)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7581):	594.84	24.642	3.75	66.27
	+ ID2= 2 (7582):	556.86	49.113	3.17	65.78
	ID = 3 (7396):	1151.70	69.040	3.25	66.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****

** SIMULATION:6. 100 Year 6 Hour AES (Bloor, TRCA) **

****

ADD HYD (7669)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7417):	35.65	6.973	2.75	74.68
	+ ID2= 2 (7419):	51.22	10.202	2.75	77.36
	ID = 3 (7669):	86.87	17.175	2.75	76.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7668)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7667):	54.38	10.569	2.75	74.68
	+ ID2= 2 (7670):	86.87	12.085	2.92	76.26
	ID = 3 (7668):	141.25	20.749	2.75	75.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7414):	44.87	8.305	2.75	73.25
	+ ID2= 2 (7415):	141.25	16.725	2.92	75.65
	ID = 3 (7413):	186.12	23.415	2.75	75.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7408)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7409):	143.85	24.988	2.75	72.14
	+ ID2= 2 (7410):	186.12	15.677	3.67	75.07
	ID = 3 (7408):	329.97	27.937	2.75	73.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7403)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7404):	187.77	32.246	2.75	72.16
	+ ID2= 2 (7405):	329.97	20.707	3.83	73.79
	ID = 3 (7403):	517.74	35.808	2.75	73.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7581)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7397):	517.74	27.068	4.00	73.20
	+ ID2= 2 (7399):	77.10	15.193	2.75	75.47
	ID = 3 (7581):	594.84	29.030	3.75	73.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  29.030     3.75    73.49
      + ID2= 2 (  7582):   556.86  55.475     3.08    73.00
        ================================================
        ID = 3 (  7396):  1151.70  78.929     3.25    73.25

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
*******************************
** SIMULATION:Hazel1000       **
*******************************

-------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   5.195    10.00   205.92
      + ID2= 2 (  7419):    51.22   7.523    10.00   208.93
        ================================================
        ID = 3 (  7669):    86.87  12.718    10.00   207.70

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

-------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   7.910    10.00   205.92
      + ID2= 2 (  7670):    86.87  11.550    10.17   207.69
        ================================================
        ID = 3 (  7668):   141.25  19.018    10.00   207.01

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

-------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   6.502    10.00   204.32
      + ID2= 2 (  7415):   141.25  17.841    10.17   207.01
        ================================================
        ID = 3 (  7413):   186.12  23.837    10.08   206.36

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

-------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  20.475    10.00   202.96
      + ID2= 2 (  7410):   186.12  21.230    11.08   206.36
        ================================================
        ID = 3 (  7408):   329.97  36.505    11.00   204.88

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

-------------------
| ADD HYD  (  7403)|
```

```
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  26.627    10.00   203.14
      + ID2= 2 (  7405):   329.97  34.874    11.25   204.88
        ================================================
        ID = 3 (  7403):   517.74  54.219    11.00   204.25

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


--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  51.212    11.33   204.25
      + ID2= 2 (  7399):    77.10  11.304    10.00   206.82
        ================================================
        ID = 3 (  7581):   594.84  57.557    11.00   204.58

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  57.557    11.00   204.58
      + ID2= 2 (  7582):   556.86  67.694    10.33   204.04
        ================================================
        ID = 3 (  7396):  1151.70 120.696    11.00   204.32

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

VO Modeling Results Downstream Flows
Scenario 3: Future Conditions – Proposed Natural Channel by Wood

```
**************************************************
** SIMULATION:100 Year 6 Hour AES (Bloor, TRCA) **
**************************************************

-------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   6.973     2.75    74.68
      + ID2= 2 (  7419):    51.22  10.202     2.75    77.36
        ==================================================
        ID = 3 (  7669):    86.87  17.175     2.75    76.26

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

-------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38  10.569     2.75    74.68
      + ID2= 2 (  7670):    86.87  13.078     2.92    76.26
        ==================================================
        ID = 3 (  7668):   141.25  22.278     2.75    75.65

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

-------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   8.305     2.75    73.25
      + ID2= 2 (  7415):   141.25  17.893     2.92    75.65
        ==================================================
        ID = 3 (  7413):   186.12  24.632     2.75    75.07

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

-------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  24.988     2.75    72.14
      + ID2= 2 (  7410):   186.12  16.169     3.58    75.07
        ==================================================
        ID = 3 (  7408):   329.97  28.073     2.75    73.79

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

-------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  32.246     2.75    72.16
      + ID2= 2 (  7405):   329.97  21.307     3.83    73.79
        ==================================================
        ID = 3 (  7403):   517.74  35.812     2.75    73.20

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

```
--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  27.445     4.08    73.20
      + ID2= 2 (  7399):    77.10  15.193     2.75    75.47
        ================================================
        ID = 3 (  7581):   594.84  29.260     3.75    73.49

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  29.260     3.75    73.49
      + ID2= 2 (  7582):   556.86  55.475     3.08    73.00
        ================================================
        ID = 3 (  7396):  1151.70  78.944     3.25    73.25

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
*******************************
** SIMULATION:Hazel1000       **
*******************************


--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   5.195    10.00   205.92
      + ID2= 2 (  7419):    51.22   7.523    10.00   208.93
        ================================================
        ID = 3 (  7669):    86.87  12.718    10.00   207.70

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


--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   7.910    10.00   205.92
      + ID2= 2 (  7670):    86.87  11.877    10.08   207.69
        ================================================
        ID = 3 (  7668):   141.25  19.587    10.00   207.01

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


--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   6.502    10.00   204.32
      + ID2= 2 (  7415):   141.25  18.373    10.17   207.01
        ================================================
        ID = 3 (  7413):   186.12  24.464    10.08   206.36

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


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

| ADD HYD (7408)|
|1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7409):	143.85	20.475	10.00	202.96
+ ID2= 2 (7410):	186.12	21.436	11.00	206.36
ID = 3 (7408):	329.97	36.759	10.92	204.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7403)|
|1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7404):	187.77	26.627	10.00	203.14
+ ID2= 2 (7405):	329.97	35.211	11.25	204.88
ID = 3 (7403):	517.74	54.607	11.00	204.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7581)|
|1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7397):	517.74	51.483	11.33	204.25
+ ID2= 2 (7399):	77.10	11.304	10.00	206.82
ID = 3 (7581):	594.84	57.634	11.00	204.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7396)|
|1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7581):	594.84	57.634	11.00	204.58
+ ID2= 2 (7582):	556.86	67.694	10.33	204.04
ID = 3 (7396):	1151.70	120.773	11.00	204.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

VO Modeling Results Downstream Flows
Scenario 4: Future Conditions – Proposed Natural Channel by Greck

```
**************************************************
** SIMULATION:1. 2 Year 6 Hour AES (Bloor, TRCA) **
**************************************************

--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7417):    35.65   2.765     2.75    31.05
     + ID2= 2 (  7419):    51.22   4.363     2.75    33.23
       ================================================
       ID = 3 (  7669):    86.87   7.129     2.75    32.33

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

--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7667):    54.38   4.157     2.75    31.05
     + ID2= 2 (  7670):    86.87   4.307     3.08    32.33
       ================================================
       ID = 3 (  7668):   141.25   7.513     2.83    31.84

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

--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7414):    44.87   3.242     2.75    29.89
     + ID2= 2 (  7415):   141.25   5.930     3.08    31.83
       ================================================
       ID = 3 (  7413):   186.12   8.269     2.83    31.37

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

--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7409):   143.85   9.051     2.83    29.11
     + ID2= 2 (  7410):   186.12   5.306     4.17    31.36
       ================================================
       ID = 3 (  7408):   329.97   9.719     2.83    30.38

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

--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7404):   187.77  11.485     2.83    28.95
     + ID2= 2 (  7405):   329.97   6.476     4.83    30.38
       ================================================
       ID = 3 (  7403):   517.74  12.341     2.83    29.86

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

```
--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74   8.096     4.83    29.86
      + ID2= 2 (  7399):    77.10   6.105     2.75    31.67
        ==========================================================
        ID = 3 (  7581):   594.84   8.455     4.33    30.09

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84   8.455     4.33    30.09
      + ID2= 2 (  7582):   556.86  17.773     3.33    29.69
        ==========================================================
        ID = 3 (  7396):  1151.70  24.391     3.58    29.90

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
*************************************************
** SIMULATION:2. 5 Year 6 Hour AES (Bloor, TRCA) **
*************************************************


--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   3.845     2.75    42.58
      + ID2= 2 (  7419):    51.22   5.912     2.75    44.97
        ==========================================================
        ID = 3 (  7669):    86.87   9.757     2.75    43.99

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


--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   5.794     2.75    42.58
      + ID2= 2 (  7670):    86.87   6.110     3.00    43.98
        ==========================================================
        ID = 3 (  7668):   141.25  10.766     2.83    43.44

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


--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   4.591     2.75    41.31
      + ID2= 2 (  7415):   141.25   8.664     3.00    43.44
        ==========================================================
        ID = 3 (  7413):   186.12  12.149     2.83    42.93

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


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

| ADD HYD (7408)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7409):	143.85	13.280	2.75	40.41
+ ID2= 2 (7410):	186.12	7.492	4.00	42.93
ID = 3 (7408):	329.97	14.133	2.75	41.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7403)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7404):	187.77	16.666	2.83	40.31
+ ID2= 2 (7405):	329.97	9.430	4.58	41.83
ID = 3 (7403):	517.74	18.294	2.83	41.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7581)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7397):	517.74	12.084	4.42	41.27
+ ID2= 2 (7399):	77.10	8.638	2.75	43.27
ID = 3 (7581):	594.84	12.898	4.25	41.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7396)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7581):	594.84	12.898	4.25	41.53
+ ID2= 2 (7582):	556.86	27.480	3.25	41.09
ID = 3 (7396):	1151.70	37.300	3.33	41.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****
** SIMULATION:3. 10 Year 6 Hour AES (Bloor, TRCA) **
****

| ADD HYD (7669)|
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7417):	35.65	4.579	2.75	50.33
+ ID2= 2 (7419):	51.22	6.952	2.75	52.81
ID = 3 (7669):	86.87	11.531	2.75	51.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (7668)|

```
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   6.873     2.75    50.33
      + ID2= 2 (  7670):    86.87   7.342     3.00    51.79
        ================================================
        ID = 3 (  7668):   141.25  12.834     2.83    51.23

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


--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   5.474     2.75    49.01
      + ID2= 2 (  7415):   141.25  10.417     3.00    51.22
        ================================================
        ID = 3 (  7413):   186.12  14.678     2.83    50.69

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


--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  15.946     2.75    48.04
      + ID2= 2 (  7410):   186.12   9.094     3.83    50.69
        ================================================
        ID = 3 (  7408):   329.97  17.125     2.75    49.53

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


--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  20.383     2.75    47.98
      + ID2= 2 (  7405):   329.97  11.684     4.42    49.53
        ================================================
        ID = 3 (  7403):   517.74  22.009     2.75    48.97

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


--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  15.011     4.33    48.97
      + ID2= 2 (  7399):    77.10  10.208     2.75    51.05
        ================================================
        ID = 3 (  7581):   594.84  15.988     4.25    49.24

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
------------------           (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  15.988     4.25    49.24
      + ID2= 2 (  7582):   556.86  34.119     3.25    48.78
```

```
        ==============================================
        ID = 3 (  7396):  1151.70  46.863     3.33    49.01

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
**********************************************
** SIMULATION:4. 25 Year 6 Hour AES (Bloor, TRCA) **
**********************************************

--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   5.476     2.75    60.10
      + ID2= 2 (  7419):    51.22   8.259     2.75    62.68
        ==============================================
        ID = 3 (  7669):    86.87  13.735     2.75    61.62

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

--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   8.239     2.75    60.10
      + ID2= 2 (  7670):    86.87   9.021     2.92    61.61
        ==============================================
        ID = 3 (  7668):   141.25  16.066     2.83    61.03

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

--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   6.630     2.75    58.73
      + ID2= 2 (  7415):   141.25  13.157     2.92    61.03
        ==============================================
        ID = 3 (  7413):   186.12  17.814     2.75    60.48

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

--------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  19.359     2.75    57.70
      + ID2= 2 (  7410):   186.12  11.485     3.75    60.47
        ==============================================
        ID = 3 (  7408):   329.97  21.190     2.75    59.26

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

--------------------
| ADD HYD  (  7403)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  24.816     2.75    57.67
      + ID2= 2 (  7405):   329.97  15.005     4.08    59.26
        ==============================================
```

```
        ID = 3 (  7403):   517.74  27.079     2.75    58.68

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


--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  19.380     4.25    58.68
      + ID2= 2 (  7399):    77.10  12.183     2.75    60.85
        ================================================
        ID = 3 (  7581):   594.84  20.552     4.17    58.96

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  20.552     4.17    58.96
      + ID2= 2 (  7582):   556.86  42.661     3.17    58.49
        ================================================
        ID = 3 (  7396):  1151.70  59.161     3.33    58.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
**********************************************
** SIMULATION:5. 50 Year 6 Hour AES (Bloor, TRCA) **
**********************************************


--------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   6.298     2.75    67.43
      + ID2= 2 (  7419):    51.22   9.237     2.75    70.07
        ================================================
        ID = 3 (  7669):    86.87  15.536     2.75    68.99

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


--------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   9.540     2.75    67.43
      + ID2= 2 (  7670):    86.87  10.368     2.92    68.98
        ================================================
        ID = 3 (  7668):   141.25  18.627     2.75    68.39

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


--------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   7.471     2.75    66.03
      + ID2= 2 (  7415):   141.25  14.868     2.92    68.38
        ================================================
        ID = 3 (  7413):   186.12  21.026     2.75    67.82
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7408)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7409):	143.85	22.374	2.75	64.96
	+ ID2= 2 (7410):	186.12	13.449	3.58	67.81
	ID = 3 (7408):	329.97	24.866	2.75	66.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7403)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7404):	187.77	28.840	2.75	64.95
	+ ID2= 2 (7405):	329.97	17.786	3.92	66.57
	ID = 3 (7403):	517.74	31.745	2.75	65.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7581)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7397):	517.74	23.187	4.08	65.98
	+ ID2= 2 (7399):	77.10	13.734	2.75	68.20
	ID = 3 (7581):	594.84	24.731	3.75	66.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7396)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7581):	594.84	24.731	3.75	66.27
	+ ID2= 2 (7582):	556.86	49.113	3.17	65.78
	ID = 3 (7396):	1151.70	69.054	3.25	66.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

****

** SIMULATION:6. 100 Year 6 Hour AES (Bloor, TRCA) **

****

ADD HYD (7669)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7417):	35.65	6.973	2.75	74.68
	+ ID2= 2 (7419):	51.22	10.202	2.75	77.36
	ID = 3 (7669):	86.87	17.175	2.75	76.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7668)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7667):	54.38	10.569	2.75	74.68
	+ ID2= 2 (7670):	86.87	11.667	2.92	76.26
	ID = 3 (7668):	141.25	20.836	2.75	75.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7413)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7414):	44.87	8.305	2.75	73.25
	+ ID2= 2 (7415):	141.25	16.712	2.92	75.65
	ID = 3 (7413):	186.12	23.650	2.75	75.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7408)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7409):	143.85	24.988	2.75	72.14
	+ ID2= 2 (7410):	186.12	15.530	3.58	75.07
	ID = 3 (7408):	329.97	28.049	2.75	73.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7403)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7404):	187.77	32.246	2.75	72.16
	+ ID2= 2 (7405):	329.97	20.704	3.83	73.79
	ID = 3 (7403):	517.74	35.814	2.75	73.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7581)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (7397):	517.74	27.140	4.00	73.20
	+ ID2= 2 (7399):	77.10	15.193	2.75	75.47
	ID = 3 (7581):	594.84	29.115	3.75	73.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  29.115     3.75    73.49
      + ID2= 2 (  7582):   556.86  55.475     3.08    73.00
        ==========================================================
        ID = 3 (  7396):  1151.70  78.941     3.25    73.25

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
*******************************
** SIMULATION:Hazel1000       **
*******************************


-------------------
| ADD HYD  (  7669)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7417):    35.65   5.195    10.00   205.92
      + ID2= 2 (  7419):    51.22   7.523    10.00   208.93
        ==========================================================
        ID = 3 (  7669):    86.87  12.718    10.00   207.70

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


-------------------
| ADD HYD  (  7668)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7667):    54.38   7.910    10.00   205.92
      + ID2= 2 (  7670):    86.87  11.244    10.17   207.69
        ==========================================================
        ID = 3 (  7668):   141.25  18.675    10.08   207.01

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


-------------------
| ADD HYD  (  7413)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7414):    44.87   6.502    10.00   204.32
      + ID2= 2 (  7415):   141.25  17.541    10.17   207.01
        ==========================================================
        ID = 3 (  7413):   186.12  23.539    10.08   206.36

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


-------------------
| ADD HYD  (  7408)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7409):   143.85  20.475    10.00   202.96
      + ID2= 2 (  7410):   186.12  21.007    11.08   206.36
        ==========================================================
        ID = 3 (  7408):   329.97  36.271    11.00   204.88

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


-------------------
| ADD HYD  (  7403)|
```

```
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7404):   187.77  26.627    10.00   203.14
      + ID2= 2 (  7405):   329.97  34.664    11.25   204.88
        ================================================
        ID = 3 (  7403):   517.74  54.025    11.00   204.25

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


--------------------
| ADD HYD  (  7581)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7397):   517.74  51.114    11.33   204.25
      + ID2= 2 (  7399):    77.10  11.304    10.00   206.82
        ================================================
        ID = 3 (  7581):   594.84  57.403    11.00   204.58

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


--------------------
| ADD HYD  (  7396)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7581):   594.84  57.403    11.00   204.58
      + ID2= 2 (  7582):   556.86  67.694    10.33   204.04
        ================================================
        ID = 3 (  7396):  1151.70 120.542    11.00   204.32

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

Flow Calculations

Site: West Rainbow Creek Channel Realignment
30-Jul-25

Design Flow for Equity SWM Pond Outlet Extension

Flow into Equity SWM Pond outlet extension is catchment 24.11 100-year uncontrolled flows and 100-year controlled flows from Site 1 and 2

	100-year	
24.11 flow	10.202	m^3/s
Site 1 and 2 Area	8.166	ha
Site 1 and 2 Target 100-year Unit Flow Rate	25.05	L/s/ha *TRCA SWM Criteria (2012) Equation F for 100-year*
Site 1 and 2 Target 100-year Flow Rate	204.6	L/s
	0.20	m^3/s
Total flow to SWM Pond Outlet Extension	**10.407**	m^3/s

Emergency Spill Path Flows

Flow for the emergency spill path is catchment 24.11 100-year uncontrolled flows and 100-year uncontrolled flows from Site 1 and 2.

	100-year	
24.11 flow	10.202	m^3/s
Site 1 and 2 area	8.166	ha
Catchment 24.10 area	35.650	ha
Catchment 24.10 flow	6.973	*m^3/s From VO model*
Site 1 and 2 flow	1.597	m^3/s *Weighted average*
Total flow to emergency spill	**11.80**	m^3/s

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

****
Element Count
****
Number of rain gages 2
Number of subcatchments ... 0
Number of nodes 2
Number of links 1
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
AES_6h_100y	AES_6h_100y	INTENSITY	15 min.
Hazel_48h	Hazel_48h	INTENSITY	60 min.

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
EquityPond	JUNCTION	232.00	2.00	0.0	Yes
OF2	OUTFALL	230.02	1.50	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
C7	EquityPond	OF2	CONDUIT	120.0	1.6527	0.0130

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
C7	RECT_CLOSED	1.50	6.30	0.55	4.20	1	41.96

****
Transect Summary
****

Transect EmergencyPath
Area:

0.0005	0.0019	0.0043	0.0077	0.0120
0.0173	0.0235	0.0307	0.0389	0.0480
0.0581	0.0691	0.0811	0.0941	0.1080
0.1229	0.1387	0.1555	0.1733	0.1920
0.2117	0.2323	0.2539	0.2765	0.3000
0.3242	0.3486	0.3734	0.3986	0.4240
0.4498	0.4758	0.5022	0.5290	0.5560
0.5834	0.6110	0.6390	0.6674	0.6960
0.7250	0.7542	0.7838	0.8138	0.8440
0.8746	0.9054	0.9366	0.9682	1.0000

Hrad:

0.0160	0.0320	0.0480	0.0640	0.0800
0.0960	0.1120	0.1280	0.1440	0.1600
0.1760	0.1920	0.2080	0.2240	0.2400
0.2560	0.2720	0.2880	0.3040	0.3200
0.3360	0.3520	0.3680	0.3840	0.4000
0.4266	0.4528	0.4788	0.5045	0.5300
0.5553	0.5803	0.6051	0.6297	0.6541
0.6783	0.7024	0.7262	0.7499	0.7734
0.7967	0.8198	0.8429	0.8657	0.8884
0.9110	0.9334	0.9558	0.9779	1.0000

Width:

0.0300	0.0600	0.0900	0.1200	0.1500
0.1800	0.2100	0.2400	0.2700	0.3000
0.3300	0.3600	0.3900	0.4200	0.4500
0.4800	0.5100	0.5400	0.5700	0.6000
0.6300	0.6600	0.6900	0.7200	0.7500
0.7600	0.7700	0.7800	0.7900	0.8000
0.8100	0.8200	0.8300	0.8400	0.8500
0.8600	0.8700	0.8800	0.8900	0.9000
0.9100	0.9200	0.9300	0.9400	0.9500
0.9600	0.9700	0.9800	0.9900	1.0000

Transect T-C1
Area:

0.0002	0.0009	0.0019	0.0032	0.0047
0.0066	0.0088	0.0114	0.0144	0.0182
0.0228	0.0281	0.0341	0.0419	0.0508
0.0608	0.0721	0.0843	0.0971	0.1109
0.1256	0.1412	0.1577	0.1753	0.1941
0.2136	0.2340	0.2553	0.2776	0.3009
0.3251	0.3502	0.3766	0.4044	0.4338
0.4643	0.4958	0.5278	0.5604	0.5938
0.6280	0.6632	0.6989	0.7356	0.7745
0.8185	0.8635	0.9088	0.9543	1.0000

Hrad:

0.0316	0.0631	0.1017	0.1416	0.1760
0.2094	0.2308	0.2627	0.3115	0.3518
0.3789	0.4021	0.4170	0.4233	0.4313
0.4338	0.4445	0.4595	0.4736	0.4900
0.5032	0.5190	0.5363	0.5465	0.5626
0.5819	0.5990	0.6155	0.6333	0.6490
0.6663	0.6815	0.6929	0.7011	0.7110
0.7261	0.7515	0.7758	0.8036	0.8235
0.8412	0.8661	0.8916	0.9100	0.9190
0.8800	0.9087	0.9388	0.9692	1.0000

Width:

0.0093	0.0186	0.0256	0.0309	0.0370
0.0431	0.0522	0.0618	0.0739	0.0896
0.1089	0.1231	0.1548	0.1816	0.2061
0.2360	0.2567	0.2722	0.2924	0.3086
0.3311	0.3511	0.3695	0.3973	0.4183

```
            0.4351     0.4550     0.4760     0.4956     0.5180
            0.5385     0.5618     0.5903     0.6238     0.6560
            0.6812     0.6931     0.7067     0.7159     0.7359
            0.7596     0.7735     0.7865     0.8095     0.9141
            0.9777     0.9849     0.9901     0.9951     1.0000

Transect T-C8
Area:
            0.0003     0.0009     0.0017     0.0026     0.0039
            0.0057     0.0080     0.0107     0.0137     0.0177
            0.0227     0.0286     0.0351     0.0423     0.0505
            0.0594     0.0688     0.0787     0.0890     0.1000
            0.1117     0.1241     0.1370     0.1505     0.1650
            0.1809     0.1979     0.2164     0.2385     0.2645
            0.2924     0.3225     0.3541     0.3874     0.4214
            0.4558     0.4905     0.5256     0.5609     0.5967
            0.6330     0.6697     0.7066     0.7437     0.7810
            0.8192     0.8601     0.9040     0.9503     1.0000
Hrad:
            0.0347     0.0878     0.1386     0.1852     0.1530
            0.2027     0.2580     0.3047     0.3496     0.3630
            0.3772     0.3896     0.4074     0.4272     0.4372
            0.4580     0.4815     0.5047     0.5247     0.5468
            0.5578     0.5788     0.6036     0.6219     0.6334
            0.6455     0.6615     0.6661     0.6195     0.6313
            0.6391     0.6109     0.6276     0.6382     0.6635
            0.6920     0.7203     0.7525     0.7828     0.8098
            0.8438     0.8738     0.9090     0.9449     0.9806
            1.0147     1.0239     1.0091     1.0279     1.0000
Width:
            0.0103     0.0141     0.0166     0.0191     0.0341
            0.0385     0.0495     0.0548     0.0656     0.0905
            0.1049     0.1227     0.1345     0.1419     0.1691
            0.1784     0.1865     0.1958     0.2075     0.2173
            0.2348     0.2463     0.2553     0.2693     0.2954
            0.3236     0.3417     0.3796     0.4891     0.5166
            0.5604     0.5997     0.6287     0.6561     0.6644
            0.6710     0.6789     0.6836     0.6908     0.7020
            0.7065     0.7156     0.7192     0.7223     0.7257
            0.7699     0.8185     0.8816     0.9199     1.0000


*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

***************
Analysis Options
***************
Flow Units ............... CMS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN

Starting Date ............ 11/16/2021 00:00:00
Ending Date .............. 11/19/2021 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Routing Time Step ........ 5.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.001500 m


*************************        Volume         Volume
Flow Routing Continuity        hectare-m      10^6 ltr
*************************     ---------      ---------
Dry Weather Inflow .......       269.797      2697.996
Wet Weather Inflow .......         0.000         0.000
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.001
External Outflow .........       269.782      2697.848
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.038         0.378
Final Stored Volume ......         0.053         0.526
Continuity Error (%) .....         0.000


***************************
Time-Step Critical Elements
***************************
None


*********************************
Highest Flow Instability Indexes
*********************************
All links are stable.


************************
Routing Time Step Summary
************************
Minimum Time Step           :     4.50 sec
Average Time Step           :     5.00 sec
Maximum Time Step           :     5.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     2.00
Percent Not Converging      :     0.00
Time Step Frequencies       :
    5.000 -  3.155 sec      :   100.00 %
    3.155 -  1.991 sec      :     0.00 %
    1.991 -  1.256 sec      :     0.00 %
    1.256 -  0.792 sec      :     0.00 %
    0.792 -  0.500 sec      :     0.00 %


*****************
Node Depth Summary
*****************

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

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EquityPond	JUNCTION	0.59	1.15	233.15	0 00:00	0.99
OF2	OUTFALL	2.17	2.17	232.19	0 00:00	2.17

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EquityPond	JUNCTION	10.410	10.559	0 00:00	2.7e+03	2.7e+03	0.006
OF2	OUTFALL	0.000	13.782	0 00:01	0	2.7e+03	0.000

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
OF2	100.00	10.409	13.782	2697.836
System	100.00	10.409	13.782	2697.836

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C7	CONDUIT	13.782	0 00:01	2.81	0.33	0.88

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C7	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
C7	0.01	0.01	72.00	0.01	0.01

Analysis begun on: Mon Jul 28 17:16:37 2025
Analysis ended on: Mon Jul 28 17:16:37 2025
Total elapsed time: < 1 sec

HEC-RAS Plan: PR 33m 0.1% part chnl v9 River: River1 Reach: Creek

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Left	Vel Chnl	Vel Right	Flow Area	Top Width	Froude # Chl	Volume
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m/s)	(m/s)	(m2)	(m)		(1000 m3)
Creek	632	Flsh	0.30	230.02	230.44		230.45	0.001014		0.38		0.79	2.70	0.23	0.36
Creek	632	1.5	5.35	230.02	231.27		231.30	0.001157	0.31	0.99	0.31	10.34	13.93	0.30	4.20
Creek	632	2	7.13	230.02	231.48		231.52	0.001194	0.25	1.13	0.25	15.41	28.50	0.31	5.57
Creek	632	5	9.76	230.02	231.64		231.68	0.001140	0.30	1.19	0.30	20.22	29.34	0.31	7.83
Creek	632	10	11.53	230.02	231.73		231.77	0.001166	0.33	1.25	0.33	22.80	29.78	0.32	8.90
Creek	632	25	13.74	230.02	231.83		231.87	0.001194	0.36	1.32	0.36	25.78	30.28	0.33	10.29
Creek	632	50	15.54	230.02	231.91		231.95	0.001214	0.38	1.37	0.38	28.08	30.67	0.33	11.36
Creek	632	100	17.18	230.02	231.97		232.02	0.001232	0.40	1.42	0.40	30.07	30.99	0.34	12.42
Creek	632	Regional	12.72	230.02	231.79		231.83	0.001181	0.34	1.29	0.35	24.43	30.06	0.32	9.65
Creek	609	Flsh	0.30	229.99	230.42		230.43	0.001016		0.38		0.79	2.70	0.23	0.34
Creek	609	1.5	5.35	229.99	231.24		231.28	0.001176	0.31	1.00	0.32	10.28	13.91	0.30	3.97
Creek	609	2	7.13	229.99	231.45		231.49	0.001225	0.25	1.14	0.26	15.24	28.47	0.32	5.22
Creek	609	5	9.76	229.99	231.62		231.66	0.001157	0.30	1.20	0.30	20.10	29.32	0.32	7.36
Creek	609	10	11.53	229.99	231.70		231.74	0.001185	0.33	1.26	0.33	22.66	29.76	0.32	8.38
Creek	609	25	13.74	229.99	231.80		231.85	0.001215	0.36	1.33	0.36	25.62	30.26	0.33	9.69
Creek	609	50	15.54	229.99	231.88		231.92	0.001235	0.38	1.38	0.38	27.90	30.64	0.33	10.72
Creek	609	100	17.18	229.99	231.94		231.99	0.001254	0.40	1.43	0.40	29.87	30.96	0.34	11.73
Creek	609	Regional	12.72	229.99	231.76		231.80	0.001201	0.34	1.30	0.35	24.28	30.03	0.33	9.09
Creek	562	Flsh	0.30	229.95	230.37		230.38	0.001026		0.38		0.78	2.70	0.23	0.30
Creek	562	1.5	5.35	229.95	231.19		231.22	0.001221	0.32	1.01	0.32	10.13	13.85	0.31	3.49
Creek	562	2	7.13	229.95	231.38		231.43	0.001318	0.26	1.17	0.26	14.77	28.39	0.33	4.52
Creek	562	5	9.76	229.95	231.56		231.60	0.001203	0.30	1.22	0.30	19.80	29.27	0.32	6.42
Creek	562	10	11.53	229.95	231.64		231.69	0.001235	0.33	1.28	0.33	22.30	29.70	0.33	7.32
Creek	562	25	13.74	229.95	231.74		231.79	0.001267	0.36	1.35	0.36	25.21	30.19	0.34	8.50
Creek	562	50	15.54	229.95	231.82		231.86	0.001290	0.39	1.41	0.39	27.45	30.56	0.34	9.41
Creek	562	100	17.18	229.95	231.88		231.93	0.001311	0.41	1.45	0.41	29.39	30.88	0.35	10.33
Creek	562	Regional	12.72	229.95	231.70		231.74	0.001253	0.35	1.32	0.35	23.90	29.97	0.33	7.96
Creek	495	Flsh	0.30	229.88	230.30		230.31	0.001054		0.39		0.78	2.68	0.23	0.25
Creek	495	1.5	5.35	229.88	231.10		231.13	0.001318	0.33	1.04	0.33	9.85	13.75	0.32	2.81
Creek	495	2	7.13	229.88	231.28		231.33	0.001580	0.27	1.26	0.27	13.66	28.19	0.36	3.56
Creek	495	5	9.76	229.88	231.47		231.52	0.001303	0.31	1.26	0.31	19.18	29.16	0.33	5.11
Creek	495	10	11.53	229.88	231.55		231.60	0.001342	0.34	1.32	0.34	21.60	29.58	0.34	5.83
Creek	495	25	13.74	229.88	231.65		231.70	0.001380	0.37	1.40	0.37	24.42	30.06	0.35	6.82
Creek	495	50	15.54	229.88	231.72		231.77	0.001405	0.39	1.45	0.40	26.60	30.42	0.36	7.59
Creek	495	100	17.18	229.88	231.78		231.84	0.001429	0.42	1.50	0.42	28.47	30.73	0.36	8.38
Creek	495	Regional	12.72	229.88	231.61		231.65	0.001363	0.36	1.36	0.36	23.15	29.84	0.35	6.37
Creek	450	Flsh	0.30	229.84	230.25		230.26	0.001079		0.39		0.77	2.67	0.23	0.21
Creek	450	1.5	5.35	229.84	231.04		231.07	0.001411	0.33	1.06	0.33	9.60	13.65	0.33	2.37
Creek	450	2	7.13	229.84	231.19		231.25	0.001994	0.28	1.38	0.28	12.31	27.94	0.40	2.97
Creek	450	5	9.76	229.84	231.41		231.45	0.001406	0.31	1.29	0.32	18.62	29.06	0.35	4.26
Creek	450	10	11.53	229.84	231.49		231.54	0.001450	0.34	1.36	0.35	20.97	29.47	0.35	4.88
Creek	450	25	13.74	229.84	231.58		231.63	0.001491	0.38	1.44	0.38	23.72	29.94	0.36	5.74
Creek	450	50	15.54	229.84	231.65		231.71	0.001517	0.40	1.49	0.41	25.85	30.29	0.37	6.41
Creek	450	100	17.18	229.84	231.71		231.77	0.001542	0.42	1.54	0.43	27.68	30.60	0.37	7.12
Creek	450	Regional	12.72	229.84	231.54		231.59	0.001472	0.36	1.40	0.37	22.47	29.73	0.36	5.35
Creek	368	Flsh	0.30	229.75	230.16		230.17	0.001202		0.41		0.74	2.63	0.24	0.15
Creek	368	1.5	5.35	229.75	230.90		230.95	0.001714	0.35	1.13	0.35	8.93	13.40	0.36	1.62
Creek	368	2	7.13	229.75	231.04		231.09	0.001823	0.40	1.27	0.40	10.81	14.10	0.38	2.03
Creek	368	5	9.76	229.75	231.26		231.32	0.001794	0.33	1.42	0.33	16.87	28.76	0.39	2.82
Creek	368	10	11.53	229.75	231.34		231.40	0.001845	0.36	1.49	0.37	19.08	29.14	0.40	3.25
Creek	368	25	13.74	229.75	231.43		231.50	0.001880	0.40	1.57	0.40	21.71	29.60	0.40	3.90
Creek	368	50	15.54	229.75	231.50		231.57	0.001891	0.43	1.62	0.43	23.80	29.95	0.41	4.39
Creek	368	100	17.18	229.75	231.56		231.63	0.001913	0.45	1.67	0.45	25.55	30.24	0.41	4.96
Creek	368	Regional	12.72	229.75	231.39		231.45	0.001864	0.38	1.53	0.39	20.52	29.39	0.40	3.60
Creek	308	Flsh	0.30	229.69	230.07		230.08	0.001589		0.45		0.67	2.52	0.28	0.11
Creek	308	1.5	5.35	229.69	230.77		230.82	0.002305	0.38	1.25	0.39	8.00	13.04	0.41	1.11
Creek	308	2	7.13	229.69	230.90		230.96	0.002447	0.44	1.40	0.44	9.69	13.69	0.43	1.41
Creek	308	5	9.76	229.69	231.07		231.17	0.003295	0.37	1.79	0.37	13.04	28.16	0.52	1.91
Creek	308	10	11.53	229.69	231.15		231.26	0.003094	0.41	1.82	0.41	15.50	28.73	0.51	2.20
Creek	308	25	13.74	229.69	231.25		231.35	0.002893	0.44	1.85	0.44	18.41	29.39	0.50	2.68
Creek	308	50	15.54	229.69	231.33		231.43	0.002751	0.47	1.87	0.47	20.72	29.91	0.49	3.04
Creek	308	100	17.18	229.69	231.39		231.49	0.002715	0.49	1.90	0.49	22.52	30.30	0.49	3.50
Creek	308	Regional	12.72	229.69	231.21		231.31	0.002960	0.43	1.83	0.43	17.13	29.10	0.50	2.46
Creek	252	Flsh	0.30	229.61	229.80	229.79	229.86	0.019443		1.10		0.27	1.78	0.90	0.08
Creek	252	1.5	5.35	229.61	230.37	230.37	230.56	0.012791	0.60	2.24	0.60	4.15	11.43	0.91	0.77
Creek	252	2	7.13	229.61	230.46	230.46	230.68	0.013101	0.70	2.47	0.70	5.15	11.87	0.94	1.00
Creek	252	5	9.76	229.61	230.56	230.56	230.83	0.013722	0.83	2.78	0.83	6.43	12.41	0.98	1.37
Creek	252	10	11.53	229.61	230.63	230.63	230.92	0.013841	0.89	2.94	0.89	7.27	12.75	1.00	1.57
Creek	252	25	13.74	229.61	230.71	230.71	231.03	0.013768	0.96	3.11	0.96	8.30	13.16	1.01	1.94
Creek	252	50	15.54	229.61	230.76	230.76	231.11	0.014159	1.02	3.26	1.02	9.00	13.43	1.04	2.22
Creek	252	100	17.18	229.61	230.83	230.83	231.18	0.013298	1.04	3.30	1.04	9.93	14.12	1.02	2.60
Creek	252	Regional	12.72	229.61	230.67	230.67	230.98	0.013818	0.93	3.03	0.93	7.83	12.97	1.01	1.77
Creek	230	Flsh	0.30	229.13	229.31	229.31	229.38	0.025296		1.21		0.25	1.73	1.02	0.08
Creek	230	1.5	5.35	229.13	229.89	229.89	230.08	0.012790	0.60	2.24	0.60	4.15	11.43	0.91	0.68
Creek	230	2	7.13	229.13	229.98	229.98	230.20	0.013115	0.70	2.47	0.70	5.15	11.87	0.94	0.89
Creek	230	5	9.76	229.13	230.08	230.08	230.35	0.013730	0.83	2.78	0.83	6.43	12.41	0.98	1.23
Creek	230	10	11.53	229.13	230.15	230.15	230.44	0.013851	0.89	2.94	0.89	7.27	12.75	1.00	1.41
Creek	230	25	13.74	229.13	230.23	230.23	230.55	0.013762	0.96	3.11	0.96	8.30	13.16	1.01	1.76
Creek	230	50	15.54	229.13	230.28	230.28	230.63	0.014158	1.02	3.26	1.02	9.00	13.43	1.04	2.02
Creek	230	100	17.18	229.13	230.35	230.35	230.70	0.013300	1.04	3.30	1.04	9.93	13.78	1.02	2.38
Creek	230	Regional	12.72	229.13	230.19	230.19	230.50	0.013812	0.93	3.03	0.93	7.83	12.97	1.01	1.60
Creek	207	Flsh	0.30	228.21	228.43	228.39	228.48	0.010965		0.90		0.33	1.91	0.69	0.07
Creek	207	1.5	5.35	228.21	228.97	228.97	229.16	0.012787	0.60	2.24	0.60	4.15	11.43	0.91	0.59
Creek	207	2	7.13	228.21	229.06	229.06	229.28	0.013092	0.70	2.47	0.70	5.15	11.87	0.94	0.78
Creek	207	5	9.76	228.21	229.16	229.16	229.43	0.013711	0.83	2.78	0.83	6.43	12.41	0.98	1.09
Creek	207	10	11.53	228.21	229.27	229.23	229.52	0.011568	0.85	2.77	0.85	7.77	12.95	0.92	1.25
Creek	207	25	13.74	228.21	229.43	229.31	229.65	0.008382	0.83	2.63	0.83	9.98	13.80	0.81	1.56
Creek	207	50	15.54	228.21	229.59	229.36	229.85	0.008176	0.59	2.83	0.59	13.15	28.09	0.81	1.78

HEC-RAS Plan: PR 33m 0.1% part chnl v9 River: River1 Reach: Creek (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Left	Vel Chnl	Vel Right	Flow Area	Top Width	Froude # Chl	Volume
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m/s)	(m/s)	(m2)	(m)		(1000 m3)
Creek	207	100	17.18	228.21	229.71		229.90	0.005736	0.58	2.53	0.59	16.66	28.72	0.69	2.10
Creek	207	Regional	12.72	228.21	229.35		229.59	0.009937	0.84	2.71	0.85	8.85	13.37	0.87	1.42
Creek	191	FIsh	0.30	228.19	228.27	228.25	228.29	0.009887		0.54		0.56	6.66	0.59	0.06
Creek	191	1.5	5.35	228.19	228.80	228.59	228.88	0.004433		1.24		4.31	7.54	0.52	0.52
Creek	191	2	7.13	228.19	228.94	228.67	229.03	0.004109		1.34		5.33	7.76	0.51	0.69
Creek	191	5	9.76	228.19	229.13	228.79	229.23	0.003662		1.43		6.82	8.07	0.50	0.98
Creek	191	10	11.53	228.19	229.25	228.86	229.36	0.003421		1.48		7.81	8.27	0.49	1.12
Creek	191	25	13.74	228.19	229.41	228.94	229.52	0.003172	0.11	1.50		9.20	11.06	0.47	1.40
Creek	191	50	15.54	228.19	229.60	229.00	229.70	0.002261	0.24	1.41	0.12	11.10	17.78	0.41	1.57
Creek	191	100	17.18	228.19	229.70	229.05	229.80	0.002040	0.18	1.41	0.14	14.01	21.11	0.40	1.84
Creek	191	Regional	12.72	228.19	229.32	228.90	229.44	0.003362		1.50		8.47	8.61	0.48	1.27
Creek	154 Mayfield Rd		Culvert												
Creek	100	FIsh	0.30	227.49	227.76	227.56	227.76	0.000218		0.17		1.80	7.14	0.11	0.03
Creek	100	1.5	5.35	227.49	228.22	227.90	228.27	0.002600	0.02	0.96		5.54	12.04	0.41	0.32
Creek	100	2	7.13	227.49	228.25	227.98	228.32	0.004010	0.09	1.23		5.80	13.02	0.51	0.45
Creek	100	5	9.76	227.49	228.31	228.08	228.43	0.005363	0.28	1.52	0.07	6.47	15.06	0.60	0.69
Creek	100	10	11.53	227.49	228.35	228.17	228.49	0.006130	0.38	1.69	0.15	6.91	16.25	0.65	0.79
Creek	100	25	13.74	227.49	228.38	228.24	228.57	0.007517	0.49	1.92	0.20	7.27	17.67	0.73	1.03
Creek	100	50	15.54	227.49	228.42	228.30	228.63	0.008101	0.59	2.06	0.27	7.73	19.28	0.76	1.14
Creek	100	100	17.18	227.49	228.46	228.35	228.69	0.008124	0.68	2.15	0.37	8.30	22.02	0.77	1.25
Creek	100	Regional	12.72	227.49	228.36	228.21	228.53	0.006931	0.44	1.82	0.17	7.09	16.96	0.70	0.92
Creek	87	FIsh	0.30	227.54	227.70	227.70	227.74	0.023137	0.38	0.97		0.36	4.39	0.95	0.02
Creek	87	1.5	5.35	227.54	228.03	228.01	228.17	0.018437	0.88	2.15	0.73	4.26	19.75	1.06	0.26
Creek	87	2	7.13	227.54	228.12	228.11	228.23	0.012160	0.90	1.99	0.72	6.14	21.57	0.89	0.38
Creek	87	5	9.76	227.54	228.18	228.16	228.32	0.013476	1.06	2.25	0.77	7.47	23.40	0.96	0.60
Creek	87	10	11.53	227.54	228.27		228.38	0.009457	1.00	2.08	0.70	9.75	28.27	0.82	0.68
Creek	87	25	13.74	227.54	228.27	228.24	228.43	0.013934	1.20	2.52	0.84	9.61	28.03	0.99	0.92
Creek	87	50	15.54	227.54	228.33	228.27	228.48	0.011385	1.14	2.42	0.88	11.52	31.08	0.91	1.01
Creek	87	100	17.18	227.54	228.40	228.31	228.53	0.009823	1.04	2.39	0.87	13.69	34.27	0.86	1.10
Creek	87	Regional	12.72	227.54	228.27	228.23	228.41	0.011990	1.12	2.33	0.77	9.60	28.01	0.92	0.81
Creek	34	FIsh	0.30	226.44	226.69	226.66	226.73	0.013075	0.05	0.86		0.35	2.54	0.74	
Creek	34	1.5	5.35	226.44	227.22	227.22	227.42	0.011097	0.92	2.24	0.76	3.45	39.81	0.88	
Creek	34	2	7.13	226.44	227.28	227.28	227.54	0.013485	1.08	2.62	0.92	4.04	41.05	0.99	
Creek	34	5	9.76	226.44	227.44	227.44	227.68	0.010405	1.11	2.63	0.95	5.90	45.19	0.90	
Creek	34	10	11.53	226.44	227.46	227.46	227.77	0.013099	1.26	3.00	1.08	6.17	45.74	1.01	
Creek	34	25	13.74	226.44	227.64	227.64	227.87	0.008161	1.04	2.67	0.97	8.95	52.51	0.82	
Creek	34	50	15.54	226.44	227.67	227.67	227.93	0.009075	1.12	2.87	1.05	9.50	53.72	0.87	
Creek	34	100	17.18	226.44	227.69	227.69	227.98	0.010062	1.20	3.06	1.13	9.89	54.43	0.92	
Creek	34	Regional	12.72	226.44	227.56	227.56	227.82	0.009983	1.17	2.81	0.97	7.65	49.64	0.90	

HEC-RAS Plan: PR 33m 0.1% part chnl v9 w crossing River: River1 Reach: Creek

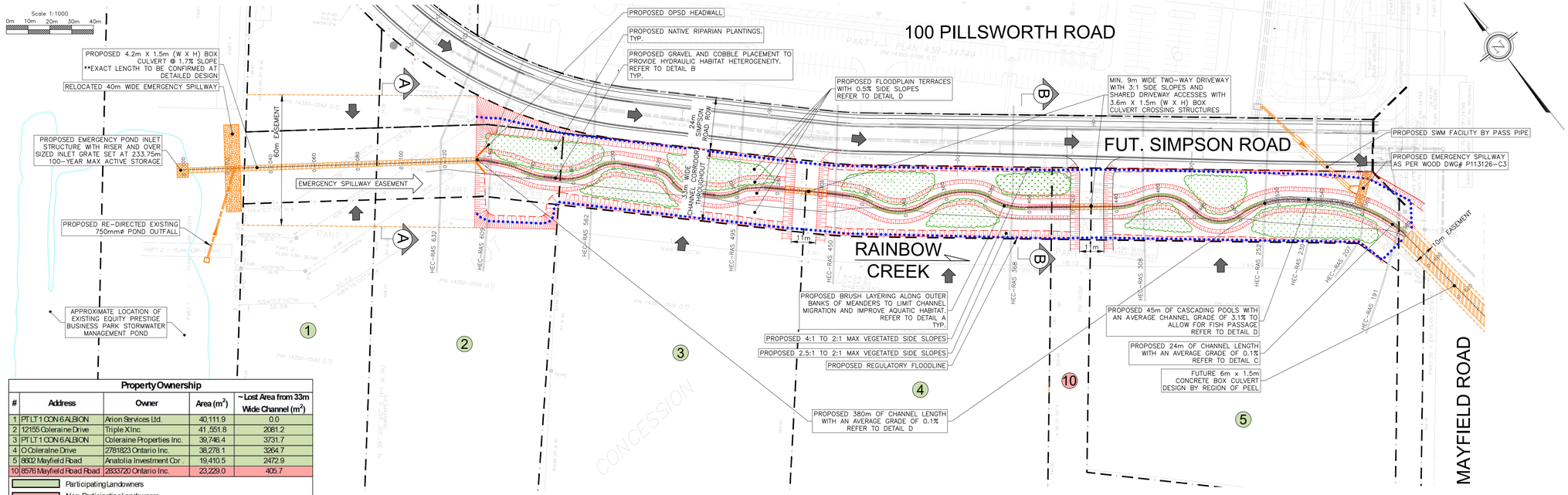
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Left	Vel Chnl	Vel Right	Flow Area	Top Width	Froude # Chl	Volume
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m/s)	(m/s)	(m2)	(m)		(1000 m3)
Creek	632	Flsh	0.30	230.02	230.43		230.44	0.001152		0.40		0.75	2.65	0.24	0.37
Creek	632	1.5	5.35	230.02	231.29		231.32	0.001063	0.30	0.96	0.31	10.67	14.05	0.29	3.90
Creek	632	2	7.13	230.02	231.52		231.55	0.000993	0.24	1.05	0.25	16.62	28.71	0.29	5.49
Creek	632	5	9.76	230.02	231.84		231.86	0.000588	0.25	0.93	0.25	26.02	30.32	0.23	8.31
Creek	632	10	11.53	230.02	232.08		232.10	0.000411	0.25	0.85	0.25	33.55	31.55	0.20	10.29
Creek	632	25	13.74	230.02	232.25		232.27	0.000386	0.26	0.87	0.26	38.93	32.41	0.19	12.29
Creek	632	50	15.54	230.02	232.33		232.35	0.000408	0.28	0.92	0.28	41.70	32.83	0.20	13.48
Creek	632	100	17.18	230.02	232.40		232.42	0.000434	0.30	0.97	0.30	43.75	33.61	0.21	14.59
Creek	632	Regional	12.72	230.02	232.19		232.20	0.000383	0.25	0.85	0.25	36.95	32.10	0.19	11.47
Creek	609	Flsh	0.30	229.99	230.40		230.41	0.001197		0.41		0.74	2.63	0.24	0.36
Creek	609	1.5	5.35	229.99	231.27		231.30	0.001070	0.31	0.97	0.31	10.64	14.04	0.29	3.66
Creek	609	2	7.13	229.99	231.50		231.53	0.000993	0.24	1.05	0.25	16.63	28.71	0.29	5.11
Creek	609	5	9.76	229.99	231.83		231.85	0.000570	0.25	0.92	0.25	26.33	30.37	0.23	7.71
Creek	609	10	11.53	229.99	232.07		232.09	0.000397	0.24	0.84	0.24	33.99	31.63	0.19	9.51
Creek	609	25	13.74	229.99	232.24		232.26	0.000374	0.26	0.86	0.26	39.41	32.48	0.19	11.39
Creek	609	50	15.54	229.99	232.33		232.34	0.000396	0.28	0.91	0.28	42.16	32.91	0.20	12.52
Creek	609	100	17.18	229.99	232.39		232.41	0.000421	0.29	0.96	0.29	44.21	33.92	0.20	13.58
Creek	609	Regional	12.72	229.99	232.18		232.20	0.000370	0.25	0.84	0.25	37.42	32.17	0.19	10.62
Creek	562	Flsh	0.30	229.95	230.34		230.35	0.001371		0.43		0.70	2.58	0.26	0.32
Creek	562	1.5	5.35	229.95	231.22		231.25	0.001086	0.31	0.97	0.31	10.59	14.02	0.29	3.16
Creek	562	2	7.13	229.95	231.45		231.48	0.000992	0.24	1.05	0.25	16.64	28.72	0.29	4.32
Creek	562	5	9.76	229.95	231.80		231.82	0.000533	0.25	0.90	0.25	26.99	30.49	0.22	6.46
Creek	562	10	11.53	229.95	232.05		232.07	0.000368	0.24	0.82	0.24	34.93	31.78	0.19	7.89
Creek	562	25	13.74	229.95	232.22		232.24	0.000348	0.25	0.84	0.25	40.40	32.63	0.18	9.51
Creek	562	50	15.54	229.95	232.31		232.32	0.000371	0.27	0.89	0.27	43.13	33.25	0.19	10.51
Creek	562	100	17.18	229.95	232.37		232.39	0.000395	0.29	0.94	0.29	45.18	34.60	0.20	11.48
Creek	562	Regional	12.72	229.95	232.16		232.18	0.000344	0.24	0.82	0.24	38.42	32.33	0.18	8.83
Creek	506	Flsh	0.30	229.89	230.25		230.26	0.001892		0.48		0.63	2.45	0.30	0.29
Creek	506	1.5	5.35	229.89	231.16		231.19	0.001083	0.31	0.97	0.31	10.60	14.02	0.29	2.56
Creek	506	2	7.13	229.89	231.40		231.43	0.000960	0.24	1.04	0.24	16.86	28.75	0.28	3.37
Creek	506	5	9.76	229.89	231.77		231.79	0.000480	0.24	0.86	0.24	28.05	30.66	0.21	4.90
Creek	506	10	11.53	229.89	232.04		232.05	0.000331	0.23	0.79	0.23	36.31	31.99	0.18	5.87
Creek	506	25	13.74	229.89	232.21		232.22	0.000316	0.25	0.81	0.25	41.84	32.86	0.18	7.18
Creek	506	50	15.54	229.89	232.29		232.30	0.000336	0.26	0.86	0.26	44.58	34.14	0.18	8.02
Creek	506	100	17.18	229.89	232.35		232.36	0.000360	0.28	0.90	0.28	46.64	35.39	0.19	8.88
Creek	506	Regional	12.72	229.89	232.15		232.16	0.000310	0.24	0.79	0.24	39.86	32.55	0.17	6.61
Creek	495	Flsh	0.30	229.88	230.22	230.07	230.24	0.002386		0.52		0.58	2.37	0.34	0.28
Creek	495	1.5	5.35	229.88	231.14	230.65	231.18	0.001115	0.31	0.98	0.31	10.48	13.98	0.30	2.44
Creek	495	2	7.13	229.88	231.39	230.73	231.42	0.000925	0.28	1.02	0.31	14.91	28.73	0.28	3.19
Creek	495	5	9.76	229.88	231.76	230.85	231.78	0.000562	0.29	0.93	0.32	22.03	30.62	0.23	4.59
Creek	495	10	11.53	229.88	232.03	230.91	232.05	0.000361	0.28	0.82	0.24	32.55	31.99	0.19	5.47
Creek	495	25	13.74	229.88	232.20	230.99	232.22	0.000315	0.25	0.81	0.25	41.90	32.87	0.18	6.72
Creek	495	50	15.54	229.88	232.29	231.04	232.30	0.000335	0.26	0.86	0.26	44.63	34.41	0.18	7.53
Creek	495	100	17.18	229.88	232.34	231.10	232.36	0.000359	0.28	0.90	0.28	46.70	35.92	0.19	8.36
Creek	495	Regional	12.72	229.88	232.14	230.95	232.16	0.000309	0.24	0.79	0.24	39.91	32.56	0.17	6.17
Creek	476		Culvert												
Creek	450	Flsh	0.30	229.84	230.22	230.02	230.23	0.001443		0.43		0.69	2.56	0.27	0.23
Creek	450	1.5	5.35	229.84	231.05	230.61	231.08	0.001364	0.33	1.05	0.33	9.73	13.70	0.32	2.24
Creek	450	2	7.13	229.84	231.25	230.69	231.29	0.001354	0.26	1.17	0.33	13.57	28.27	0.33	2.93
Creek	450	5	9.76	229.84	231.50	230.80	231.53	0.001022	0.31	1.15	0.36	19.07	29.51	0.30	4.26
Creek	450	10	11.53	229.84	231.66	230.86	231.69	0.000857	0.33	1.13	0.37	22.81	30.35	0.28	5.08
Creek	450	25	13.74	229.84	231.85	230.94	231.88	0.000665	0.30	1.07	0.31	31.99	31.30	0.25	6.18
Creek	450	50	15.54	229.84	231.94	231.00	231.97	0.000668	0.32	1.10	0.32	34.92	31.77	0.25	6.91
Creek	450	100	17.18	229.84	232.02	231.05	232.05	0.000678	0.34	1.14	0.34	37.35	32.16	0.25	7.67
Creek	450	Regional	12.72	229.84	231.78	230.91	231.80	0.000700	0.30	1.06	0.30	29.67	30.93	0.25	5.70
Creek	442	Flsh	0.30	229.81	230.21		230.22	0.001310		0.42		0.72	2.59	0.25	0.22
Creek	442	1.5	5.35	229.81	231.03		231.07	0.001316	0.33	1.04	0.33	9.86	13.75	0.32	2.16
Creek	442	2	7.13	229.81	231.23		231.28	0.001434	0.26	1.21	0.26	14.25	28.29	0.34	2.82
Creek	442	5	9.76	229.81	231.49		231.52	0.000960	0.29	1.12	0.29	21.61	29.58	0.29	4.09
Creek	442	10	11.53	229.81	231.66		231.69	0.000768	0.29	1.07	0.29	26.68	30.43	0.26	4.87
Creek	442	25	13.74	229.81	231.84		231.87	0.000638	0.30	1.05	0.30	32.47	31.38	0.24	5.93
Creek	442	50	15.54	229.81	231.94		231.96	0.000644	0.32	1.09	0.32	35.40	31.85	0.25	6.63
Creek	442	100	17.18	229.81	232.01		232.04	0.000654	0.33	1.12	0.33	37.84	32.23	0.25	7.37
Creek	442	Regional	12.72	229.81	231.77		231.80	0.000671	0.29	1.05	0.30	30.13	31.00	0.25	5.46
Creek	378	Flsh	0.30	229.75	230.12	229.93	230.13	0.001714		0.46		0.65	2.49	0.29	0.18
Creek	378	1.5	5.35	229.75	230.95	230.51	230.98	0.001408	0.33	1.06	0.33	9.61	13.66	0.33	1.54
Creek	378	2	7.13	229.75	231.12	230.60	231.18	0.001764	0.27	1.31	0.26	13.13	29.03	0.38	1.95
Creek	378	5	9.76	229.75	231.43	230.71	231.46	0.000906	0.28	1.09	0.28	22.29	30.29	0.28	2.70
Creek	378	10	11.53	229.75	231.61	230.77	231.64	0.000696	0.28	1.03	0.28	27.88	31.03	0.25	3.14
Creek	378	25	13.74	229.75	231.81	230.85	231.83	0.000570	0.29	1.00	0.29	34.02	31.83	0.23	3.82
Creek	378	50	15.54	229.75	231.90	230.91	231.92	0.000577	0.31	1.04	0.31	36.98	32.21	0.23	4.34
Creek	378	100	17.18	229.75	231.98	230.96	232.00	0.000589	0.32	1.08	0.33	39.42	32.51	0.24	4.92
Creek	378	Regional	12.72	229.75	231.73	230.82	231.76	0.000600	0.28	1.00	0.29	31.59	31.52	0.24	3.50
Creek	368	Flsh	0.30	229.75	230.09	229.94	230.11	0.002466		0.53		0.57	2.36	0.34	0.17
Creek	368	1.5	5.35	229.75	230.93	230.52	230.97	0.001565	0.34	1.10	0.34	9.24	13.52	0.35	1.45
Creek	368	2	7.13	229.75	231.10	230.61	231.16	0.001782	0.30	1.30	0.32	12.11	27.95	0.38	1.82
Creek	368	5	9.76	229.75	231.41	230.71	231.45	0.001030	0.33	1.15	0.34	18.81	29.51	0.30	2.48
Creek	368	10	11.53	229.75	231.60	230.78	231.63	0.000829	0.34	1.12	0.35	22.78	30.44	0.27	2.86
Creek	368	25	13.74	229.75	231.80	230.86	231.82	0.000610	0.30	1.03	0.30	33.01	31.47	0.24	3.48
Creek	368	50	15.54	229.75	231.89	230.92	231.92	0.000618	0.31	1.07	0.32	35.93	31.93	0.24	3.96
Creek	368	100	17.18	229.75	231.97	230.97	231.99	0.000630	0.33	1.11	0.33	38.34	32.31	0.25	4.52
Creek	368	Regional	12.72	229.75	231.72	230.83	231.75	0.000680	0.33	1.06	0.30	28.29	31.06	0.25	3.18
Creek	341		Culvert												
Creek	322	Flsh	0.30	229.71	230.09	229.89	230.10	0.001451		0.43		0.69	2.55	0.27	0.12
Creek	322	1.5	5.35	229.71	230.81	230.48	230.86	0.002091	0.37	1.21	0.37	8.30	13.16	0.39	1.22
Creek	322	2	7.13	229.71	230.94	230.56	231.00	0.002219	0.43	1.36	0.43	10.05	13.82	0.42	1.55

HEC-RAS Plan: PR 33m 0.1% part chnl v9 w crossing River: River1 Reach: Creek (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Left	Vel Chnl	Vel Right	Flow Area	Top Width	Froude # Chl	Volume
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m/s)	(m/s)	(m2)	(m)		(1000 m3)
Creek	322	5	9.76	229.71	231.16	230.67	231.22	0.002112	0.41	1.49	0.44	13.74	28.48	0.42	2.11
Creek	322	10	11.53	229.71	231.23	230.74	231.30	0.002287	0.46	1.61	0.49	15.04	28.86	0.44	2.44
Creek	322	25	13.74	229.71	231.31	230.81	231.40	0.002467	0.51	1.74	0.55	16.56	29.30	0.46	2.95
Creek	322	50	15.54	229.71	231.37	230.87	231.46	0.002631	0.56	1.84	0.59	17.64	29.61	0.48	3.35
Creek	322	100	17.18	229.71	231.43	230.92	231.53	0.002671	0.59	1.91	0.62	18.79	29.95	0.48	3.82
Creek	322	Regional	12.72	229.71	231.27	230.78	231.35	0.002396	0.49	1.68	0.52	15.86	29.09	0.45	2.71
Creek	308	Flsh	0.30	229.69	230.07	229.88	230.08	0.001581		0.45		0.67	2.52	0.28	0.11
Creek	308	1.5	5.35	229.69	230.77	230.46	230.82	0.002319	0.39	1.25	0.39	7.98	13.03	0.41	1.11
Creek	308	2	7.13	229.69	230.90	230.55	230.96	0.002454	0.44	1.40	0.44	9.68	13.68	0.43	1.41
Creek	308	5	9.76	229.69	231.07	230.66	231.17	0.003324	0.37	1.80	0.37	12.99	28.15	0.52	1.91
Creek	308	10	11.53	229.69	231.15	230.72	231.26	0.003114	0.41	1.82	0.41	15.46	28.72	0.51	2.20
Creek	308	25	13.74	229.69	231.26	230.80	231.35	0.002880	0.44	1.84	0.44	18.44	29.40	0.49	2.68
Creek	308	50	15.54	229.69	231.33	230.85	231.43	0.002782	0.47	1.87	0.47	20.63	29.89	0.49	3.04
Creek	308	100	17.18	229.69	231.40	230.91	231.49	0.002674	0.49	1.89	0.49	22.65	30.33	0.48	3.49
Creek	308	Regional	12.72	229.69	231.21	230.76	231.31	0.002981	0.43	1.84	0.43	17.08	29.09	0.50	2.46
Creek	252	Flsh	0.30	229.61	229.80	229.79	229.86	0.020048		1.11		0.27	1.78	0.91	0.08
Creek	252	1.5	5.35	229.61	230.38	230.38	230.56	0.012437	0.60	2.22	0.60	4.20	11.45	0.90	0.77
Creek	252	2	7.13	229.61	230.46	230.46	230.68	0.012929	0.70	2.46	0.70	5.18	11.88	0.93	1.00
Creek	252	5	9.76	229.61	230.57	230.57	230.83	0.013415	0.82	2.76	0.82	6.49	12.43	0.97	1.37
Creek	252	10	11.53	229.61	230.63	230.63	230.92	0.013586	0.89	2.92	0.89	7.32	12.77	0.99	1.57
Creek	252	25	13.74	229.61	230.71	230.71	231.03	0.013923	0.96	3.12	0.96	8.27	13.14	1.02	1.94
Creek	252	50	15.54	229.61	230.77	230.77	231.11	0.013668	1.01	3.23	1.01	9.12	13.47	1.02	2.22
Creek	252	100	17.18	229.61	230.82	230.82	231.18	0.014009	1.06	3.36	1.06	9.74	13.71	1.04	2.60
Creek	252	Regional	12.72	229.61	230.68	230.68	230.98	0.013536	0.92	3.01	0.93	7.89	13.00	1.00	1.77
Creek	230	Flsh	0.30	229.13	229.31	229.31	229.38	0.024506		1.19		0.25	1.74	1.00	0.08
Creek	230	1.5	5.35	229.13	229.89	229.89	230.08	0.012790	0.60	2.24	0.60	4.15	11.43	0.91	0.68
Creek	230	2	7.13	229.13	229.98	229.98	230.20	0.013115	0.70	2.47	0.70	5.15	11.87	0.94	0.89
Creek	230	5	9.76	229.13	230.08	230.08	230.35	0.013730	0.83	2.78	0.83	6.43	12.41	0.98	1.23
Creek	230	10	11.53	229.13	230.15	230.15	230.44	0.013851	0.89	2.94	0.89	7.27	12.75	1.00	1.41
Creek	230	25	13.74	229.13	230.23	230.23	230.55	0.013762	0.96	3.11	0.96	8.30	13.16	1.01	1.76
Creek	230	50	15.54	229.13	230.28	230.28	230.63	0.014158	1.02	3.26	1.02	9.00	13.43	1.04	2.02
Creek	230	100	17.18	229.13	230.35	230.35	230.70	0.013300	1.04	3.30	1.04	9.93	13.78	1.02	2.38
Creek	230	Regional	12.72	229.13	230.19	230.19	230.50	0.013812	0.93	3.03	0.93	7.83	12.97	1.01	1.60
Creek	207	Flsh	0.30	228.21	228.43	228.39	228.48	0.010965		0.90		0.33	1.91	0.69	0.07
Creek	207	1.5	5.35	228.21	228.97	228.97	229.16	0.012787	0.60	2.24	0.60	4.15	11.43	0.91	0.59
Creek	207	2	7.13	228.21	229.06	229.06	229.28	0.013092	0.70	2.47	0.70	5.15	11.87	0.94	0.78
Creek	207	5	9.76	228.21	229.16	229.16	229.43	0.013711	0.83	2.78	0.83	6.43	12.41	0.98	1.09
Creek	207	10	11.53	228.21	229.27	229.23	229.52	0.011568	0.85	2.77	0.85	7.77	12.95	0.92	1.25
Creek	207	25	13.74	228.21	229.43	229.31	229.65	0.008382	0.83	2.63	0.83	9.98	13.80	0.81	1.56
Creek	207	50	15.54	228.21	229.59	229.36	229.85	0.008176	0.59	2.83	0.59	13.15	28.09	0.81	1.78
Creek	207	100	17.18	228.21	229.71		229.90	0.005736	0.58	2.53	0.59	16.66	28.72	0.69	2.10
Creek	207	Regional	12.72	228.21	229.35		229.59	0.009937	0.84	2.71	0.85	8.85	13.37	0.87	1.42
Creek	191	Flsh	0.30	228.19	228.27	228.25	228.29	0.009887		0.54		0.56	6.66	0.59	0.06
Creek	191	1.5	5.35	228.19	228.80	228.59	228.88	0.004433		1.24		4.31	7.54	0.52	0.52
Creek	191	2	7.13	228.19	228.94	228.67	229.03	0.004109		1.34		5.33	7.76	0.51	0.69
Creek	191	5	9.76	228.19	229.13	228.79	229.23	0.003662		1.43		6.82	8.07	0.50	0.98
Creek	191	10	11.53	228.19	229.25	228.86	229.36	0.003421		1.48		7.81	8.27	0.49	1.12
Creek	191	25	13.74	228.19	229.41	228.94	229.52	0.003172	0.11	1.50		9.20	11.06	0.47	1.40
Creek	191	50	15.54	228.19	229.60	229.00	229.70	0.002261	0.24	1.41	0.12	11.10	17.78	0.41	1.57
Creek	191	100	17.18	228.19	229.70	229.05	229.80	0.002040	0.18	1.41	0.14	14.01	21.11	0.40	1.84
Creek	191	Regional	12.72	228.19	229.32	228.90	229.44	0.003362		1.50		8.47	8.61	0.48	1.27
Creek	154 Mayfield Rd		Culvert												
Creek	100	Flsh	0.30	227.49	227.76	227.56	227.76	0.000218		0.17		1.80	7.14	0.11	0.03
Creek	100	1.5	5.35	227.49	228.22	227.90	228.27	0.002600	0.02	0.96		5.54	12.04	0.41	0.32
Creek	100	2	7.13	227.49	228.25	227.98	228.32	0.004010	0.09	1.23		5.80	13.02	0.51	0.45
Creek	100	5	9.76	227.49	228.31	228.08	228.43	0.005363	0.28	1.52	0.07	6.47	15.06	0.60	0.69
Creek	100	10	11.53	227.49	228.35	228.17	228.49	0.006130	0.38	1.69	0.15	6.91	16.25	0.65	0.79
Creek	100	25	13.74	227.49	228.38	228.24	228.57	0.007517	0.49	1.92	0.20	7.27	17.67	0.73	1.03
Creek	100	50	15.54	227.49	228.42	228.30	228.63	0.008101	0.59	2.06	0.27	7.73	19.28	0.76	1.14
Creek	100	100	17.18	227.49	228.46	228.35	228.69	0.008124	0.68	2.15	0.37	8.30	22.02	0.77	1.25
Creek	100	Regional	12.72	227.49	228.36	228.21	228.53	0.006931	0.44	1.82	0.17	7.09	16.96	0.70	0.92
Creek	87	Flsh	0.30	227.54	227.70	227.70	227.74	0.023137	0.38	0.97		0.36	4.39	0.95	0.02
Creek	87	1.5	5.35	227.54	228.03	228.01	228.17	0.018437	0.88	2.15	0.73	4.26	19.75	1.06	0.26
Creek	87	2	7.13	227.54	228.12	228.11	228.23	0.012160	0.90	1.99	0.72	6.14	21.57	0.89	0.38
Creek	87	5	9.76	227.54	228.18	228.16	228.32	0.013476	1.06	2.25	0.77	7.47	23.40	0.96	0.60
Creek	87	10	11.53	227.54	228.27		228.38	0.009457	1.00	2.08	0.70	9.75	28.27	0.82	0.68
Creek	87	25	13.74	227.54	228.27	228.24	228.43	0.013934	1.20	2.52	0.84	9.61	28.03	0.99	0.92
Creek	87	50	15.54	227.54	228.33	228.27	228.48	0.011385	1.14	2.42	0.88	11.52	31.08	0.91	1.01
Creek	87	100	17.18	227.54	228.40	228.31	228.53	0.009823	1.04	2.39	0.87	13.69	34.27	0.86	1.10
Creek	87	Regional	12.72	227.54	228.27	228.23	228.41	0.011990	1.12	2.33	0.77	9.60	28.01	0.92	0.81
Creek	34	Flsh	0.30	226.44	226.69	226.66	226.73	0.013075	0.05	0.86		0.35	2.54	0.74	
Creek	34	1.5	5.35	226.44	227.22	227.22	227.42	0.011097	0.92	2.24	0.76	3.45	39.81	0.88	
Creek	34	2	7.13	226.44	227.28	227.28	227.54	0.013485	1.08	2.62	0.92	4.04	41.05	0.99	
Creek	34	5	9.76	226.44	227.44	227.44	227.68	0.010405	1.11	2.63	0.95	5.90	45.19	0.90	
Creek	34	10	11.53	226.44	227.46	227.46	227.77	0.013099	1.26	3.00	1.08	6.17	45.74	1.01	
Creek	34	25	13.74	226.44	227.64	227.64	227.87	0.008161	1.04	2.67	0.97	8.95	52.51	0.82	
Creek	34	50	15.54	226.44	227.67	227.67	227.93	0.009075	1.12	2.87	1.05	9.50	53.72	0.87	
Creek	34	100	17.18	226.44	227.69	227.69	227.98	0.010062	1.20	3.06	1.13	9.89	54.43	0.92	
Creek	34	Regional	12.72	226.44	227.56	227.56	227.82	0.009983	1.17	2.81	0.97	7.65	49.64	0.90	

HEC-RAS Plan: Emergency Path v2 River: River1 Reach: Creek

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Creek	721	Emerg Spill Reg	8.71	233.68	233.89	233.89	233.96	0.002891	1.29	7.39	50.87	0.99
Creek	721	Emerg Spill 100	11.80	233.68	233.93	233.93	234.01	0.002651	1.40	9.33	54.55	0.98
Creek	646	Emerg Spill Reg	8.71	233.38	233.59	233.59	233.66	0.002894	1.29	7.39	50.86	0.99
Creek	646	Emerg Spill 100	11.80	233.38	233.63	233.63	233.71	0.002651	1.40	9.33	54.54	0.98

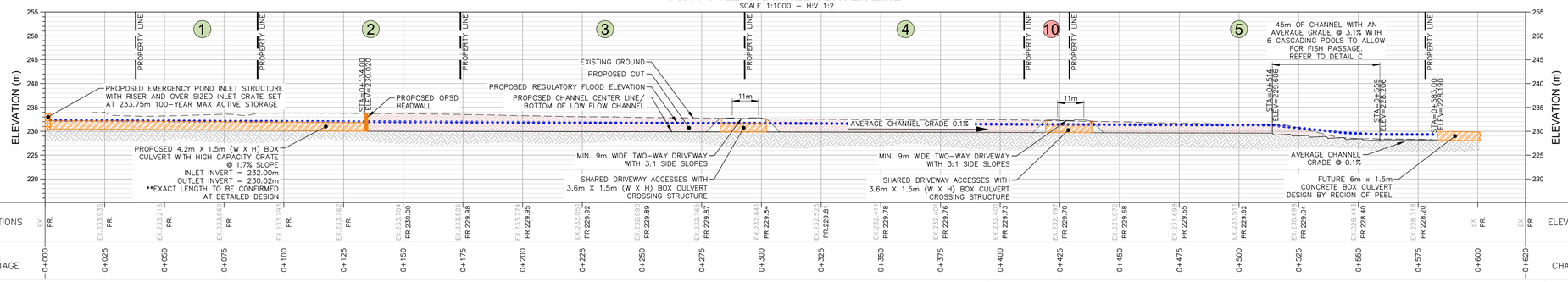


Property Ownership				
#	Address	Owner	Area (m^2)	~ Lost Area from 33m Wide Channel (m^2)
1	PT LT 1 CON 6 ALBION	Arion Services Ltd.	40,111.9	0.0
2	12155 Coleraine Drive	Triple X Inc.	41,551.8	2081.2
3	PT LT 1 CON 6 ALBION	Coleraine Properties Inc.	39,746.4	3731.7
4	0 Coleralne Drive	2781823 Ontario Inc.	38,278.1	3264.7
5	8602 Mayfield Road	Anatolia Investment Cor.	19,410.5	2472.9
10	8576 Mayfield Road Road	2833720 Ontario Inc.	23,229.0	405.7

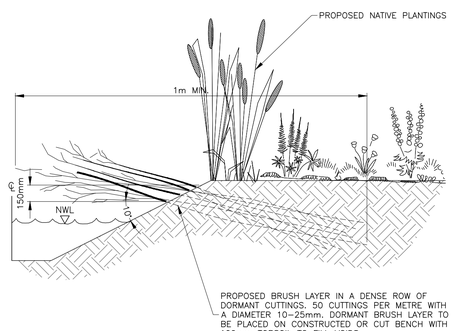
Participating Landowners
Non-Participating Landowners

PROPOSED CHANNEL CENTER LINE

SCALE 1:1000 – H:V 1:2



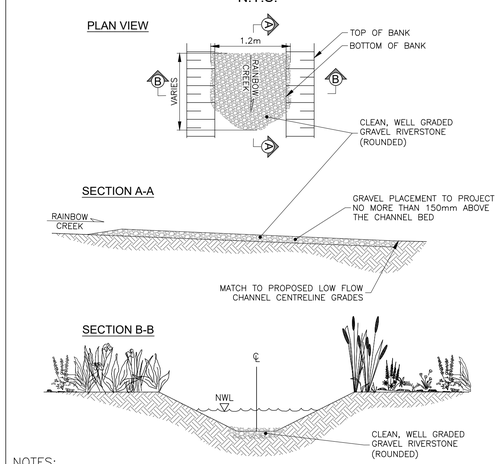
DETAIL A
TYPICAL BANK BRUSH LAYERING TREATMENT
N.T.S.



NOTES:

- COVER BRUSH LAYER IMMEDIATELY WITH 0.15m OF TOPSOIL AND COMPACT USING A VIBRATOR TAMPER.
- BRUSH LAYERING SHOULD BE SOAKED IN WATER PRIOR TO INSTALLATION AND HANDLED/TRANSPORTED WITH CARE.
- BRUSH LAYER WILL BE OF NATIVE WILLOW AND DOGWOOD SPECIES.

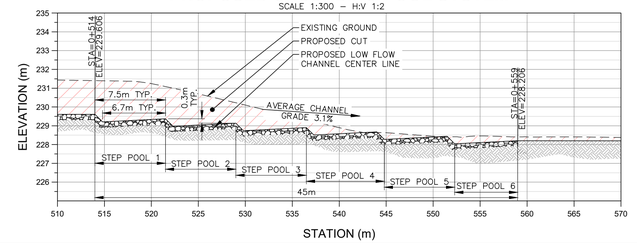
DETAIL B
TYPICAL BED GRAVEL AND COBBLE TREATMENT
N.T.S.



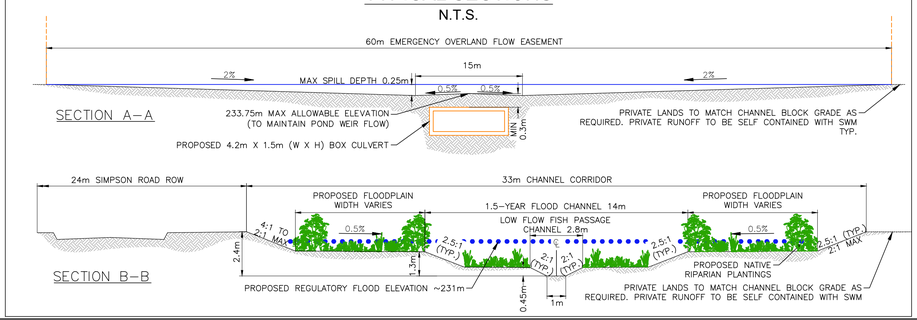
NOTES:

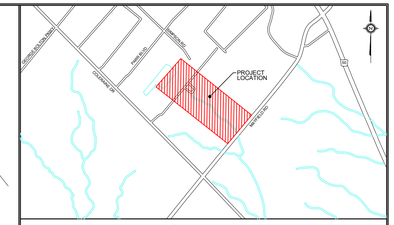
- GRAVEL TO BE CLEANED PRIOR TO PLACEMENT THEN CAREFULLY DISTRIBUTED ACROSS THE CHANNEL BED UNDER THE GUIDANCE OF ONSITE ADMINISTRATOR.
- WELL-GRADED AGGREGATE TO RANGE IN DIAMETER FROM 10mm TO 150mm"

DETAIL C
PROPOSED CASCADING POOL SYSTEM
SCALE 1:300 – H:V 1:2



DETAIL D
TYPICAL SECTIONS
N.T.S.





KEY PLAN
N.T.S.

LEGEND

EXISTING	PROPOSED	
		PROPERTY LINE
		RAINBOW CREEK
		TOP OF SLOPE
		BOTTOM OF SLOPE
		CHANNEL CENTRE LINE
		HEC-RAS CROSS SECTION
		BRUSH LAYERING BANKS
		GRAVEL AND COBBLE CHANNEL BED
		CASCADING POOL SYSTEM
		EMERGENCY SPILLWAY
		NATIVE RIPARIAN PLANTINGS
		CULVERT
		STORM PIPE
		CULVERT EASEMENT
		REGULATORY FLOODLINE (REGIONAL EVENT)
		OVERLAND FLOW

DRAFT DRAWING
NOT TO BE USED FOR CONSTRUCTION

BENCHMARK

SURVEY INFORMATION SOURCE :

EXISTING GROUND INFORMATION DERIVED FROM LIDAR INFORMATION PROVIDED BY GEI CONSULTANTS IN AUGUST 2023. NO TOPOGRAPHIC SURVEY COMPETED TO DATE.

ALL FUTURE SIMPSON ROAD GRADING INFORMATION AS PER WOODS DRAWINGS DATED SEPTEMBER 2023.

ALL SUBJECT LANDS GRADING AS PER DRAWINGS BY GEI CONSULTANTS DATED JULY 2025.

LEGAL BOUNDAREIS AND LEGAL INFORMATION AS PER INFORMATION PROVIDED BY GEI CONSULTANTS DATED JULY 2025.

NO.	REVISION	DATE	BY	APPROVED
1	ISSUED FOR REVIEW	2025/07/25	P.G.	E.G.

Greck
Civil · Water Resources · Environmental
5770 Highway 7, Woodbridge, Ontario, L4L 1T8 www.greck.ca

CLIENT NAME:
SIMPSON ROAD LANDOWNERS GROUP INC.
7501 KEELE STREET, SUITE 200
VAUGHAN, ON L4K 1Y2

PROJECT NAME:
SIMPSON ROAD MESP
CHANNEL WORK

CHANNEL REALIGNMENT AND NATURALIZED CONCEPT

DESIGNED BY:	J.C.	SCALES: AS SHOWN	PROJECT No. 20-717
CHECKED BY:	E.G.		DRAWING No. C1
DRAWN BY:	P.G.		SHEET No.
DATE:	JULY, 2025	SHEET SIZE: 24"x36"	

F:\Projects\2020\20-717 – Rainbow Creek Channel Design\05_Drawings\CAD\20-717 – PRE DESIGN.dwg

Date Plotted: Jul 17, 2025 – 8:08 PM