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PROPOSED RETAIL PADS B & C
(Phase 1 & 2)
13311 Loyalist Pkwy. (Hwy. #33)
PRINCE EDWARD COUNTY
PICTON - ONTARIO

SITE SERVICING AND
STORMWATER MANAGEMENT REPORT

Prepared For:

Choice Properties REIT

Original: November 2023
Update: June 2024 (SPA)
Update: February 2025 (SPA)
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Update: September 2025 (SPA)
Update: October 2025 (SPA) (Phase 1 & 2)

Update: December 2025 (SPA) (Phase 1 & 2)

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1.0 BACKGROUND

The property under study is a 3.78 ha site located at 13311 Loyalist Pkwy. in the County of Prince Edward, Picton, Ontario. The site area under review is approximately 3.14ha. of developable area which discharges to the east and west stormwater management ponds. The property is bounded to the north by Loyalist Pkwy., to the south by Millenium Trail, to the west by commercial land with a Canadian Tire store and to the east by the existing recreational complex and gas bar. Refer to Figure 1 below for the site location.

Figure 1 – Site Location

This report will evaluate the stormwater management (SWM) strategy proposed for the site for Phase 1 & Phase 2. Each Phase can be reviewed separately as for stormwater management, water and sanitary from each Phase of the Development are not interconnected. Phase 1 Stormwater Management relates to Retail B while Phase 2 Stormwater Management relates to Retail C. Both Phases outlet to separate Stormwater Management Ponds on site. Similarly, water and sanitary connections for each Phase will be provided via separate connections. Phase 1 will be provided from Millenium Trail while Future Phase 2 Retail C will connect to the services located with the drive aisle in the future.

At the present time, the site is comprised of one commercial building, Retail A and related parking.

There are two sand filter ponds, one to the west and one to the east, to control the runoff from the existing site. These ponds will be assessed for the addition of parking and hardscape and adjusted accordingly to meet predevelopment flows.

It is proposed to construct two commercial buildings, Retail B (Phase 1) and Retail C (Phase 2), including extending the existing parking lot. The west pond will be relocated to the west side of the site to accommodate the runoff from the development. Refer to the Site Plan by Turner Fleischer Architects Inc. for details of the site development. Figure 2 below.

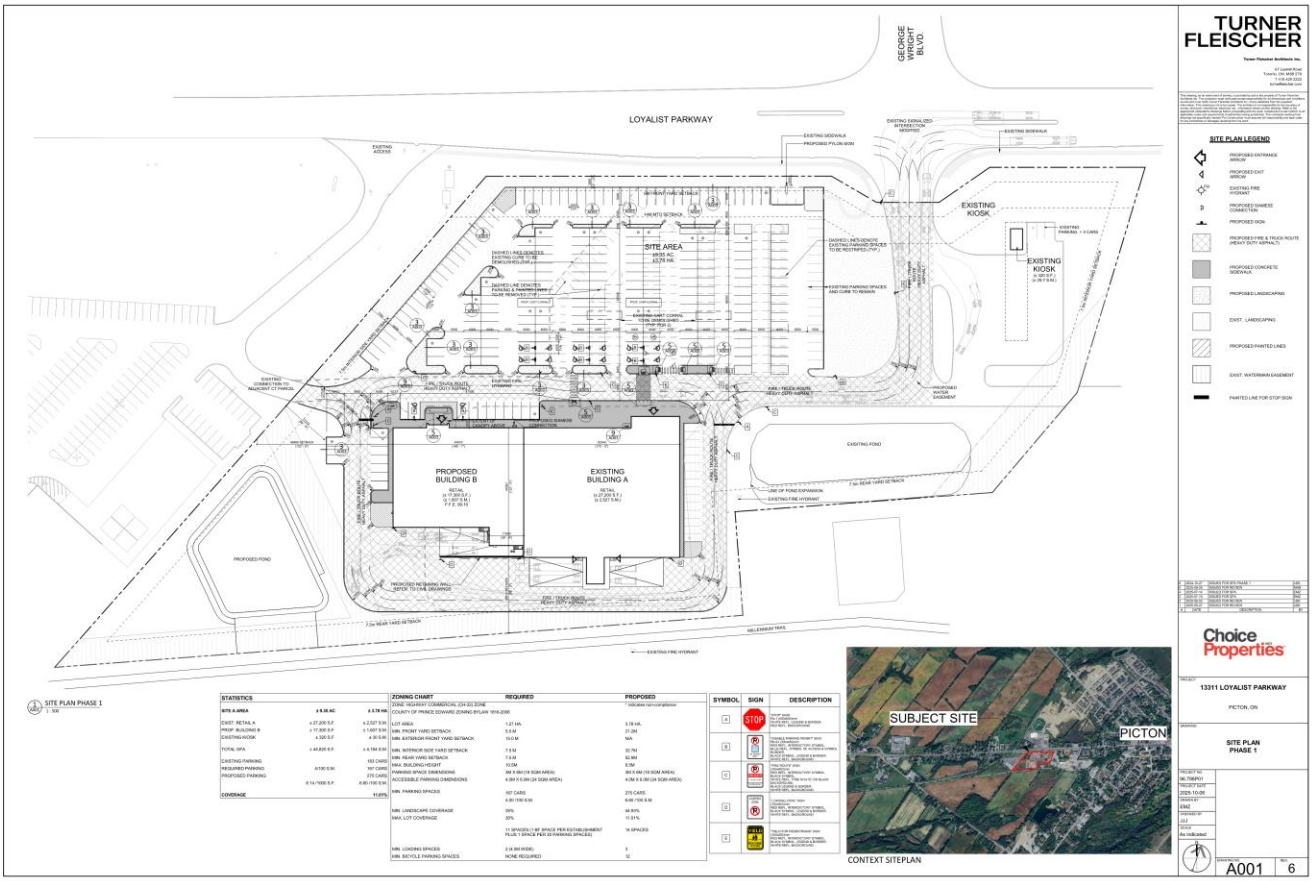

Figure 2A – Site Plan – Phase 1

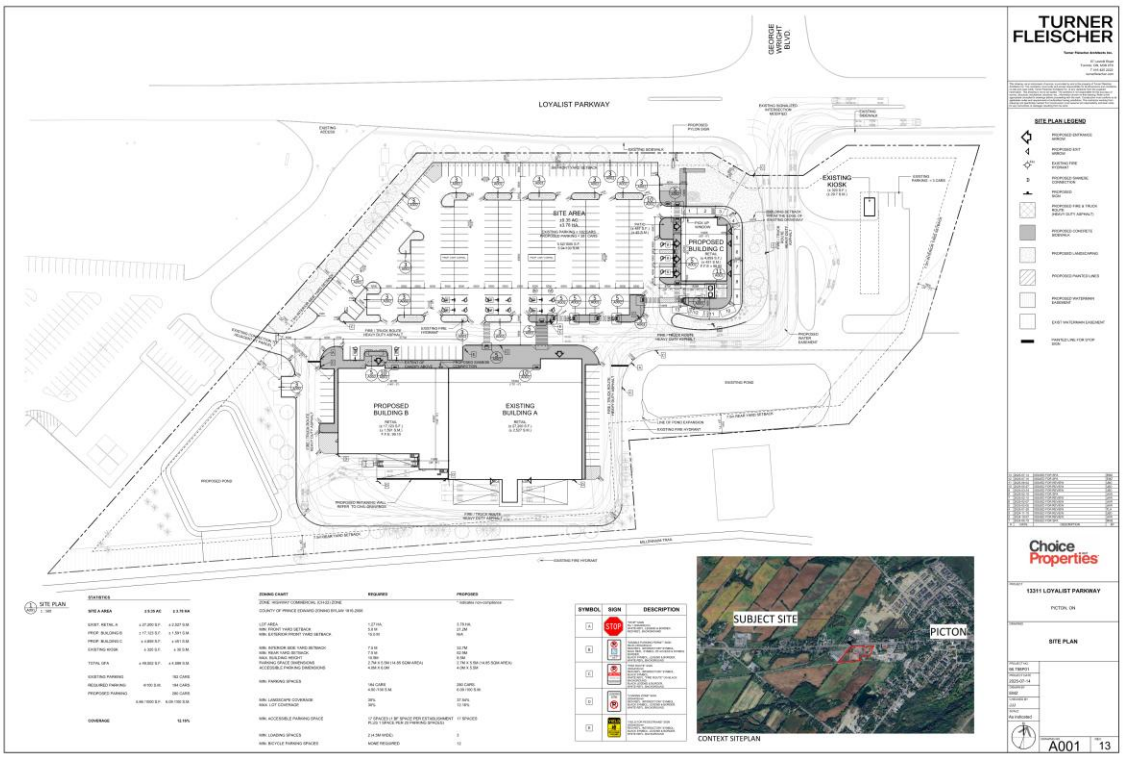

Figure 2B – Site Plan – Phase 1 & 2

2.0 WASTEWATER

The proposed development was considered as a Commercial development under previous zoning applications. The total site area was considered at that time. The following provides for the total area considered.

Phase 1 – Retail B – will connect via the existing sanitary lateral connection provided at the rear (south side) of the site from Millenium Trail.

Phase 2 – Retail C – will connect via the existing sanitary lateral connection provided to the site near the existing Gas Bar Outlet (east side) of the site.

TABLE 1 – WASTER WATER EXISTING CONDITION

Total development area	3.56 ha
Equivalent population based on 85 ppha:	303 persons
Peaking Factor: (Harmon Peaking Factor)	4.1
Total average daily flow (450 l/person/day):	136,350 l/day
Total average daily flow (l/sec	1.58 l/sec
Peak extraneous flow (0.23 l/sec./ha.):	0.82 l/sec
Total Expected Peak flow (domestic + extraneous) 4.1 x 1.58 + 0.82	**7.30 L/sec**
Pipe capacity: 250 mm dia. @ 0.28% n = 0.013	Q_{cap} = 31 l/sec

TABLE 2 – WASTERWATER PROPOSED CONDITION

The revised conditions are as follows which considers the road widening taken along Loyalist Parkway (Hwy. 33) and additional property acquired at the north west corner of the development.

Total development area	3.78 ha
Equivalent population based on 85 ppha:	321 persons
Peaking Factor: (Harmon Peaking Factor)	4.1
Total average daily flow (450 l/person/day):	144,450 l/day
Total average daily flow (l/sec	1.67 l/sec
Peak extraneous flow (0.23 l/sec./ha.):	0.87 l/sec

Total Expected Peak flow (domestic + extraneous) 4.1 x 1.58 + 0.82	**7.72 L/sec**
Pipe capacity: 250 mm dia. @ 0.28% n = 0.013	Q_{cap} = 31 l/sec
Pipe Capacity: 150mm dia. @ 2.0% N = 0.013	Q_{cap} = 22 l/sec

Therefore, the total flow from the site will be 7.72 l/sec which is a minor increase of 0.42 l/sec. Both the existing 150mm and 250mm existing lateral services are capable of conveying the flows.

3.0 WATER DISTRIBUTION

The site is serviced from the water main located on Hwy # 33. The water main underwent localized improvements to loop the system during expansion of the Canadian Tire Site. As the site is zoned for commercial use it is expected that adequate flows have been provided to the site by the County of Prince Edward.

Phase 1 – Retail B – will connect to the existing water main on site located at the rear of the development (south side) via the existing Municipal water main located at Millenium Trail.

Phase 2 – Retail C – will connect to the existing Municipal water main located on site looping from Loyalist Parkway to Millenium Trail.

During the original development the pressures and flows were found to be sufficient for peak hour conditions and under fire conditions as established by the Ministry of Environment and Energy (MOEE) and the Fire Under Writers Survey booklet once the loop was completed.

Based on the MOEE criteria the following allowable pressures will be used:

CONDITION	**ALLOWABLE PRESSURE**	
	Min.	**Max.**
1) Min. Hour	275	700
2) Peak Hour	275	700
3) Peak Day + Fire Flow	140	700

As the added uses are standard Retail units it is expected that the addition of the Retail building will not significantly alter the current site conditions as the Food Store would be the determine the highest Fire Flow requirement and domestic usage.

As required by the County confirmation on available fire flows is required. In order to address this fire flow test completed on July 24 2025 and are provided on the following page. The available flow at 20 PSI is 2613 USGPM.

The required fire flow based on the Fire Underwriters Survey (FUS) is USGPM for the worst case scenario is Retail A @ 67 l/sec or 1,062 USGPM, not including Peak Day, refer to Appendix B.

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Client	A2Z fire protection Ltd N/A Picton	**Site**	13311 Loyalist Parkway
		Site Contact **Phone**	Derek 647-622-3473

FIRE FLOW TEST

Fire Flow Date **July 24, 2025 - 9:26 am**
Site **13311 Loyalist Parkway**
Static Hydrant **Z 1140**
Flow Hydrant **Z1141**

Hydrant Colours

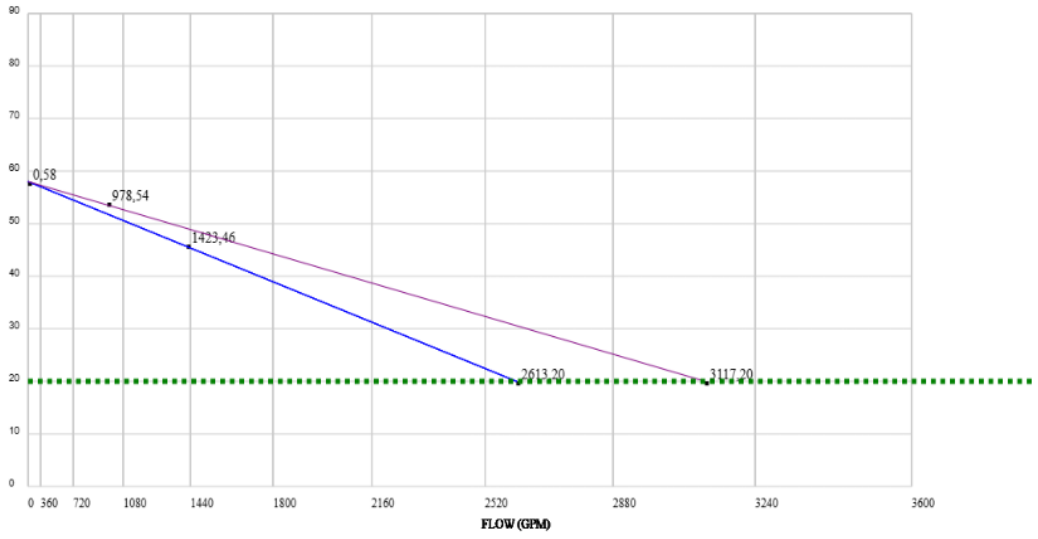
RED - C	0-500
ORANGE - B	500-1000
GREEN - A	1000-1500
BLUE - AA	>1500

Single Port

Static	58.5 psi
Residual 1	54 psi
Flow	34 psi
Observed	**978 US GPM** 814 IMP GPM 3702 L / MIN
Projected @ 20psi	**3117 US GPM** 2595 IMP GPM 11799 l/min.

Two Port

Static	58.5 psi
Residual 2	46 psi
Flow 2 (x2)	18 psi
Observed	**1423 US GPM** 1185IMP GPM 5387 L / MIN
Projected @ 20psi	**2613 US GPM** 2176 IMP GPM 9891 l/min.



4.0 STORMWATER MANAGEMENT

Storm water management for the proposed development will follow the requirements as specified by the County of Prince Edward during the original design stage. Previous discussions with the Moira Region Conservation Authority will still apply and as indicated the stormwater drainage criteria specific to this area remains as described:

- Drainage area is part of Wearing Creek watershed which is an MNR TYPE 1 Habitat. Therefore, runoff Quality will require TYPE 1 level treatment or Enhanced Treatment.
- Post Development Maximum release rates to match pre-development flows.
- Maintain post to predevelopment volumes of runoff.

TYPE 1 Level Treatment, Enhanced, can be accomplished by a sand filter holding pond that can capture the first flush or 25 mm storm runoff. In Addition, this sand filter pond can be used to store and infiltrate/evaporate excess runoff volume from the site to that of pre-development levels.

The pre to post development flows for the existing site conditions and added areas will be matched or maintained. Roof top control can accommodate the extra runoff in addition to minor expansion of the easterly pond.

Phase 1 – Retail B – outlets to the west Stormwater Management Dry Pond.

Phase 2 – Retail C – outlets to the east Stormwater Management Dry Pond.

Each Pond will be upgraded and altered independently during the specific Phasing and Construction of each Phase as neither Phase or Pond influences the other.

To evaluate the site the following design storms have been used.

The following are the rainfall data used to evaluate the flows based on the original design equations and approved stormwater management.

$I = 1081/(T+3)^{0767}$ mm/hr. FOR RETURN PERIOD OF 100-YEAR

I = 151 mm/hr. (for T = 10 min)

$I = 630/(T+4)^{0783}$ mm/hr. FOR RETURN PERIOD OF 5-YEAR

I = 80 mm/hr. (for T = 10 min)

Using Visual OTTHYMO 2.3.2 to perform stormwater runoff analysis, 5- and 100-year storms will be used to show that the storm drainage up to the 100-year event will be accommodated on-site. The 100-year storm will be used to determine the storage requirements for ponds.

4.1 Allowable Flows

The drainage area drains to the proposed pond will be considered to match the post-development flows to the pre-development flows. The tributary areas consider flows outside the property within the MTO right of way that drain towards the site and subsequently the stormwater quantity ponds. Adjustment has been made as per MTO comments to include the stormwater management pond areas. In addition, the new parking lot which previously by passed the stormwater pond has been added to the allowable flows from the development.

Pre-development flows from the existing site for 5- and 100-year storms based on Visual OTTHYMO model will be the allowable post-development flows for the corresponding storms. For the pre-development storm tributary areas, the areas directed to the existing ponds and storm outlets will be considered. Any areas that bypass the ponds remain unchanged and will not be considered.

The following Table 3 summarizes the parameters used in VISUAL OTTHYMO to characterize the pre-development catchment.

The underlying soils are sandy silt which would be classified as SCS Hydrologic Group C.

TABLE 3 - Catchment Characteristics for the Pre-Developed Site – Open Field -

Area No.	Description	Area (ha)	Hydrograph Method	% impervious	imperviousness directly connected %	Loss Method for Pervious Area	CN for Pervious Area	Initial Abstraction for Pervious Area (mm)	Time to peak (T_p)
1	Open Field (Pre Development)	3.26	NASHYD	0	-	SCS	5yr. - 75 100yr. - 86	5	0.111

Note: 5 year CN is for antecedent condition II, 100 year storm SCS recommends antecedent condition III. Conversion Factor is 1.15 CN (CN For Condition II).

The following Figure 3 shows the Visual OTTHYMO model for pre-development condition (100-year storm) allowable flows from the site.

Figure 3 – Visual OTTHYMO Model (5 & 100-Year Storms)

Table 4 shows the pre-development flows from the site

TABLE 4 - Summary of Allowable Flows from Site	
Storm Event	**Allowable Flow (L/s)**
5 Year	90
100 Year	536

4.2 Post Development Flow Analysis

For the purposes of post development analysis, the post development storm tributary area of the subject site has been identified as shown on Figure 5 in Appendix A. The tributary area now considers areas draining to the site from the MTO Hwy. 33 right-of-way.

To control the post development flows to the allowable flow rate, on-site parking lot storage will be required as well as a roof top storage and stormwater management ponds. This will be achieved with the use of surface storage and orifice plate flow control. A 100mm orifice plate is used to restrict the flow from the site. Visual OTTHYMO 2.3.2. will be used to model and determine the detention volume required.

The following Table 5 summarizes the parameters used in Visual OTTHYMO to characterize the post development catchment.

TABLE 5 - Catchment Characteristics for the Post-Developed Site

Area No.	Description	Area (ha)	Hydrograph Method	% impervious	imperviousness directly connected %	Loss Method for Pervious Area	CN for Pervious Area	Initial Abstraction for Pervious	Time to peak (T_p)
East Pond									
1	Parking	1.07	STANDHYD	85	85	SCS	75/86	5	-
2	Building	0.05	STANDHYD	99	99	SCS	99	1	-
3	Gas Bar	0.25	STANDHYD	85	85	SCS	75/86	5	-
6	Building	0.24	STANDHYD	99	99	SCS	99	1	-
West Pond									
5	Building	0.16	STANDHYD	99	99	SCS	99	1	-
4	Parking	0.54	STANDHYD	85	85	SCS	75/86	5	-
7	Loading	0.68	STANDHYD	50	50	SCS	75/86	5	-
8	East Pond	0.28	NASHYD	-	-	SCS	75/86	5	-

Note: 5 year CN is for antecedent condition II, 100 year storm SCS recommends antecedent condition III. Conversion Factor is 1.15 CN (CN For Condition II).

The storage details and the stage/storage/discharge properties used to model the flow controls for this site are shown in Appendix A. This information, along with the surface characteristics of the areas were used in Visual OTTHYMO to determine the storage requirements and discharge from the orifice-controlled area. Refer to the Visual OTTHYMO detailed output file in Appendix A for further details.

Figure 6 shows the VISUAL OTTHYMO model for post-development condition (5 year storm)

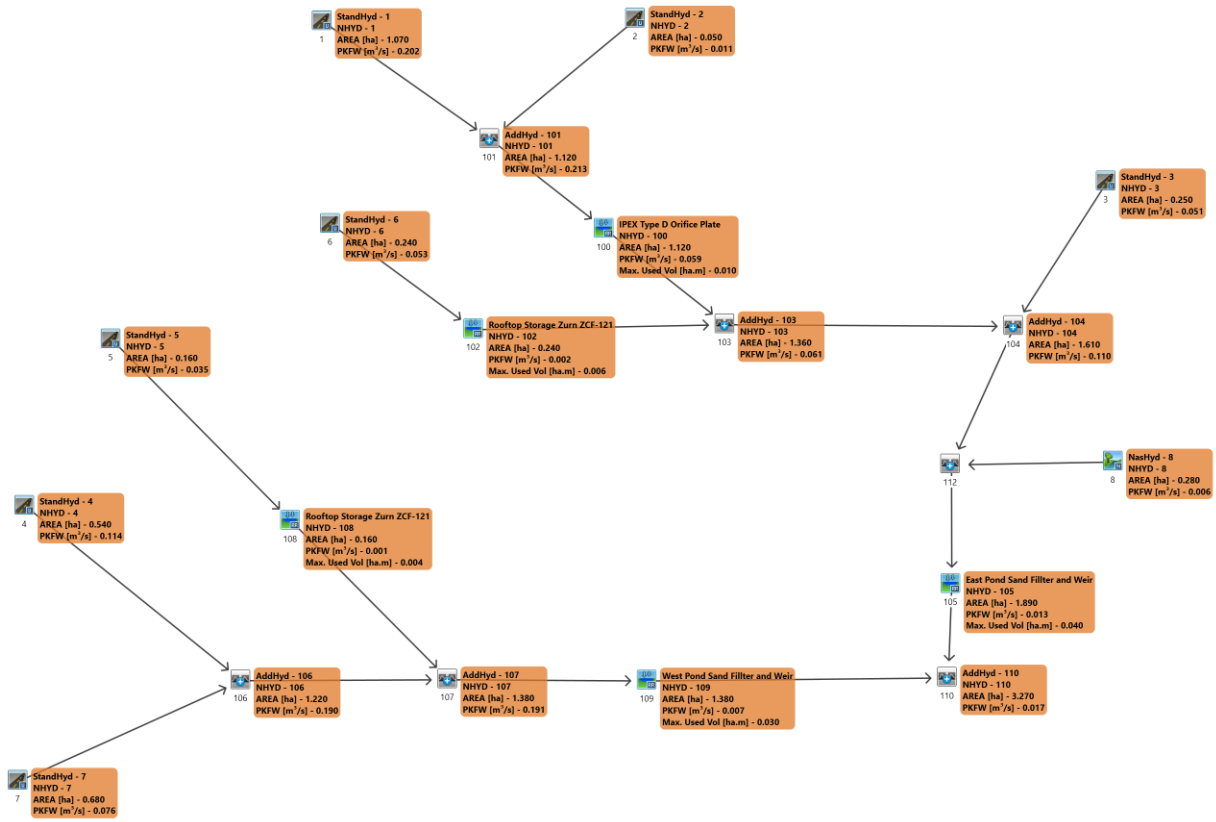


Figure 6 – Visual OTTHYMO Model (5 Year Storm)

The following Tables show a summary of the pre to post development site characteristics comparison.

TABLE 6 - Summary of Parking Lot Storage		
Storm Event	**Storage Used (m^3)**	**Storage Available (m3)**
5 Year Storm	103	400
100 Year Storm	272	

TABLE 7 - Summary of Predevelopment flow analysis

Site Area (ha.)	Q 5 year (l/sec)	Q 100 year (l/sec)	Runoff Volume (mm) 5 year	Runoff Volume (mm) 100 Year
3.27 ha.	90	536	7.28	34.05

TABLE 8 - Summary of Post Development Flows

Area ID(Model ID) Description	Q 5 year (l/sec)	Q 100 year (l/sec)	Runoff Volume (mm) 5 year	Runoff Volume (mm) 100 Year
East Pond				
1&2 (1&2) Front Parking	59	61	29.36	57.44
6 (6) Roof (Control)	2	4	29.63	59.58
3 (3) Gas Bar	51	94	30.46	59.08
8 (8) East Pond SF	13	78	5.75	30.64
(105) Total East	13	78	5.75	30.64
West Pond				
4 (4) Front Parking	114	219	31.75	62.94
5 (5) Roof (Control)	1	3	27.96	57.86
7 (7) Rear Loading	76	156	20.21	43.58
(109) West Pond SF	7	95	5.52	31.96
(109) Total West	7	95	5.52	31.96
(110) TOTAL SITE	17	131	5.65	32.24

The post-development flow is less than the pre-development flow for 100-year and 5-year storm. The post-development runoff flow drains to a sand filter pond for treatment. The major system will be controlled via parking lot storage and orifice devices and extended detention with the stormwater pond. The following page provides for a comparison of post to predevelopment flows.

Post Development to Predevelopment Comparison

Total Release From Site Q 5year – Post Development = 17 l/sec < 90 l/sec Allowable

Total Release From Site Q 100 year - Post Development = 131 l/sec < 536 l/sec Allowable

The total runoff volume has been reduced from the site as per the below comparison.

Site Area (ha.)	Runoff Volume (mm) 5 year	Runoff Volume (mm) 100 Year
Predevelpoment Runoff Volume		
3.27 ha.	7.28	34.05
Post Development Runoff Volume		
3.27 ha.	5.52	32.24

As noted at the start of this section, each Stormwater Pond for Phase 1 & Phase 2 can be upgraded independently during the Phasing of the site to meet and maintain Stormwater Management criteria for the development as both Phases drain to separate Stormwater Ponds on site.

4.3 MTO Risk Assessment Analysis No Roof Top Controls on New Retail Pads

As part of MTO requirements rooftop controls are not permitted. As such a risk assessment has been completed to compare the predevelopment conditions with the post development conditions and rooftop controls removed for the new proposed Retail pad and existing Retail Pad. The existing rooftop control on the food store will remain as this is an existing building and was approved with rooftop controls during the original site plan application process related to the Food Store and the current function site and pond sizing, however, the MTO has requested assessment of the site with these controls removed.

The following comment was provided from the MTO related to rooftop controls, “The Relationship for Rooftop Control devices calculations are provided in Appendix A. Please clarify which proposed building each set of calculations applies to. Note that, per MTO SWM policy, rooftop storage is not considered to be a permanent SWM control due to the ability to tamper with the outlets and, therefore, continuous effectiveness of the rooftop storage devices cannot be guaranteed. Where the applicant chooses rooftop storage, the SWM report needs to demonstrate that tampering or removal of the rooftop storage devices will not have an adverse impact on the highway drainage system. Please share details for the proposed rooftop storage systems that confirm they are tamper proof.”

In order for the development to function and as accepted by the County and Conservation Authority rooftop controls must remain for the existing Food Store as this was previously approved and accepted during the original site design and SPA stage. Rooftop Controls for the small CRU have been removed entirely. Rooftop Controls for the larger CRU Retail B are required to minimize impacts on the downstream Pond and internal piping within building.

To address MTO concerns a risk assessment has been added to the report to demonstrate the impact on removing Rooftop Control devices on the existing building. It should be noted that the Developer/Owner adheres to strict policies regarding tampering and removal of these devices as the internal piping relies on controls in order to downsize internal piping.

There is no method that would make the device 100% tamper proof as the devices will be periodically removed from time to time for roof maintenance and inspection of the roof drainage system. It is the responsibility of the Owner to ensure that these devices are not removed and if removed are immediately replaced upon completing any inspections or maintenance. It is recommended that during the spring the Owner Inspects the rooftop to ensure the devices are in place and functioning.

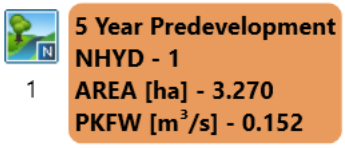
In order to address MTO concerns regarding removal of rooftop devices an additional OTTHYMO model has been completed to assess the removal of the rooftop control devices related to the proposed and existing building. The following assessment provides a summary of the model results. In addition to this model, it is further demonstrated with contour mapping and aerial views that the proposed development is lower than Loyalist Parkway (Hwy. 33) and will not contribute or impact the storm sewer system on Loyalist Parkway (Hwy. 33). Flows from the proposed development drain away from the MTO right-of-way.

Additionally, the following model has been revised to MTO IDF Curves based on the MTO Ministry District Intensity-Duration-Frequency Values obtained from the MTO IDF Curve Lookup website, which is based on the Geospatial location of site in Picton, County of Prince Edward.

MTO IDF Curve parameters are provided in Appendix A and were derived from the MTO IDF Curve Lookup, Ministry of Transportation website. The Intensity-Duration pairs were input into OTTHYMO to derive the IDF Equations for the 5 Year and 100 Year Storm Events. These were used to model the risk assessments in this section.

Table 9 shows the pre-development flows from the site based on MTO IDF Curves.

TABLE 9 - Summary of Allowable Flows from Site (MTO IDF Curves)	
Storm Event	**Allowable Flow (L/s)**
5 Year	152
100 Year	636



The same parameters from Table 5 will be used in the model to assess removal of rooftop controls.

Figure 7 shows the MTO IDF Curve VISUAL OTTHYMO model for post-development condition based on the 5 year storm.

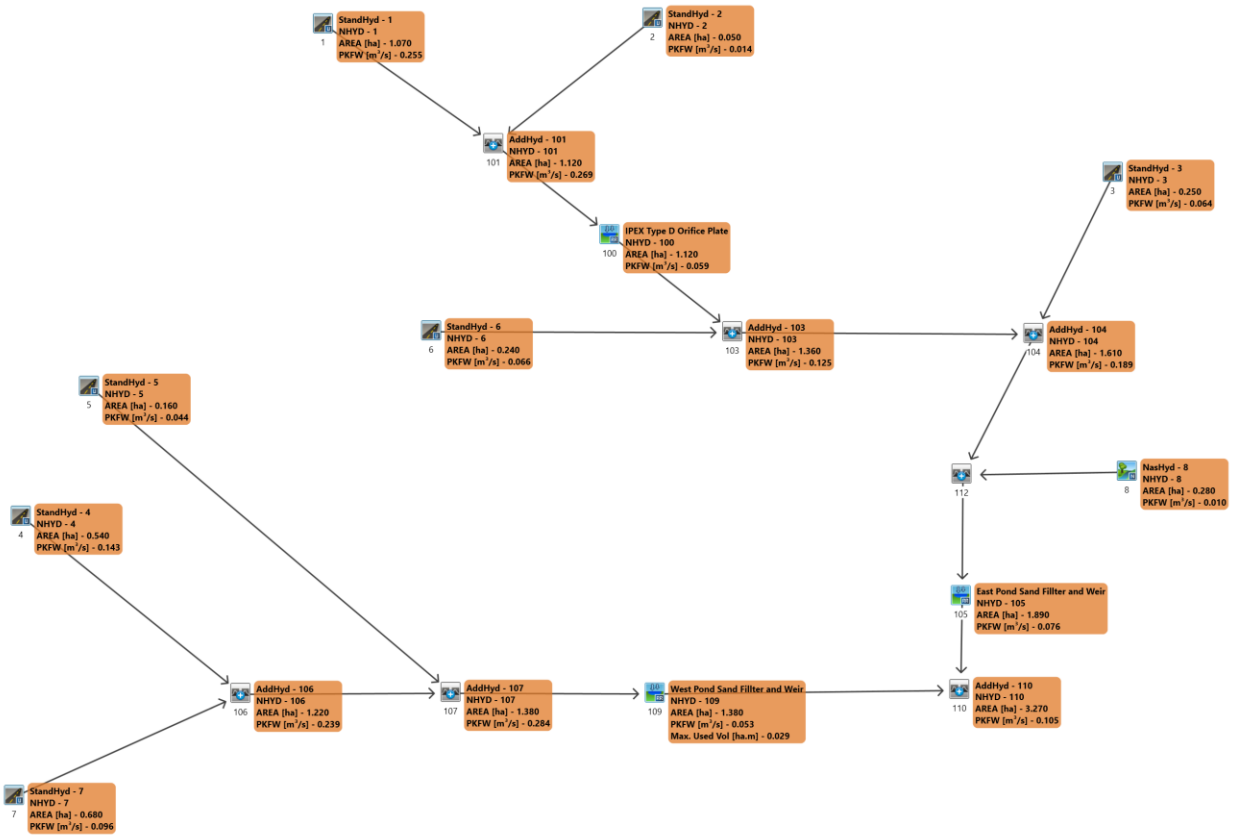


Figure 7 – Visual OTTHYMO Model (5 Year Storm) (MTO IDF Curves)

The following Tables show a summary of the pre to post development site characteristics comparison.

TABLE 10 - Summary of Parking Lot Storage		
Storm Event	**Storage Used (m^3)**	**Storage Available (m3)**
5 Year Storm	142	400
100 Year Storm	306	

TABLE 11 - Summary of Post Development Flows (MTO IDF Curves)

Area ID(Model ID) Description	Q 5 year (l/sec)	Q 100 year (l/sec)
1&2 (1&2) Front Parking	59	62
6 (6) Roof (Uncontrolled)	66	101
3 (3) Gas Bar	64	100
8 (8) East Pond SF	76	149
(105) Total East	76	149
4 (4) Front Parking	143	221
5 (5) Roof (Uncontrolled)	44	67
7 (7) Rear Loading	96	181
(109) West Pond SF	53	149
(109) Total West	105	267
(110) TOTAL SITE	105	267

The post-development flow is less than the pre-development flow for 100-year and 5-year storm. The post-development runoff flow drains to a sand filter pond for treatment. The major system will be controlled via parking lot storage and orifice devices and extended detention with the stormwater pond. The following page provides for a comparison of post to predevelopment flows.

Post Development to Predevelopment Comparison based on **MTO IDF Curves.**

Total Release From Site Q 5year – Post Development = 105 l/sec < 152 l/sec Allowable

Total Release From Site Q 100 year - Post Development = 267 l/sec < 636 l/sec Allowable

As demonstrated above the removal of Rooftop Controls on the new proposed CRU Retail B and Existing Food Store will result in minimal impact and change to the stormwater management strategy for the development from predevelopment to post development.

4.4 Storm Outlet Locations

West Stormwater Pond Outlet (Phase 1)

The West Stormwater Pond outlets via an overflow during the 100 Year Storm event. During the 5 year storm event the pond outlets via an infiltration trench (underdrain) to the south open field. The ultimate outlet during the 100 Year Storm event is via 2 culverts.

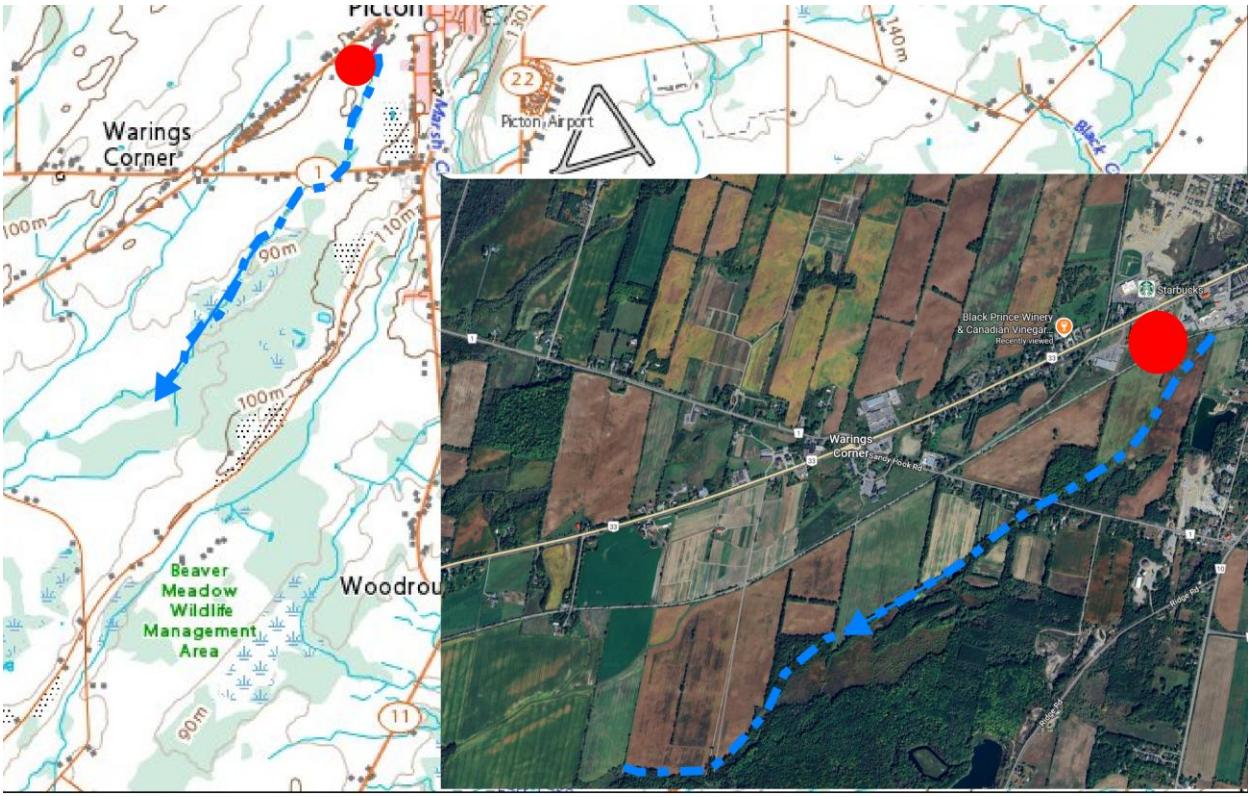
East Stormwater Pond Outlet (Phase 2)

The East Stormwater Pond outlets via an overflow during the 100 Year Storm event. During the 5 year storm event the pond outlets via an infiltration trench (underdrain) to Millenium Trail. The ultimate outlet is via a culvert that flows to the south below Millenium Trail.

Ultimate Outlet

As noted above the development has two (2) stormwater ponds that contain the 5 Year storm event within the pond and discharge the 100 year storm event via weirs located at the top of the stormwater quantity pond.

Both of these outlets are lower than Loyalist Parkway (Hwy. 33) by approximately 3m+/-. As such the development will not drain to or impact Hwy. 33 during large storm events. Discharge from the development can be followed via the sketch below which shows the development location, represented by a red dot, draining to the south-west away from Loyalist Parkway (Hwy. 33).



It can further be seen that the drainage ditch to the south does not cross Loyalist Parkway (Hwy. 33) further south. As such the risk of flooding Loyalist Parkway (Hwy. 33) due to the proposed development and removal of rooftop controls will have no impact on MTO lands or infrastructure upstream of the development.

4.5 Water Quality

The sand filter plus dry pond will provide the necessary quality control for a Level 1 (Enhanced) protection. The pond is shown on the site servicing drawings. Maintenance access is provided via the proposed parking lot (see enclosed drawings). As such two(2) dry ponds have been provided for the site.

The volume required for water quality is as follows:

West Pond (Phase 1):

Based on a 4 hour 25 mm Chicago storm, the volume runoff from the site is 23mm, refer to Visual OTTHYMO output in Appendix A.

The required storage for quality control will be 257 m^3 and the available storage is 350m^3.

East Pond (Phase 2):

Based on a 4 hour 25 mm Chicago storm, the volume runoff from the site is 23mm, refer to Visual OTTHYMO output in Appendix A.

The required storage for quality control will be 368 m^3 and the available storage is 410m^3.

The east pond will require expansion to accommodate the increase hard scape surface and drainage area being directed to the pond. An increase from original site conditions.

5.0 CONCLUSIONS

From our investigation storm water management can be accommodated with on-site storage as described in this report. The post development 100- year storm design has been maintained below the allowable flow rate for the site using roof top control and on-site storage. Stormwater quality has been proposed for the site to meet the 80% TSS removal target.

The following Table 12 summarizes the SWM components of the proposed development.

TABLE 12 - Summary Information		
Allowable release rate from site 100 Year Storm	5 Year - 90 L/sec	100 Year - 536 L/s
Actual release rate from site	5-year – 17 L/s	100 Year - 131 L/s
Total Storm Water Storage Required 100-Year (Full Site Both Ponds)	$350m^3 + 407m^3 = 757m^3$	
Total Storm Water Storage Provided (Full Site Both Ponds)	$500m^3 + 720m^3 = 1220m^3$	
Orifice Device Used	Orifice Tube 100mm Parking Lot	
Storage System Used	SWM Pond + Rooftop + Parking Lot Storage	
Water Quality	Sand filter- 80% TSS	

Respectfully Submitted;
The Odan Detech Group Inc.

LICENSED PROFESSIONAL ENGINEER
DEC 11/25
P.J. HECIMOVIC
100126980
PROVINCE OF ONTARIO

Mark Harris
Digitally signed by Mark Harris
DN: C=CA, E=mark@odandetech.com, O=The Odan/Detech Group Inc., CN=Mark Harris
Date: 2025.12.11 14:51:08-05'00'

Paul Hecimovic, P.Eng. Mark Harris, Dipl. Tech.

APPENDIX A

- Figure 4 – Predevelpoment Storm Tributary Area Plan

- Figure 5 – Post-Development Storm Tributary Area Plan

- Stage/Storage/Discharge Characteristics for Flow Controlled Areas
    - Rooftop
    - Parking – IPEX Inlet Device

- Visual OTTHYOM Pre Development Flows
    - 5 Year Design Storm
    - 100 Year Design Storm

- Visual OTTHYMO Post-Development Flows (County IDF Curves) (Rooftop Controls)
    - 5 Year Design Storm
    - 100 Year Design Storm

- Visual OTTHYMO Post-Development Flows (MTO IDF Curves) (No Rooftop Controls)
    - 5 Year Design Storm
    - 100 Year Design Storm

- Visual OTTHYMO Post-Development Flows
    - 25mm Design Storm

- MTO IDF Curves (Ministry IDF Curve Lookup)

- Storm Sewer Design Sheet (MTO IDF Curves)

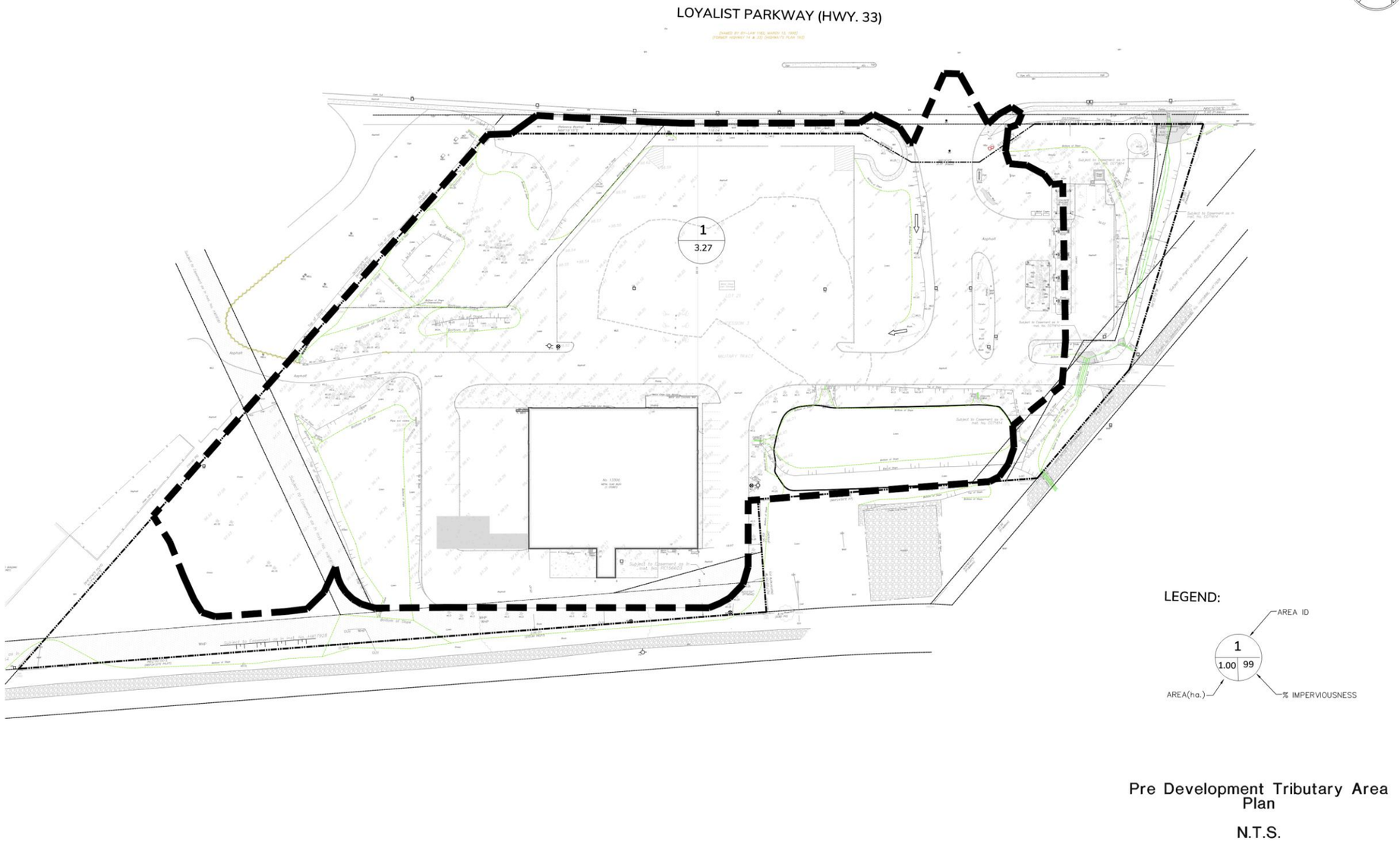


Figure 4 - Predevelopment Storm Tributary Area Plan

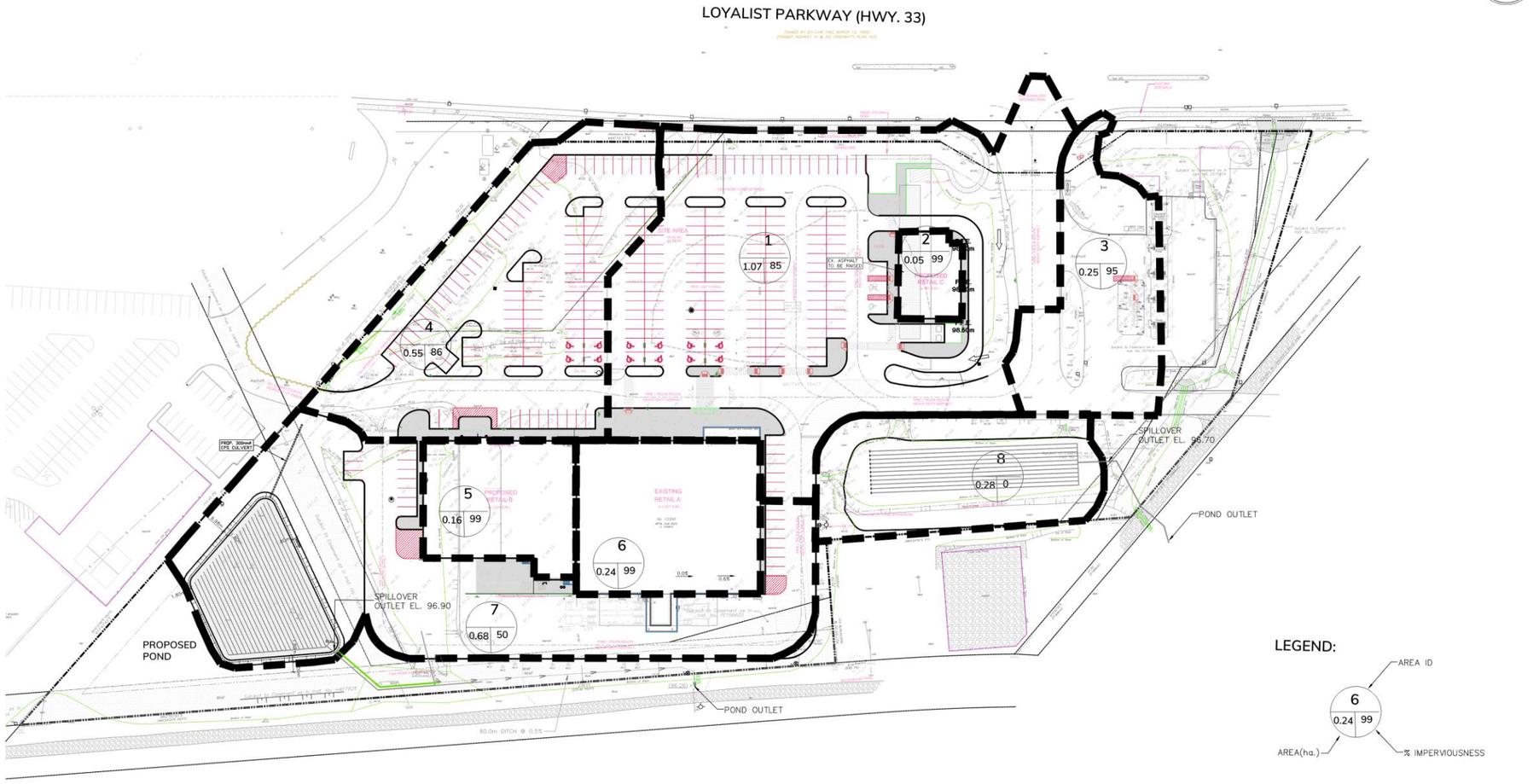


Figure 5 – Post Development Storm Tributary Area Plan

ORIFICE DISCHARGE CALCULATOR

This program calculates the discharge from a circular orifice when given elevations and orifice diameters by the user.

Discharge based on orifice equ.: Q = CA x sqrt(2gh)

Orifice Diameter =	**IPEX Type D**	m ←	**Enter the orifice diameter in metres**
Area	**-**	m2	
Discharge Coeff. =	**-**	←	**Enter discharge coeff. to use Orifice Tube**

Elev.	Head	Discharge	Volume
96.85	0	**0.0000**	0.0
98.15	1.30	**0.0570**	10.0
98.25	1.40	**0.0590**	130.0
98.35	1.50	**0.0600**	200.0
98.45	1.60	**0.0630**	400.0

IPEX PLATE MANUFACTURER SPECIFICATIONS

Inlet Control Device

The IPEX Inlet Control Device (ICD) is used to control flow into storm sewers during peak flow events.

It is designed to allow a specified flow volume out of a catchbasin at a specified head. This causes the excess stormwater to be temporarily stored above ground. This approach conserves pipe capacity so that catchbasins upstream do not become uncontrollably surcharged, which could lead to flooding. IPEX ICD's incorporate a special design that prevents clogging, particularly during low flow conditions. IPEX ICDs can also be fabricated to fit any type of pipe – PVC, concrete, clay or a host of other products.

ADVANTAGES

- Controls flow into storm sewers during peak flow events.
- Designed to allow a specified flow volume out of a catchbasin at a specified head.
- Conserves pipe capacity so that catchbasins upstream do not become uncontrollably surcharged, which could lead to flooding.
- Special design that prevents clogging, which can be a problem for some orifice plates, particularly during low flow conditions.

EMCO Corporation Waterworks is not responsible for any errors and discrepencies in the products depicted herein. Information is provided directly from our suppliers.

ICDS FOR STORMWATER SYSTEMS

PRODUCT INFORMATION BULLETIN

Inlet Control Device

The IPEX Inlet Control Device (ICD) is used to control flow into storm sewers during peak flow events. It is designed to allow a specified flow volume out of a catchbasin at a specified head. This causes the excess stormwater to be temporarily stored above ground. This approach conserves pipe capacity so that catchbasins upstream do not become uncontrollably surcharged, which could lead to flooding.

IPEX ICD's incorporate a special design that prevents clogging, particularly during low flow conditions.

IPEX ICDs can also be fabricated to fit any type of pipe – PVC, concrete, clay or a host of other products.

Dimensions

ICD's are available both as standard (Types A, B, C, D, & F) and custom designed configurations. In addition, there are specific designs for different types of pipe, including smooth wall PVC, profile wall and concrete pipe.

The main advantage of specifying standard ICD's is that they are readily available and can be delivered immediately. However, there are definite advantages to specifying custom sized units as they allow tremendous design flexibility because the allowable flow can be matched directly to the topography of the pavement surface.

Types Available

'Plug' ICD

A short, slightly tapered plug is inserted in the outlet pipe from the catchbasin. Held in place by friction and hydrostatic pressure, plug ICDs are made to fit 200mm, 250mm and 3mm (8", 10" & 12") pipe made from any material (i.e. PVC, concrete, clay, etc.). The orifice plate sits flush with the inside of the catchbasin.

'Framed' ICD

A plate containing the orifice is held in channels in the frame. The ICD frame is bolted over the outlet pipe inside the catchbasin. Framed ICDs can be fabricated for any size and type of pipe.

Applications & Benefits

Storm water flow control for:

- parking lots
- roads
- where main line storm sewer capacity must be managed
- alleviates basement flooding

IPEX

Products are manufactured by IPEX Inc. and distributed in the United States by IPEX USA LLC.

Canadian Customers call IPEX Inc.
Toll Free: (866) 473-9462
www.ipexinc.com

US Customers call IPEX USA LLC
Toll Free: (800) 463-9572
www.ipexamerica.com

PIMNNAIP050813R
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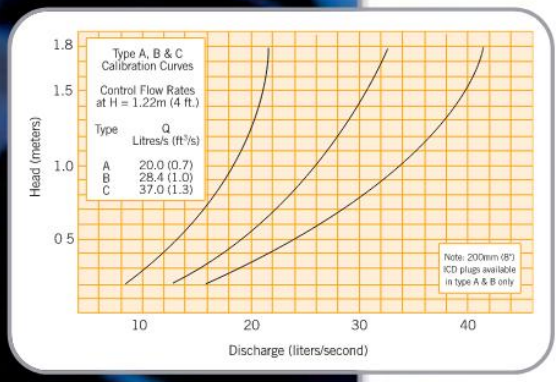
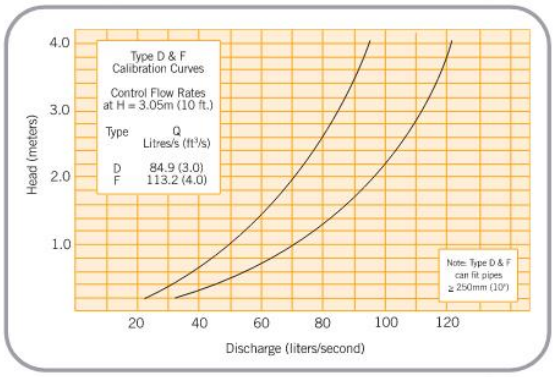
Sump Scouring Action

The rectangular slot at the bottom of the orifice works effectively in two ways. First, during dry periods it draws the water level below the main orifice area, keeping it clear of floating debris. Second, it generates strong vortex action in the approach flow during heavy rainfalls, vigorously scouring sediment from the sump of the catchbasin.





Specifications

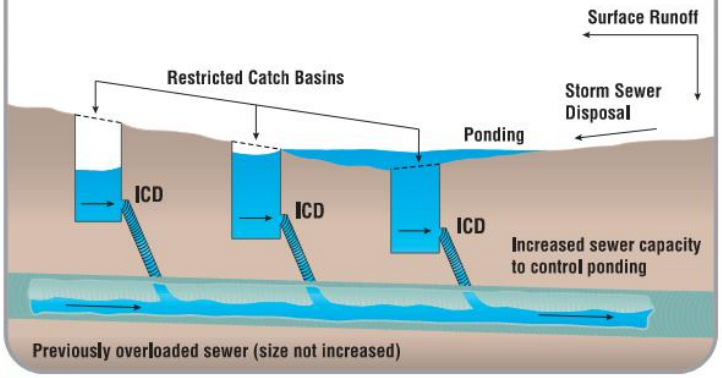
IPEX Inlet Control Devices are manufactured from Polyvinyl Chloride (PVC) to be supplied according to the type (i.e. A, B, C, D, or F) as shown in the above graphs.

IPEX Plug ICDs are to be machined to provide a friction fit into the outlet pipe.

Framed ICDs are to be bolted in position over appropriate outlet pipe in the catchbasin/maintenance hole.

Note: IPEX can also design and fabricate I.C.D's with custom curves, in order to match specific site requirements.

DUAL DRAINAGE SYSTEM



Canadian Customers call IPEX Inc.
Toll Free: (866) 473-9462
www.ipexinc.com

US Customers call IPEX USA LLC
Toll Free: (800) 463-9572
www.ipexamerica.com

Visual OTTHYMO Pre-Development flows 5- & 100 -year storm events output

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DATE: 07/16/2025                          TIME: 01:37:33

USER:



COMMENTS: _____________________________________________________________


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  ************************************************
  ** SIMULATION : 5 Year Picton Chicago         **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 630.000
| Ptotal= 34.04 mm |                          B=   4.000
--------------------                          C=   0.783
                       used in:   INTENSITY =  A / (t + B)^C

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

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    2.23 |  1.00   16.79 |  2.00    5.15 |  3.00    2.64
                0.17    2.55 |  1.17   79.79 |  2.17    4.40 |  3.17    2.46
                0.33    2.99 |  1.33   22.00 |  2.33    3.86 |  3.33    2.30
                0.50    3.65 |  1.50   11.61 |  2.50    3.45 |  3.50    2.17
                0.67    4.77 |  1.67    8.06 |  2.67    3.12 |  3.67    2.05
                0.83    7.15 |  1.83    6.25 |  2.83    2.86 |  3.83    1.94


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```
| CALIB             |
| NASHYD   (  0001)|   Area     (ha)=   3.14   Curve Number    (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.23	1.083	16.79	2.083	5.15	3.08	2.64
0.167	2.23	1.167	16.79	2.167	5.15	3.17	2.64
0.250	2.55	1.250	79.79	2.250	4.40	3.25	2.46
0.333	2.55	1.333	79.79	2.333	4.40	3.33	2.46
0.417	2.99	1.417	22.00	2.417	3.86	3.42	2.30
0.500	2.99	1.500	22.00	2.500	3.86	3.50	2.30
0.583	3.65	1.583	11.61	2.583	3.45	3.58	2.17
0.667	3.65	1.667	11.61	2.667	3.45	3.67	2.17
0.750	4.77	1.750	8.06	2.750	3.12	3.75	2.05
0.833	4.77	1.833	8.06	2.833	3.12	3.83	2.05
0.917	7.15	1.917	6.25	2.917	2.86	3.92	1.94
1.000	7.15	2.000	6.25	3.000	2.86	4.00	1.94

```
     Unit Hyd Qpeak  (cms)=   1.080

     PEAK FLOW       (cms)=   0.087 (i)
     TIME TO PEAK    (hrs)=   1.417
     RUNOFF VOLUME    (mm)=   7.283
     TOTAL RAINFALL   (mm)=  34.035
     RUNOFF COEFFICIENT   =   0.214

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



COMMENTS: _____________________________________________________________


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  ************************************************
  ** SIMULATION : MTO Kingston West 5yr 4hr 10m **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 685.000
| Ptotal= 37.38 mm |                          B=   6.008
--------------------                          C=   0.780
                       used in:   INTENSITY =  A / (t + B)^C

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

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    2.55 |  1.00   19.83 |  2.00    6.02 |  3.00    3.03
                0.17    2.92 |  1.17   78.76 |  2.17    5.12 |  3.17    2.82
                0.33    3.44 |  1.33   25.87 |  2.33    4.47 |  3.33    2.64
                0.50    4.22 |  1.50   13.81 |  2.50    3.98 |  3.50    2.48
                0.67    5.56 |  1.67    9.53 |  2.67    3.60 |  3.67    2.34
                0.83    8.43 |  1.83    7.34 |  2.83    3.29 |  3.83    2.22


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

```
| CALIB             |
| NASHYD   (  0001)|   Area     (ha)=   3.14   Curve Number    (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.55	1.083	19.83	2.083	6.02	3.08	3.03
0.167	2.55	1.167	19.83	2.167	6.02	3.17	3.03
0.250	2.92	1.250	78.76	2.250	5.12	3.25	2.82
0.333	2.92	1.333	78.76	2.333	5.12	3.33	2.82
0.417	3.44	1.417	25.87	2.417	4.47	3.42	2.64
0.500	3.44	1.500	25.87	2.500	4.47	3.50	2.64
0.583	4.22	1.583	13.81	2.583	3.98	3.58	2.48
0.667	4.22	1.667	13.81	2.667	3.98	3.67	2.48
0.750	5.56	1.750	9.53	2.750	3.60	3.75	2.34
0.833	5.56	1.833	9.53	2.833	3.60	3.83	2.34
0.917	8.43	1.917	7.34	2.917	3.29	3.92	2.22
1.000	8.43	2.000	7.34	3.000	3.29	4.00	2.22

```
     Unit Hyd Qpeak  (cms)=   1.080

     PEAK FLOW       (cms)=   0.098 (i)
     TIME TO PEAK    (hrs)=   1.417
     RUNOFF VOLUME    (mm)=   8.799
     TOTAL RAINFALL   (mm)=  37.382
     RUNOFF COEFFICIENT   =   0.235

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

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 FINISH
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DATE: 07/16/2025                          TIME: 01:46:16

USER:



COMMENTS: _____________________________________________________________


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  ************************************************
  ** SIMULATION : 100 Year Picton Chicago       **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1081.000
| Ptotal= 63.97 mm |                          B=   3.000
--------------------                          C=   0.767
                       used in:   INTENSITY =  A / (t + B)^C

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

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    4.40 |  1.00   30.12 |  2.00    9.79 |  3.00    5.18
                0.17    5.00 |  1.17  151.16 |  2.17    8.44 |  3.17    4.83
                0.33    5.83 |  1.33   39.10 |  2.33    7.44 |  3.33    4.54
                0.50    7.06 |  1.50   21.18 |  2.50    6.68 |  3.50    4.28
                0.67    9.11 |  1.67   14.98 |  2.67    6.08 |  3.67    4.05
                0.83   13.37 |  1.83   11.78 |  2.83    5.59 |  3.83    3.85


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```

```
| CALIB             |
| NASHYD   (  0001)|   Area     (ha)=   3.14   Curve Number    (CN)= 86.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.40	1.083	30.12	2.083	9.79	3.08	5.18
0.167	4.40	1.167	30.12	2.167	9.79	3.17	5.18
0.250	5.00	1.250	151.16	2.250	8.44	3.25	4.83
0.333	5.00	1.333	151.16	2.333	8.44	3.33	4.83
0.417	5.83	1.417	39.10	2.417	7.44	3.42	4.54
0.500	5.83	1.500	39.10	2.500	7.44	3.50	4.54
0.583	7.06	1.583	21.18	2.583	6.68	3.58	4.28
0.667	7.06	1.667	21.18	2.667	6.68	3.67	4.28
0.750	9.11	1.750	14.98	2.750	6.08	3.75	4.05
0.833	9.11	1.833	14.98	2.833	6.08	3.83	4.05
0.917	13.37	1.917	11.78	2.917	5.59	3.92	3.85
1.000	13.37	2.000	11.78	3.000	5.59	4.00	3.85

```
     Unit Hyd Qpeak  (cms)=   1.080

     PEAK FLOW       (cms)=   0.515 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=  34.047
     TOTAL RAINFALL   (mm)=  63.970
     RUNOFF COEFFICIENT   =   0.532

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

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        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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DATE: 07/16/2025                          TIME: 01:46:16

USER:



COMMENTS: _____________________________________________________________


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  ************************************************
  ** SIMULATION : MTO Kingston West 100yr 4hr 1 **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1203.038
| Ptotal= 60.93 mm |                          B=   5.259
--------------------                          C=   0.794
                       used in:   INTENSITY =  A / (t + B)^C

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

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    3.89 |  1.00   31.64 |  2.00    9.29 |  3.00    4.64
                0.17    4.46 |  1.17  138.22 |  2.17    7.89 |  3.17    4.30
                0.33    5.27 |  1.33   41.62 |  2.33    6.88 |  3.33    4.02
                0.50    6.49 |  1.50   21.71 |  2.50    6.11 |  3.50    3.77
                0.67    8.58 |  1.67   14.85 |  2.67    5.52 |  3.67    3.56
                0.83   13.10 |  1.83   11.38 |  2.83    5.03 |  3.83    3.37


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

```
| CALIB             |
| NASHYD   (  0001)|   Area     (ha)=   3.14   Curve Number    (CN)= 86.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.89	1.083	31.64	2.083	9.29	3.08	4.64
0.167	3.89	1.167	31.64	2.167	9.29	3.17	4.64
0.250	4.46	1.250	138.22	2.250	7.89	3.25	4.30
0.333	4.46	1.333	138.22	2.333	7.89	3.33	4.30
0.417	5.27	1.417	41.62	2.417	6.88	3.42	4.02
0.500	5.27	1.500	41.62	2.500	6.88	3.50	4.02
0.583	6.49	1.583	21.71	2.583	6.11	3.58	3.77
0.667	6.49	1.667	21.71	2.667	6.11	3.67	3.77
0.750	8.58	1.750	14.85	2.750	5.52	3.75	3.56
0.833	8.58	1.833	14.85	2.833	5.52	3.83	3.56
0.917	13.10	1.917	11.38	2.917	5.03	3.92	3.37
1.000	13.10	2.000	11.38	3.000	5.03	4.00	3.37

```
     Unit Hyd Qpeak  (cms)=   1.080

     PEAK FLOW       (cms)=   0.456 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=  31.585
     TOTAL RAINFALL   (mm)=  60.930
     RUNOFF COEFFICIENT   =   0.518

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

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

 FINISH
```

Visual OTTHYMO Post-Development flows 5- & 100 -year storm events output

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\5303c543-0a21-4475-9c91-c4bf78df3084\
  Summary filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\5303c543-0a21-4475-9c91-c4bf78df3084\


DATE: 09/16/2025                          TIME: 11:47:41

USER:


COMMENTS: _____________________________________________________________


----------------------------------------------------------------------------------------------------------------
  ***********************************************
  ** SIMULATION : 5 Year Picton Chicago         **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 630.000
| Ptotal= 34.04 mm |                          B=   4.000
--------------------                          C=   0.783
                       used in:   INTENSITY =  A / (t + B)^C

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

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    2.23 |  1.00   16.79 |  2.00    5.15 |  3.00    2.64
               0.17    2.55 |  1.17   79.79 |  2.17    4.40 |  3.17    2.46
               0.33    2.99 |  1.33   22.00 |  2.33    3.86 |  3.33    2.30
               0.50    3.65 |  1.50   11.61 |  2.50    3.45 |  3.50    2.17
               0.67    4.77 |  1.67    8.06 |  2.67    3.12 |  3.67    2.05
               0.83    7.15 |  1.83    6.25 |  2.83    2.86 |  3.83    1.94


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0008)|   Area    (ha)=   0.28   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

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


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.23 | 1.083   16.79 | 2.083    5.15 |  3.08    2.64
               0.167    2.23 | 1.167   16.79 | 2.167    5.15 |  3.17    2.64
               0.250    2.55 | 1.250   79.79 | 2.250    4.40 |  3.25    2.46
               0.333    2.55 | 1.333   79.79 | 2.333    4.40 |  3.33    2.46
               0.417    2.99 | 1.417   22.00 | 2.417    3.86 |  3.42    2.30
```

```
                0.500    2.99 | 1.500   22.00 | 2.500    3.86 |  3.50    2.30
                0.583    3.65 | 1.583   11.61 | 2.583    3.45 |  3.58    2.17
                0.667    3.65 | 1.667   11.61 | 2.667    3.45 |  3.67    2.17
                0.750    4.77 | 1.750    8.06 | 2.750    3.12 |  3.75    2.05
                0.833    4.77 | 1.833    8.06 | 2.833    3.12 |  3.83    2.05
                0.917    7.15 | 1.917    6.25 | 2.917    2.86 |  3.92    1.94
                1.000    7.15 | 2.000    6.25 | 3.000    2.86 |  4.00    1.94

     Unit Hyd Qpeak  (cms)=   0.053

     PEAK FLOW       (cms)=   0.006 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   7.398
     TOTAL RAINFALL   (mm)=  34.035
     RUNOFF COEFFICIENT   =   0.217

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   0.24
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.00        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    2.23 | 1.083   16.79 | 2.083    5.15 |  3.08    2.64
               0.167    2.23 | 1.167   16.79 | 2.167    5.15 |  3.17    2.64
               0.250    2.55 | 1.250   79.79 | 2.250    4.40 |  3.25    2.46
               0.333    2.55 | 1.333   79.79 | 2.333    4.40 |  3.33    2.46
               0.417    2.99 | 1.417   22.00 | 2.417    3.86 |  3.42    2.30
               0.500    2.99 | 1.500   22.00 | 2.500    3.86 |  3.50    2.30
               0.583    3.65 | 1.583   11.61 | 2.583    3.45 |  3.58    2.17
               0.667    3.65 | 1.667   11.61 | 2.667    3.45 |  3.67    2.17
               0.750    4.77 | 1.750    8.06 | 2.750    3.12 |  3.75    2.05
               0.833    4.77 | 1.833    8.06 | 2.833    3.12 |  3.83    2.05
               0.917    7.15 | 1.917    6.25 | 2.917    2.86 |  3.92    1.94
               1.000    7.15 | 2.000    6.25 | 3.000    2.86 |  4.00    1.94

     Max.Eff.Inten.(mm/hr)=      79.79        76.83
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.61 (ii)    2.84 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.32         0.28
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.05         0.00          0.053 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=     33.04        30.65          33.00
     TOTAL RAINFALL   (mm)=     34.04        34.04          34.04
     RUNOFF COEFFICIENT   =      0.97         0.90           0.97

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0102)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |    (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0061     0.0182
                          0.0019     0.0061   |   0.0085     0.0243
                          0.0041     0.0122   |   0.0000     0.0000
```

```
                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)      0.240     0.053      1.33      33.00
   OUTFLOW: ID= 1 (  0102)      0.240     0.002      2.92      29.63

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.64
                  TIME SHIFT OF PEAK FLOW          (min)= 95.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0062

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.07
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.91         0.16
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.46        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    2.23 | 1.083   16.79 | 2.083    5.15 |  3.08    2.64
              0.167    2.23 | 1.167   16.79 | 2.167    5.15 |  3.17    2.64
              0.250    2.55 | 1.250   79.79 | 2.250    4.40 |  3.25    2.46
              0.333    2.55 | 1.333   79.79 | 2.333    4.40 |  3.33    2.46
              0.417    2.99 | 1.417   22.00 | 2.417    3.86 |  3.42    2.30
              0.500    2.99 | 1.500   22.00 | 2.500    3.86 |  3.50    2.30
              0.583    3.65 | 1.583   11.61 | 2.583    3.45 |  3.58    2.17
              0.667    3.65 | 1.667   11.61 | 2.667    3.45 |  3.67    2.17
              0.750    4.77 | 1.750    8.06 | 2.750    3.12 |  3.75    2.05
              0.833    4.77 | 1.833    8.06 | 2.833    3.12 |  3.83    2.05
              0.917    7.15 | 1.917    6.25 | 2.917    2.86 |  3.92    1.94
              1.000    7.15 | 2.000    6.25 | 3.000    2.86 |  4.00    1.94

     Max.Eff.Inten.(mm/hr)=      79.79        13.32
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      2.53 (ii)    6.39 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.29         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.20         0.00          0.202 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.42           1.33
     RUNOFF VOLUME    (mm)=     33.04         7.41          29.19
     TOTAL RAINFALL   (mm)=     34.04        34.04          34.04
     RUNOFF COEFFICIENT   =      0.97         0.22           0.86

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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 (  0002)|   Area    (ha)=   0.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.05         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      18.26        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    2.23 | 1.083   16.79 | 2.083    5.15 |  3.08    2.64
               0.167    2.23 | 1.167   16.79 | 2.167    5.15 |  3.17    2.64
               0.250    2.55 | 1.250   79.79 | 2.250    4.40 |  3.25    2.46
               0.333    2.55 | 1.333   79.79 | 2.333    4.40 |  3.33    2.46
               0.417    2.99 | 1.417   22.00 | 2.417    3.86 |  3.42    2.30
               0.500    2.99 | 1.500   22.00 | 2.500    3.86 |  3.50    2.30
               0.583    3.65 | 1.583   11.61 | 2.583    3.45 |  3.58    2.17
               0.667    3.65 | 1.667   11.61 | 2.667    3.45 |  3.67    2.17
               0.750    4.77 | 1.750    8.06 | 2.750    3.12 |  3.75    2.05
               0.833    4.77 | 1.833    8.06 | 2.833    3.12 |  3.83    2.05
               0.917    7.15 | 1.917    6.25 | 2.917    2.86 |  3.92    1.94
               1.000    7.15 | 2.000    6.25 | 3.000    2.86 |  4.00    1.94

     Max.Eff.Inten.(mm/hr)=      79.79        76.83
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.01 (ii)    2.24 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.30
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00          0.011 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      33.04        30.65          33.01
     TOTAL RAINFALL   (mm)=      34.04        34.04          34.04
     RUNOFF COEFFICIENT   =       0.97         0.90           0.97

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    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  (  0101)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.07   0.202     1.33    29.19
     + ID2= 2 (  0002):     0.05   0.011     1.33    33.01
       ================================================
       ID = 3 (  0101):     1.12   0.213     1.33    29.36

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0100)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |   0.0600      0.0200
                          0.0570      0.0010   |   0.0630      0.0364
                          0.0590      0.0100   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0101)      1.120      0.213      1.33      29.36
   OUTFLOW: ID= 1 (  0100)      1.120      0.059      1.50      29.36

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 27.71
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0103

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

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0100):     1.12   0.059     1.50    29.36
     + ID2= 2 (  0102):     0.24   0.002     2.92    29.63
       ================================================
       ID = 3 (  0103):     1.36   0.061     1.58    29.41

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

```
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.22         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.82        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    2.23 | 1.083   16.79 | 2.083    5.15 |  3.08    2.64
               0.167    2.23 | 1.167   16.79 | 2.167    5.15 |  3.17    2.64
               0.250    2.55 | 1.250   79.79 | 2.250    4.40 |  3.25    2.46
               0.333    2.55 | 1.333   79.79 | 2.333    4.40 |  3.33    2.46
               0.417    2.99 | 1.417   22.00 | 2.417    3.86 |  3.42    2.30
               0.500    2.99 | 1.500   22.00 | 2.500    3.86 |  3.50    2.30
               0.583    3.65 | 1.583   11.61 | 2.583    3.45 |  3.58    2.17
               0.667    3.65 | 1.667   11.61 | 2.667    3.45 |  3.67    2.17
               0.750    4.77 | 1.750    8.06 | 2.750    3.12 |  3.75    2.05
               0.833    4.77 | 1.833    8.06 | 2.833    3.12 |  3.83    2.05
               0.917    7.15 | 1.917    6.25 | 2.917    2.86 |  3.92    1.94
               1.000    7.15 | 2.000    6.25 | 3.000    2.86 |  4.00    1.94

     Max.Eff.Inten.(mm/hr)=      79.79        13.32
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.63 (ii)    4.84 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.32         0.22
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.05         0.00          0.051 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=     33.04         7.41          30.46
     TOTAL RAINFALL   (mm)=     34.04        34.04          34.04
     RUNOFF COEFFICIENT   =      0.97         0.22           0.90

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  75.0    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  (  0104)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     1.36   0.061     1.58    29.41
      + ID2= 2 (  0003):     0.25   0.051     1.33    30.46
        ================================================
        ID = 3 (  0104):     1.61   0.110     1.33    29.57

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

--------------------
| ADD HYD  (  0112)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0104):     1.61   0.110     1.33    29.57
      + ID2= 2 (  0008):     0.28   0.006     1.50     7.40
        ================================================
        ID = 3 (  0112):     1.89   0.113     1.33    26.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0105)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
```

```
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   0.0003      0.0395
                         0.0001     0.0350   |   0.1000      0.0410
                         0.0002     0.0380   |   0.0000      0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0112)     1.890     0.113      1.33      26.29
   OUTFLOW: ID= 1 (  0105)     1.890     0.013      3.00       5.75

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 11.72
                  TIME SHIFT OF PEAK FLOW         (min)=100.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0397

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.54
|ID= 1 DT= 5.0 min |   Total Imp(%)=  95.00   Dir. Conn.(%)=  95.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.00        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    2.23 | 1.083   16.79 | 2.083    5.15 |  3.08    2.64
               0.167    2.23 | 1.167   16.79 | 2.167    5.15 |  3.17    2.64
               0.250    2.55 | 1.250   79.79 | 2.250    4.40 |  3.25    2.46
               0.333    2.55 | 1.333   79.79 | 2.333    4.40 |  3.33    2.46
               0.417    2.99 | 1.417   22.00 | 2.417    3.86 |  3.42    2.30
               0.500    2.99 | 1.500   22.00 | 2.500    3.86 |  3.50    2.30
               0.583    3.65 | 1.583   11.61 | 2.583    3.45 |  3.58    2.17
               0.667    3.65 | 1.667   11.61 | 2.667    3.45 |  3.67    2.17
               0.750    4.77 | 1.750    8.06 | 2.750    3.12 |  3.75    2.05
               0.833    4.77 | 1.833    8.06 | 2.833    3.12 |  3.83    2.05
               0.917    7.15 | 1.917    6.25 | 2.917    2.86 |  3.92    1.94
               1.000    7.15 | 2.000    6.25 | 3.000    2.86 |  4.00    1.94

     Max.Eff.Inten.(mm/hr)=      79.79        13.32
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=       2.06 (ii)    4.44 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.31         0.23
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.00          0.114 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      33.04         7.41          31.75
     TOTAL RAINFALL   (mm)=      34.04        34.04          34.04
     RUNOFF COEFFICIENT   =       0.97         0.22           0.93

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  75.0    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 (  0007)|   Area    (ha)=   0.68
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.34         0.34
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      67.33        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	2.23	1.083	16.79	2.083	5.15	3.08	2.64
0.167	2.23	1.167	16.79	2.167	5.15	3.17	2.64
0.250	2.55	1.250	79.79	2.250	4.40	3.25	2.46
0.333	2.55	1.333	79.79	2.333	4.40	3.33	2.46
0.417	2.99	1.417	22.00	2.417	3.86	3.42	2.30
0.500	2.99	1.500	22.00	2.500	3.86	3.50	2.30
0.583	3.65	1.583	11.61	2.583	3.45	3.58	2.17
0.667	3.65	1.667	11.61	2.667	3.45	3.67	2.17
0.750	4.77	1.750	8.06	2.750	3.12	3.75	2.05
0.833	4.77	1.833	8.06	2.833	3.12	3.83	2.05
0.917	7.15	1.917	6.25	2.917	2.86	3.92	1.94
1.000	7.15	2.000	6.25	3.000	2.86	4.00	1.94

Max.Eff.Inten.(mm/hr)=	79.79	10.00		
over (min)	5.00	20.00		
Storage Coeff. (min)=	2.21 (ii)	19.93 (ii)		
Unit Hyd. Tpeak (min)=	5.00	20.00		
Unit Hyd. peak (cms)=	0.30	0.06		
			TOTALS	
PEAK FLOW (cms)=	0.07	0.01	0.076 (iii)	
TIME TO PEAK (hrs)=	1.33	1.58	1.33	
RUNOFF VOLUME (mm)=	33.04	7.41	20.21	
TOTAL RAINFALL (mm)=	34.04	34.04	34.04	
RUNOFF COEFFICIENT =	0.97	0.22	0.59	

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0106) | 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0004):	0.54	0.114	1.33	31.75
+ ID2= 2 (0007):	0.68	0.076	1.33	20.21
ID = 3 (0106):	1.22	0.190	1.33	25.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB | STANDHYD (0005) | ID= 1 DT= 5.0 min	Area (ha)= 0.16	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.16	0.00
Dep. Storage	(mm)=	1.00	1.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	32.66	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	2.23	1.083	16.79	2.083	5.15	3.08	2.64
0.167	2.23	1.167	16.79	2.167	5.15	3.17	2.64
0.250	2.55	1.250	79.79	2.250	4.40	3.25	2.46
0.333	2.55	1.333	79.79	2.333	4.40	3.33	2.46
0.417	2.99	1.417	22.00	2.417	3.86	3.42	2.30
0.500	2.99	1.500	22.00	2.500	3.86	3.50	2.30
0.583	3.65	1.583	11.61	2.583	3.45	3.58	2.17
0.667	3.65	1.667	11.61	2.667	3.45	3.67	2.17

```
                0.750    4.77 | 1.750    8.06 | 2.750    3.12 |  3.75    2.05
                0.833    4.77 | 1.833    8.06 | 2.833    3.12 |  3.83    2.05
                0.917    7.15 | 1.917    6.25 | 2.917    2.86 |  3.92    1.94
                1.000    7.15 | 2.000    6.25 | 3.000    2.86 |  4.00    1.94

     Max.Eff.Inten.(mm/hr)=      79.79        76.83
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.43 (ii)    2.66 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.33         0.29
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.04         0.00         0.035 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33          1.33
     RUNOFF VOLUME    (mm)=     33.04        30.65         33.01
     TOTAL RAINFALL   (mm)=     34.04        34.04         34.04
     RUNOFF COEFFICIENT   =      0.97         0.90          0.97

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0108)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0061     0.0182
                          0.0019     0.0061   |   0.0085     0.0243
                          0.0041     0.0122   |   0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      0.160     0.035      1.33      33.01
   OUTFLOW: ID= 1 (  0108)      0.160     0.001      2.92      27.96

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.63
                  TIME SHIFT OF PEAK FLOW         (min)= 95.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0041

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--------------------
| ADD HYD  (  0107)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0106):     1.22   0.190     1.33    25.32
     + ID2= 2 (  0108):     0.16   0.001     2.92    27.96
       ================================================
       ID = 3 (  0107):     1.38   0.191     1.33    25.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0109)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0003     0.0300
                          0.0001     0.0244   |   0.1000     0.0350
                          0.0002     0.0250   |   0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0107)      1.380     0.191      1.33      25.62
   OUTFLOW: ID= 1 (  0109)      1.380     0.007      3.83       5.52

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.76
                  TIME SHIFT OF PEAK FLOW         (min)=150.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0303

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--------------------
| ADD HYD  (  0110)|
```

```
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
        ID1= 1 (  0105):      1.89   0.013     3.00     5.75
      + ID2= 2 (  0109):      1.38   0.007     3.83     5.52
        ==================================================
        ID = 3 (  0110):      3.27   0.017     3.67     5.65

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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 FINISH
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=================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\b5aa16a2-84c2-4870-90f3-b9bd2f53cd57\
  Summary filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\b5aa16a2-84c2-4870-90f3-b9bd2f53cd57\


DATE: 09/16/2025                          TIME: 11:48:01

USER:


COMMENTS: _____________________________________________________________

-----------------------------------------------------------------------------------------------------------------
  ************************************************
  ** SIMULATION : 100 Year Picton Chicago       **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1081.000
| Ptotal= 63.97 mm |                          B=   3.000
--------------------                          C=   0.767
                       used in:   INTENSITY =  A / (t + B)^C

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

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    4.40 |  1.00   30.12 |  2.00    9.79 |  3.00    5.18
               0.17    5.00 |  1.17  151.16 |  2.17    8.44 |  3.17    4.83
               0.33    5.83 |  1.33   39.10 |  2.33    7.44 |  3.33    4.54
               0.50    7.06 |  1.50   21.18 |  2.50    6.68 |  3.50    4.28
               0.67    9.11 |  1.67   14.98 |  2.67    6.08 |  3.67    4.05
               0.83   13.37 |  1.83   11.78 |  2.83    5.59 |  3.83    3.85


-----------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0008)|   Area    (ha)=   0.28   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

         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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
```

```
                0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
                0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
                0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
                0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
                0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
                0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
                1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Unit Hyd Qpeak  (cms)=   0.053

     PEAK FLOW       (cms)=   0.021 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  24.163
     TOTAL RAINFALL   (mm)=  63.970
     RUNOFF COEFFICIENT   =   0.378

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   0.24
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.00        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)          5.00         5.00
     Storage Coeff.  (min)=       1.25 (ii)    2.20 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.30
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.00          0.101 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        60.51          62.94
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0102)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0061     0.0182
                          0.0019     0.0061   |   0.0085     0.0243
                          0.0041     0.0122   |   0.0000     0.0000
```

```
                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)      0.240     0.101      1.33      62.94
   OUTFLOW: ID= 1 (  0102)      0.240     0.004      2.83      59.58

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.87
                   TIME SHIFT OF PEAK FLOW         (min)= 90.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0116

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.07
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.91         0.16
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.46        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        50.94
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.96 (ii)    4.95 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.31         0.22
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.38         0.02          0.402 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        24.21          57.15
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.38           0.89

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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 (  0002)|   Area    (ha)=   0.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.05         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      18.26        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)          5.00         5.00
     Storage Coeff.  (min)=        0.78 (ii)    1.73 (ii)
     Unit Hyd. Tpeak (min)=        5.00         5.00
     Unit Hyd. peak  (cms)=        0.34         0.32
                                                          *TOTALS*
     PEAK FLOW       (cms)=        0.02         0.00          0.021 (iii)
     TIME TO PEAK    (hrs)=        1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=       62.97        60.51          62.95
     TOTAL RAINFALL   (mm)=       63.97        63.97          63.97
     RUNOFF COEFFICIENT   =        0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    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  (  0101)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.07   0.402     1.33    57.15
      + ID2= 2 (  0002):     0.05   0.021     1.33    62.95
        ================================================
        ID = 3 (  0101):     1.12   0.423     1.33    57.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0100)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |   0.0600      0.0200
                          0.0570      0.0010   |   0.0630      0.0364
                          0.0590      0.0100   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0101)      1.120      0.423      1.33      57.41
   OUTFLOW: ID= 1 (  0100)      1.120      0.061      1.67      57.41

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.49
                   TIME SHIFT OF PEAK FLOW          (min)= 20.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0272

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--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):     1.12   0.061     1.67    57.41
      + ID2= 2 (  0102):     0.24   0.004     2.83    59.58
        ================================================
        ID = 3 (  0103):     1.36   0.065     1.75    57.79

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

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.22         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.82        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        50.94
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.27 (ii)    3.75 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.25
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.00          0.098 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        24.21          59.08
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.38           0.92

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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  (  0104)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     1.36   0.065     1.75    57.79
      + ID2= 2 (  0003):     0.25   0.098     1.33    59.08
        ================================================
        ID = 3 (  0104):     1.61   0.160     1.33    57.99

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

--------------------
| ADD HYD  (  0112)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0104):     1.61   0.160     1.33    57.99
      + ID2= 2 (  0008):     0.28   0.021     1.50    24.16
        ================================================
        ID = 3 (  0112):     1.89   0.174     1.33    52.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0105)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
```

```
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   0.0003      0.0395
                         0.0001     0.0350   |   0.1000      0.0410
                         0.0002     0.0380   |   0.0000      0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0112)     1.890     0.174      1.33      52.98
   OUTFLOW: ID= 1 (  0105)     1.890     0.081      2.00      32.44

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 46.60
                  TIME SHIFT OF PEAK FLOW         (min)= 40.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0407

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-------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.54
|ID= 1 DT= 5.0 min |   Total Imp(%)=  95.00   Dir. Conn.(%)=  95.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.00        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        50.94
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.59 (ii)    3.44 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.26
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.00          0.219 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        24.21          61.03
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.38           0.95

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  75.0    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 (  0007)|   Area    (ha)=   0.68
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.34         0.34
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      67.33        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	4.40	1.083	30.12	2.083	9.79	3.08	5.18
0.167	4.40	1.167	30.12	2.167	9.79	3.17	5.18
0.250	5.00	1.250	151.16	2.250	8.44	3.25	4.83
0.333	5.00	1.333	151.16	2.333	8.44	3.33	4.83
0.417	5.83	1.417	39.10	2.417	7.44	3.42	4.54
0.500	5.83	1.500	39.10	2.500	7.44	3.50	4.54
0.583	7.06	1.583	21.18	2.583	6.68	3.58	4.28
0.667	7.06	1.667	21.18	2.667	6.68	3.67	4.28
0.750	9.11	1.750	14.98	2.750	6.08	3.75	4.05
0.833	9.11	1.833	14.98	2.833	6.08	3.83	4.05
0.917	13.37	1.917	11.78	2.917	5.59	3.92	3.85
1.000	13.37	2.000	11.78	3.000	5.59	4.00	3.85

Max.Eff.Inten.(mm/hr)=	151.16	50.94		
over (min)	5.00	15.00		
Storage Coeff. (min)=	1.71 (ii)	10.95 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.32	0.09		
			TOTALS	
PEAK FLOW (cms)=	0.14	0.03	0.156 (iii)	
TIME TO PEAK (hrs)=	1.33	1.50	1.33	
RUNOFF VOLUME (mm)=	62.97	24.21	43.58	
TOTAL RAINFALL (mm)=	63.97	63.97	63.97	
RUNOFF COEFFICIENT =	0.98	0.38	0.68	

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 75.0 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 (0106)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0004):	0.54	0.219	1.33	61.03
	+ ID2= 2 (0007):	0.68	0.156	1.33	43.58
	ID = 3 (0106):	1.22	0.375	1.33	51.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (0005)	Area (ha)= 0.16		
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.16	0.00	
Dep. Storage (mm)=	1.00	1.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	32.66	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	4.40	1.083	30.12	2.083	9.79	3.08	5.18
0.167	4.40	1.167	30.12	2.167	9.79	3.17	5.18
0.250	5.00	1.250	151.16	2.250	8.44	3.25	4.83
0.333	5.00	1.333	151.16	2.333	8.44	3.33	4.83
0.417	5.83	1.417	39.10	2.417	7.44	3.42	4.54
0.500	5.83	1.500	39.10	2.500	7.44	3.50	4.54
0.583	7.06	1.583	21.18	2.583	6.68	3.58	4.28
0.667	7.06	1.667	21.18	2.667	6.68	3.67	4.28

```
                0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
                0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
                0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
                1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.11 (ii)    2.06 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.31
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.00          0.067 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        60.51          62.94
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0108)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0061     0.0182
                          0.0019     0.0061   |   0.0085     0.0243
                          0.0041     0.0122   |   0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)      0.160     0.067      1.33      62.94
   OUTFLOW: ID= 1 (  0108)      0.160     0.003      2.92      57.86

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.74
                  TIME SHIFT OF PEAK FLOW         (min)= 95.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0078

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

--------------------
| ADD HYD  (  0107)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0106):     1.22   0.375     1.33    51.31
     + ID2= 2 (  0108):     0.16   0.003     2.92    57.86
       ================================================
       ID = 3 (  0107):     1.38   0.377     1.33    52.06

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0109)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0003     0.0300
                          0.0001     0.0244   |   0.1000     0.0350
                          0.0002     0.0250   |   0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0107)      1.380     0.377      1.33      52.06
   OUTFLOW: ID= 1 (  0109)      1.380     0.095      1.58      31.96

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.28
                  TIME SHIFT OF PEAK FLOW         (min)= 15.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0350

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

--------------------
| ADD HYD  (  0110)|
```

```
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
        ID1= 1 (  0105):      1.89   0.081     2.00    32.44
      + ID2= 2 (  0109):      1.38   0.095     1.58    31.96
        ==================================================
        ID = 3 (  0110):      3.27   0.131     2.00    32.24

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

 FINISH
================================================================================================================================
```

Visual OTTHYMO Post-Development flow 5-100 Year MTO IDF Chicago storm event output

```
================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\d7408b9a-8134-47d6-bfdc-ded3df345322\
  Summary filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\d7408b9a-8134-47d6-bfdc-ded3df345322\


DATE: 09/16/2025                          TIME: 12:02:53

USER:


COMMENTS: _____________________________________________________________


----------------------------------------------------------------------------------------------------------------
  ***********************************************
  ** SIMULATION : 5yr 4hr 10min Chicago MTO IDF **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 581.358
| Ptotal= 44.00 mm |                          B=   1.500
--------------------                          C=   0.723
                       used in:   INTENSITY =  A / (t + B)^C

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

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    3.48 |  1.00   19.27 |  2.00    7.19 |  3.00    4.04
               0.17    3.91 |  1.17   99.44 |  2.17    6.29 |  3.17    3.79
               0.33    4.50 |  1.33   24.34 |  2.33    5.62 |  3.33    3.58
               0.50    5.35 |  1.50   14.22 |  2.50    5.10 |  3.50    3.39
               0.67    6.74 |  1.67   10.50 |  2.67    4.68 |  3.67    3.22
               0.83    9.48 |  1.83    8.48 |  2.83    4.33 |  3.83    3.08


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0008)|   Area    (ha)=   0.28   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

         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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
               0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
               0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
               0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
               0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
```

```
                0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
                0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
                0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
                0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
                0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
                0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
                1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08

     Unit Hyd Qpeak  (cms)=   0.053

     PEAK FLOW       (cms)=   0.010 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  12.276
     TOTAL RAINFALL   (mm)=  44.005
     RUNOFF COEFFICIENT   =   0.279

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   0.24
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.00        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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
               0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
               0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
               0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
               0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
               0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
               0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
               0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
               0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
               0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
               0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
               1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08

     Max.Eff.Inten.(mm/hr)=      99.44        97.09
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.48 (ii)    2.60 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.33         0.29
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.07         0.00          0.066 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=     43.00        40.58          42.97
     TOTAL RAINFALL   (mm)=     44.00        44.00          44.00
     RUNOFF COEFFICIENT   =      0.98         0.92           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    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 (  0001)|   Area    (ha)=   1.07
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.91         0.16
     Dep. Storage     (mm)=       1.00         5.00
```

```
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.46        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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
               0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
               0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
               0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
               0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
               0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
               0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
               0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
               0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
               0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
               0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
               1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08

     Max.Eff.Inten.(mm/hr)=      99.44        22.71
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.31 (ii)    5.85 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.30         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.25         0.01          0.255 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42           1.33
     RUNOFF VOLUME    (mm)=      43.00        12.30          38.40
     TOTAL RAINFALL   (mm)=      44.00        44.00          44.00
     RUNOFF COEFFICIENT   =       0.98         0.28           0.87

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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 (  0002)|   Area    (ha)=   0.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.05         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      18.26        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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
               0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
               0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
               0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
               0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
               0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
               0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
               0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
               0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
               0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
               0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
               1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08

     Max.Eff.Inten.(mm/hr)=      99.44        97.09
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.92 (ii)    2.05 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
```

```
     Unit Hyd. peak  (cms)=       0.34         0.31
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00          0.014 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      43.00        40.58          42.98
     TOTAL RAINFALL   (mm)=      44.00        44.00          44.00
     RUNOFF COEFFICIENT   =       0.98         0.92           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    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  (  0101)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.07   0.255     1.33    38.40
     + ID2= 2 (  0002):     0.05   0.014     1.33    42.98
       ================================================
       ID = 3 (  0101):     1.12   0.269     1.33    38.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0100)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0600      0.0200
                          0.0570     0.0010   |   0.0630      0.0364
                          0.0590     0.0100   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0101)      1.120      0.269      1.33      38.60
   OUTFLOW: ID= 1 (  0100)      1.120      0.059      1.50      38.60

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.12
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0142

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

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0100):     1.12   0.059     1.50    38.60
     + ID2= 2 (  0006):     0.24   0.066     1.33    42.97
       ================================================
       ID = 3 (  0103):     1.36   0.125     1.33    39.37

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.22         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.82        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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
```

```
                0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
                0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
                0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
                0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
                0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
                0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
                0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
                0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
                0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
                0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
                1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08

     Max.Eff.Inten.(mm/hr)=      99.44        22.71
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.50 (ii)    4.43 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.33         0.23
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.06         0.00          0.064 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=     43.00        12.30          39.93
     TOTAL RAINFALL   (mm)=     44.00        44.00          44.00
     RUNOFF COEFFICIENT   =      0.98         0.28           0.91

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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  (  0104)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
       ID1= 1 (  0103):     1.36   0.125     1.33    39.37
     + ID2= 2 (  0003):     0.25   0.064     1.33    39.93
       ================================================
       ID = 3 (  0104):     1.61   0.189     1.33    39.46

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

--------------------
| ADD HYD  (  0112)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)      (mm)
       ID1= 1 (  0104):     1.61   0.189     1.33    39.46
     + ID2= 2 (  0008):     0.28   0.010     1.50    12.28
       ================================================
       ID = 3 (  0112):     1.89   0.195     1.33    35.43

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0105)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0003      0.0395
                          0.0001     0.0350   |   0.1000      0.0400
                          0.0002     0.0380   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0112)      1.890      0.195      1.33      35.43
   OUTFLOW: ID= 1 (  0105)      1.890      0.076      2.08      14.89

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 38.99
                  TIME SHIFT OF PEAK FLOW         (min)= 45.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0400

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.54
```

```
|ID= 1 DT= 5.0 min |   Total Imp(%)=  95.00   Dir. Conn.(%)=  95.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.00        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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
              0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
              0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
              0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
              0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
              0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
              0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
              0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
              0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
              0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
              0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
              1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08

     Max.Eff.Inten.(mm/hr)=      99.44        22.71
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.88 (ii)    4.06 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.32         0.24
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.14         0.00        0.143 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33         1.33
     RUNOFF VOLUME    (mm)=     43.00        12.30        41.47
     TOTAL RAINFALL   (mm)=     44.00        44.00        44.00
     RUNOFF COEFFICIENT   =      0.98         0.28         0.94

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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 (  0007)|   Area    (ha)=   0.68
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.34         0.34
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      67.33        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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
              0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
              0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
              0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
              0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
              0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
              0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
              0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
              0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
              0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
              0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
              1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08
```

```
     Max.Eff.Inten.(mm/hr)=      99.44        18.08
                over (min)        5.00        20.00
     Storage Coeff.  (min)=       2.02 (ii)   16.01 (ii)
     Unit Hyd. Tpeak (min)=       5.00        20.00
     Unit Hyd. peak  (cms)=       0.31         0.07
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.01          0.096 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.58           1.33
     RUNOFF VOLUME    (mm)=      43.00        12.30          27.64
     TOTAL RAINFALL   (mm)=      44.00        44.00          44.00
     RUNOFF COEFFICIENT   =       0.98         0.28           0.63

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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  (  0106)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0004):     0.54   0.143     1.33    41.47
      + ID2= 2 (  0007):     0.68   0.096     1.33    27.64
        ==========================================================
        ID = 3 (  0106):     1.22   0.239     1.33    33.76

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   0.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.16         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      32.66        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    3.48 | 1.083   19.27 | 2.083    7.19 |  3.08    4.04
              0.167    3.48 | 1.167   19.27 | 2.167    7.19 |  3.17    4.04
              0.250    3.91 | 1.250   99.44 | 2.250    6.29 |  3.25    3.79
              0.333    3.91 | 1.333   99.44 | 2.333    6.29 |  3.33    3.79
              0.417    4.50 | 1.417   24.34 | 2.417    5.62 |  3.42    3.58
              0.500    4.50 | 1.500   24.34 | 2.500    5.62 |  3.50    3.58
              0.583    5.35 | 1.583   14.22 | 2.583    5.10 |  3.58    3.39
              0.667    5.35 | 1.667   14.22 | 2.667    5.10 |  3.67    3.39
              0.750    6.74 | 1.750   10.50 | 2.750    4.68 |  3.75    3.22
              0.833    6.74 | 1.833   10.50 | 2.833    4.68 |  3.83    3.22
              0.917    9.48 | 1.917    8.48 | 2.917    4.33 |  3.92    3.08
              1.000    9.48 | 2.000    8.48 | 3.000    4.33 |  4.00    3.08

     Max.Eff.Inten.(mm/hr)=      99.44        97.09
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.31 (ii)    2.43 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.30
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.04         0.00          0.044 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      43.00        40.58          42.97
     TOTAL RAINFALL   (mm)=      44.00        44.00          44.00
     RUNOFF COEFFICIENT   =       0.98         0.92           0.98

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

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    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  (  0107)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0106):     1.22   0.239     1.33    33.76
      + ID2= 2 (  0005):     0.16   0.044     1.33    42.97
        ================================================
        ID = 3 (  0107):     1.38   0.284     1.33    34.83

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0109)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0003      0.0275
                           0.0001     0.0244   |   0.1000      0.0300
                           0.0002     0.0250   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0107)      1.380      0.284      1.33      34.83
   OUTFLOW: ID= 1 (  0109)      1.380      0.053      1.58      15.72

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.69
                  TIME SHIFT OF PEAK FLOW         (min)= 15.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0288

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

--------------------
| ADD HYD  (  0110)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0105):     1.89   0.076     2.08    14.89
      + ID2= 2 (  0109):     1.38   0.053     1.58    15.72
        ================================================
        ID = 3 (  0110):     3.27   0.105     2.08    15.24

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

 FINISH
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================================================================================================================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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1ccaee6a9ad3\42a88921-804d-45ba-9ac9-43b7ef3e9cee\


DATE: 09/15/2025                          TIME: 05:40:00

USER:


COMMENTS: _____________________________________________________________

----------------------------------------------------------------------------------------------------------------
  ***********************************************
  ** SIMULATION : 100 Year Picton Chicago       **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1081.000
| Ptotal= 63.97 mm |                          B=   3.000
--------------------                          C=   0.767
                       used in:   INTENSITY =  A / (t + B)^C

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

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    4.40 |  1.00   30.12 |  2.00    9.79 |  3.00    5.18
               0.17    5.00 |  1.17  151.16 |  2.17    8.44 |  3.17    4.83
               0.33    5.83 |  1.33   39.10 |  2.33    7.44 |  3.33    4.54
               0.50    7.06 |  1.50   21.18 |  2.50    6.68 |  3.50    4.28
               0.67    9.11 |  1.67   14.98 |  2.67    6.08 |  3.67    4.05
               0.83   13.37 |  1.83   11.78 |  2.83    5.59 |  3.83    3.85


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0004)|   Area    (ha)=   0.28   Curve Number   (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

         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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
```

```
                0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
                0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
                0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
                0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
                0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
                0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
                1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Unit Hyd Qpeak  (cms)=   0.053

     PEAK FLOW       (cms)=   0.021 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  24.163
     TOTAL RAINFALL   (mm)=  63.970
     RUNOFF COEFFICIENT   =   0.378

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   0.24
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.00        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.25 (ii)    2.20 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.33         0.30
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.10         0.00          0.101 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=     62.97        60.51          62.94
     TOTAL RAINFALL   (mm)=     63.97        63.97          63.97
     RUNOFF COEFFICIENT   =      0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    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 (  0001)|   Area    (ha)=   1.07
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.91         0.16
     Dep. Storage     (mm)=       1.00         5.00
```

```
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.46        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        79.65
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.96 (ii)    4.95 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.31         0.22
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.38         0.03          0.414 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        34.66          58.72
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.54           0.92

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  86.0    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 (  0002)|   Area    (ha)=   0.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.05         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      18.26        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       0.78 (ii)    1.73 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
```

```
     Unit Hyd. peak  (cms)=       0.34         0.32
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.02         0.00          0.021 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        60.51          62.95
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  99.0    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  (  0101)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.07   0.414     1.33    58.72
     + ID2= 2 (  0002):     0.05   0.021     1.33    62.95
       ================================================
       ID = 3 (  0101):     1.12   0.435     1.33    58.91

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0100)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0600      0.0200
                           0.0570     0.0010   |   0.0630      0.0364
                           0.0590     0.0100   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0101)      1.120      0.435      1.33      58.91
   OUTFLOW: ID= 1 (  0100)      1.120      0.062      1.67      58.91

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.14
                  TIME SHIFT OF PEAK FLOW         (min)= 20.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0283

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

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0100):     1.12   0.062     1.67    58.91
     + ID2= 2 (  0006):     0.24   0.101     1.33    62.94
       ================================================
       ID = 3 (  0103):     1.36   0.161     1.33    59.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.22         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.82        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
```

```
                0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
                0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
                0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
                0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
                0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
                0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
                0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
                0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
                0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
                0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
                1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        79.65
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.27 (ii)    3.75 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.25
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.01          0.100 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        34.66          60.14
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.54           0.94

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  86.0    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  (  0104)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)      (mm)
       ID1= 1 (  0103):     1.36   0.161     1.33    59.62
     + ID2= 2 (  0003):     0.25   0.100     1.33    60.14
       ================================================
       ID = 3 (  0104):     1.61   0.261     1.33    59.70

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

--------------------
| ADD HYD  (  0008)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)      (mm)
       ID1= 1 (  0104):     1.61   0.261     1.33    59.70
     + ID2= 2 (  0004):     0.28   0.021     1.50    24.16
       ================================================
       ID = 3 (  0008):     1.89   0.275     1.33    54.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0105)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0003      0.0395
                          0.0001     0.0350   |   0.1000      0.0400
                          0.0002     0.0380   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0008)      1.890      0.275      1.33      54.44
   OUTFLOW: ID= 1 (  0105)      1.890      0.149      1.67      33.90

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 54.10
                  TIME SHIFT OF PEAK FLOW         (min)= 20.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0415

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0044)|   Area    (ha)=   0.54
```

```
|ID= 1 DT= 5.0 min |   Total Imp(%)=  95.00   Dir. Conn.(%)=  95.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.00        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
              0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
              0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
              0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
              0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
              0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
              0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
              0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
              0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
              0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
              0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
              1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        79.65
               over (min)          5.00         5.00
     Storage Coeff.  (min)=       1.59 (ii)    3.44 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.26
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.01      0.221 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33       1.33
     RUNOFF VOLUME    (mm)=      62.97        34.66      61.55
     TOTAL RAINFALL   (mm)=      63.97        63.97      63.97
     RUNOFF COEFFICIENT   =       0.98         0.54       0.96

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  86.0    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 (  0007)|   Area    (ha)=   0.68
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.34         0.34
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      67.33        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
              0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
              0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
              0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
              0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
              0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
              0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
              0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
              0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
              0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
              0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
              1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85
```

```
     Max.Eff.Inten.(mm/hr)=     151.16        79.65
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.71 (ii)    9.44 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.05          0.181 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42           1.33
     RUNOFF VOLUME    (mm)=      62.97        34.66          48.81
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.54           0.76

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  86.0    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  (  0106)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0044):     0.54   0.221     1.33    61.55
      + ID2= 2 (  0007):     0.68   0.181     1.33    48.81
        ==========================================================
        ID = 3 (  0106):     1.22   0.402     1.33    54.45

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   0.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.16         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      32.66        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
              0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
              0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
              0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
              0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
              0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
              0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
              0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
              0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
              0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
              0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
              1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.11 (ii)    2.06 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.31
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.00          0.067 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        60.51          62.94
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.95           0.98

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

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    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  (  0107)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0106):     1.22   0.402     1.33    54.45
      + ID2= 2 (  0005):     0.16   0.067     1.33    62.94
        ================================================
        ID = 3 (  0107):     1.38   0.469     1.33    55.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0109)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0003      0.0275
                           0.0001     0.0244   |   0.1000      0.0300
                           0.0002     0.0250   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0107)      1.380      0.469      1.33      55.44
   OUTFLOW: ID= 1 (  0109)      1.380      0.267      1.42      36.33

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 56.81
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0356

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

--------------------
| ADD HYD  (  0110)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0105):     1.89   0.149     1.67    33.90
      + ID2= 2 (  0109):     1.38   0.267     1.42    36.33
        ================================================
        ID = 3 (  0110):     3.27   0.267     1.42    34.93

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

Visual OTTHYMO Post-Development flow 4-hr 25mm Chicago storm event output

```
================================================================================================
================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\b5aa16a2-84c2-4870-90f3-b9bd2f53cd57\
  Summary filename: C:\Users\Mark Harris\AppData\Local\Civica\VH5\b97e20ca-ca82-44e2-ae9c-
1ccaee6a9ad3\b5aa16a2-84c2-4870-90f3-b9bd2f53cd57\


DATE: 09/16/2025                          TIME: 11:48:01

USER:



COMMENTS: _____________________________________________________________


------------------------------------------------------------------------------------------------
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  ***********************************************
  ** SIMULATION : 100 Year Picton Chicago       **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1081.000
| Ptotal= 63.97 mm |                          B=   3.000
--------------------                          C=   0.767
                       used in:   INTENSITY =  A / (t + B)^C

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

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    4.40 |  1.00   30.12 |  2.00    9.79 |  3.00    5.18
                0.17    5.00 |  1.17  151.16 |  2.17    8.44 |  3.17    4.83
                0.33    5.83 |  1.33   39.10 |  2.33    7.44 |  3.33    4.54
                0.50    7.06 |  1.50   21.18 |  2.50    6.68 |  3.50    4.28
                0.67    9.11 |  1.67   14.98 |  2.67    6.08 |  3.67    4.05
                0.83   13.37 |  1.83   11.78 |  2.83    5.59 |  3.83    3.85


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

```
| CALIB            |
| NASHYD   (  0008)|   Area     (ha)=   0.28   Curve Number    (CN)= 75.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

         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	4.40	1.083	30.12	2.083	9.79	3.08	5.18
0.167	4.40	1.167	30.12	2.167	9.79	3.17	5.18
0.250	5.00	1.250	151.16	2.250	8.44	3.25	4.83
0.333	5.00	1.333	151.16	2.333	8.44	3.33	4.83
0.417	5.83	1.417	39.10	2.417	7.44	3.42	4.54
0.500	5.83	1.500	39.10	2.500	7.44	3.50	4.54
0.583	7.06	1.583	21.18	2.583	6.68	3.58	4.28
0.667	7.06	1.667	21.18	2.667	6.68	3.67	4.28
0.750	9.11	1.750	14.98	2.750	6.08	3.75	4.05
0.833	9.11	1.833	14.98	2.833	6.08	3.83	4.05
0.917	13.37	1.917	11.78	2.917	5.59	3.92	3.85
1.000	13.37	2.000	11.78	3.000	5.59	4.00	3.85

```
     Unit Hyd Qpeak  (cms)=   0.053

     PEAK FLOW       (cms)=   0.021 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  24.163
     TOTAL RAINFALL   (mm)=  63.970
     RUNOFF COEFFICIENT   =   0.378

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

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| STANDHYD (  0006)|   Area     (ha)=   0.24
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.24         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.00        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	4.40	1.083	30.12	2.083	9.79	3.08	5.18
0.167	4.40	1.167	30.12	2.167	9.79	3.17	5.18
0.250	5.00	1.250	151.16	2.250	8.44	3.25	4.83
0.333	5.00	1.333	151.16	2.333	8.44	3.33	4.83
0.417	5.83	1.417	39.10	2.417	7.44	3.42	4.54
0.500	5.83	1.500	39.10	2.500	7.44	3.50	4.54
0.583	7.06	1.583	21.18	2.583	6.68	3.58	4.28
0.667	7.06	1.667	21.18	2.667	6.68	3.67	4.28
0.750	9.11	1.750	14.98	2.750	6.08	3.75	4.05
0.833	9.11	1.833	14.98	2.833	6.08	3.83	4.05
0.917	13.37	1.917	11.78	2.917	5.59	3.92	3.85
1.000	13.37	2.000	11.78	3.000	5.59	4.00	3.85

```
     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)          5.00         5.00
     Storage Coeff.  (min)=       1.25 (ii)    2.20 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.30
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.00          0.101 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        60.51          62.94
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0102)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   0.0061      0.0182
                         0.0019     0.0061   |   0.0085      0.0243
                         0.0041     0.0122   |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0006)      0.240      0.101      1.33      62.94
   OUTFLOW: ID= 1 (  0102)      0.240      0.004      2.83      59.58

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.87
                  TIME SHIFT OF PEAK FLOW         (min)= 90.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0116

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.07
|ID= 1 DT= 5.0 min |   Total Imp(%)=  85.00   Dir. Conn.(%)=  85.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.91         0.16
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.46        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
```

```
                0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
                0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
                0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
                0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
                0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
                1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        50.94
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.96 (ii)    4.95 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.31         0.22
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.38         0.02          0.402 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        24.21          57.15
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.38           0.89

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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 (  0002)|   Area    (ha)=   0.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.05         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      18.26        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
                0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
                0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
                0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
                0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
                0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
                0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
                0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
                0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
                0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
                0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
                1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       0.78 (ii)    1.73 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.32
                                                      *TOTALS*
```

```
     PEAK FLOW       (cms)=       0.02         0.00          0.021 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        60.51          62.95
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    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  (  0101)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)     (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.07   0.402     1.33    57.15
      + ID2= 2 (  0002):     0.05   0.021     1.33    62.95
        ================================================
        ID = 3 (  0101):     1.12   0.423     1.33    57.41

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0100)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0600      0.0200
                           0.0570     0.0010   |   0.0630      0.0364
                           0.0590     0.0100   |   0.0000      0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0101)      1.120      0.423      1.33      57.41
   OUTFLOW: ID= 1 (  0100)      1.120      0.061      1.67      57.41

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 14.49
                  TIME SHIFT OF PEAK FLOW         (min)= 20.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0272

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

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)     (cms)    (hrs)     (mm)
        ID1= 1 (  0100):     1.12   0.061     1.67    57.41
      + ID2= 2 (  0102):     0.24   0.004     2.83    59.58
        ================================================
        ID = 3 (  0103):     1.36   0.065     1.75    57.79

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.25
|ID= 1 DT= 5.0 min |   Total Imp(%)=  90.00   Dir. Conn.(%)=  90.00
--------------------
                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.22         0.03
```

```
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      40.82        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
              0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
              0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
              0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
              0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
              0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
              0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
              0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
              0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
              0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
              0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
              1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        50.94
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.27 (ii)    3.75 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.25
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.00          0.098 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        24.21          59.08
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.38           0.92

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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  (  0104)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     1.36   0.065     1.75    57.79
      + ID2= 2 (  0003):     0.25   0.098     1.33    59.08
        ================================================
        ID = 3 (  0104):     1.61   0.160     1.33    57.99

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

--------------------
| ADD HYD  (  0112)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0104):     1.61   0.160     1.33    57.99
      + ID2= 2 (  0008):     0.28   0.021     1.50    24.16
        ================================================
```

```
        ID = 3 (  0112):     1.89   0.174     1.33    52.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0105)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000     0.0000   |   0.0003      0.0395
                           0.0001     0.0350   |   0.1000      0.0410
                           0.0002     0.0380   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0112)      1.890      0.174      1.33      52.98
   OUTFLOW: ID= 1 (  0105)      1.890      0.081      2.00      32.44

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 46.60
                  TIME SHIFT OF PEAK FLOW         (min)= 40.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0407

------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.54
|ID= 1 DT= 5.0 min |   Total Imp(%)=  95.00   Dir. Conn.(%)=  95.00
--------------------
                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.03
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.00        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
              0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
              0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
              0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
              0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
              0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
              0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
              0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
              0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
              0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
              0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
              1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        50.94
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.59 (ii)    3.44 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.26
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.00          0.219 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        24.21          61.03
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.38           0.95
```

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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 (  0007)|   Area    (ha)=   0.68
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.34         0.34
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      67.33        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16        50.94
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       1.71 (ii)   10.95 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.32         0.09
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.03          0.156 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.50           1.33
     RUNOFF VOLUME    (mm)=      62.97        24.21          43.58
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.38           0.68

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  75.0    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  (  0106)|
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|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0004):     0.54   0.219     1.33    61.03
      + ID2= 2 (  0007):     0.68   0.156     1.33    43.58
        ================================================
        ID = 3 (  0106):     1.22   0.375     1.33    51.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   0.16
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.16         0.00
     Dep. Storage     (mm)=       1.00         1.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      32.66        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    4.40 | 1.083   30.12 | 2.083    9.79 |  3.08    5.18
               0.167    4.40 | 1.167   30.12 | 2.167    9.79 |  3.17    5.18
               0.250    5.00 | 1.250  151.16 | 2.250    8.44 |  3.25    4.83
               0.333    5.00 | 1.333  151.16 | 2.333    8.44 |  3.33    4.83
               0.417    5.83 | 1.417   39.10 | 2.417    7.44 |  3.42    4.54
               0.500    5.83 | 1.500   39.10 | 2.500    7.44 |  3.50    4.54
               0.583    7.06 | 1.583   21.18 | 2.583    6.68 |  3.58    4.28
               0.667    7.06 | 1.667   21.18 | 2.667    6.68 |  3.67    4.28
               0.750    9.11 | 1.750   14.98 | 2.750    6.08 |  3.75    4.05
               0.833    9.11 | 1.833   14.98 | 2.833    6.08 |  3.83    4.05
               0.917   13.37 | 1.917   11.78 | 2.917    5.59 |  3.92    3.85
               1.000   13.37 | 2.000   11.78 | 3.000    5.59 |  4.00    3.85

     Max.Eff.Inten.(mm/hr)=     151.16       149.35
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.11 (ii)    2.06 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.31
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.00          0.067 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      62.97        60.51          62.94
     TOTAL RAINFALL   (mm)=      63.97        63.97          63.97
     RUNOFF COEFFICIENT   =       0.98         0.95           0.98

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  99.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0108)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
```

```
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   0.0061      0.0182
                         0.0019     0.0061   |   0.0085      0.0243
                         0.0041     0.0122   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)       0.160      0.067      1.33      62.94
   OUTFLOW: ID= 1 (  0108)       0.160      0.003      2.92      57.86

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.74
                   TIME SHIFT OF PEAK FLOW         (min)= 95.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0078

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

--------------------
| ADD HYD  (  0107)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)     (cms)    (hrs)     (mm)
        ID1= 1 (  0106):     1.22   0.375     1.33    51.31
      + ID2= 2 (  0108):     0.16   0.003     2.92    57.86
        ================================================
        ID = 3 (  0107):     1.38   0.377     1.33    52.06

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0109)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0003      0.0300
                          0.0001     0.0244   |   0.1000      0.0350
                          0.0002     0.0250   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0107)       1.380      0.377      1.33      52.06
   OUTFLOW: ID= 1 (  0109)       1.380      0.095      1.58      31.96

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.28
                   TIME SHIFT OF PEAK FLOW         (min)= 15.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  0.0350

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

--------------------
| ADD HYD  (  0110)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)     (cms)    (hrs)     (mm)
        ID1= 1 (  0105):     1.89   0.081     2.00    32.44
      + ID2= 2 (  0109):     1.38   0.095     1.58    31.96
        ================================================
        ID = 3 (  0110):     3.27   0.131     2.00    32.24

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

 FINISH
================================================================================================
================
```

Ontario IDF CURVE LOOKUP

Active coordinate

44° 0' 15" N, 77° 9' 45" W (44.004167,-77.162500)

Retrieved: Tue, 02 Sep 2025 20:05:26 GMT

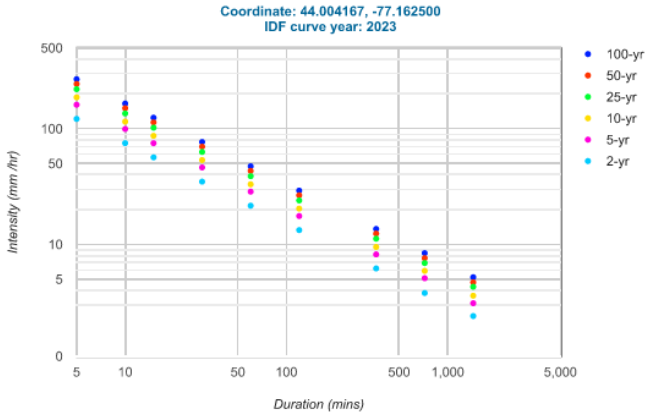
Location summary

These are the locations in the selection.

IDF Curve: 44° 0' 15" N, 77° 9' 45" W (44.004167,-77.162500)

Results

An IDF curve was found.



Coefficient summary

IDF Curve: 44° 0' 15" N, 77° 9' 45" W (44.004167,-77.162500)

Retrieved: Tue, 02 Sep 2025 20:05:26 GMT

Data year: 2010
IDF curve year: 2023

Statistics

Rainfall intensity (mm hr^{-1})

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	121.7	75.1	56.6	34.9	21.6	13.3	6.2	3.8	2.4
5-yr	161.4	99.5	75.0	46.3	28.6	17.6	8.2	5.1	3.1
10-yr	187.0	115.3	86.9	53.6	33.1	20.4	9.5	5.9	3.6
25-yr	219.9	135.6	102.2	63.0	38.9	24.0	11.2	6.9	4.3
50-yr	244.3	150.6	113.5	70.0	43.2	26.6	12.4	7.6	4.7
100-yr	268.2	165.3	124.6	76.8	47.4	29.2	13.6	8.4	5.2

Rainfall depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	10.1	12.5	14.2	17.4	21.6	26.6	37.2	45.6	57.6
5-yr	13.4	16.6	18.8	23.1	28.6	35.2	49.2	61.2	74.4
10-yr	15.6	19.2	21.7	26.8	33.1	40.8	57.0	70.8	86.4
25-yr	18.3	22.6	25.6	31.5	38.9	48.0	67.2	82.8	103.2
50-yr	20.4	25.1	28.4	35.0	43.2	53.2	74.4	91.2	112.8
100-yr	22.3	27.6	31.1	38.4	47.4	58.4	81.6	100.8	124.8

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Last Modified: September 2016

Storm Sewer Design Sheet - Post-Development Scenario **Minor (5-year storm) System**

Project: PROPOSED RETAIL B&C 13311 LOYALIST PKWY,PICTON,ON
Project No.: 96206
Date: October 27 2025
By: FADI

Location Info				Storm Flows									Pipe Information							Pipe Capacity Results	
Street Name	Catchment Area ID	Upstream MH	Downstream MH	Segment Catchment Area (Ha)	Segment Runoff Coefficient	Individual A x C	Cumulative Area	Time of Concentration (min)	Flow Time (min)	Segment 5-Year Storm Rainfall Intensity (mm/hr)	Segment 5-Year Storm Flow (L/s)	Cumulative 5-Year Storm Flow (L/s)	Length (m)	Diameter (mm)	Manning's "n" Concrete /PVC	Slope (%)	Shape	Pipe Function	Full-Flow Capacity (L/s)	Full-Flow Velocity (m/s)	5-Year % Full (%)
				A	C	A x C	Sum AxC	Tc	Ft	I(2)	q(2)	Q(2)							Q(cap)		Q(2)/Q(cap)
	A1	CBMH2	STM MH5	1.07	0.85	0.91	0.91	10.00	0.54	79.8		59.0	28.36	375	0.013	0.30	Circle	Conveyance	96	0.87	61.4%
	A2	BLDG	STM MH5	0.05	0.99	0.05	0.05	10.00	0.39	79.8		11.0	28.36	150	0.013	2.00	Circle	Conveyance	22	1.22	51.0%
	A3	STM MH8	STM MH5	0.25	0.85	0.21	0.21	10.00	0.66	79.8		47.1	29.86	300	0.013	0.30	Circle	Conveyance	53	0.75	89.0%
		STM MH5	PONDA				1.17	10.66	0.21	76.9		117.1	12.34	450	0.013	0.30	Circle	Conveyance	156	0.98	75.0%
	A4	CBMH4	STM MH3	0.45	0.85	0.38	0.38	10.00	0.78	79.8		84.8	40.95	375	0.013	0.30	Circle	Conveyance	96	0.87	88.3%
		STM MH 3	STM MH 2	0.45	0.85	0.38	0.38	10.00	0.78	79.8		84.8	40.95	375	0.013	0.30	Circle	Conveyance	96	0.87	88.3%
	A5	BLD	STM MH1	0.16	0.99	0.16	0.16	10.00	0.03	79.8		35.1	2.5	200	0.013	2.00	Circle	Conveyance	46	1.48	75.7%
	A4+A5	STM MH 2	STM MH 1	0.00	0.00	0.00	0.00	10.78	0.42	76.4		120.0	24.72	450	0.013	0.30	Circle	Conveyance	156	0.98	76.8%
	A4+A5	STM MH 1	POND B	0.00	0.00	0.00	0.00	11.20	0.27	74.8		120.0	16.1	450	0.013	0.30	Circle	Conveyance	156	0.98	76.8%
	A6			0.22	0.99	0.22	0.22	10.00	0.27	79.8		6.0	20	150	0.013	2.00	Circle	Conveyance	22	1.22	27.9%

Rainfall Intensity Info (City of Kingston *Design Criteria for Sewers & Watermains):*

5-Year Storm: $I=630(T+4)^{-0.783}$

APPENDIX B

- FUS Calculations

WATER SUPPLY FOR PUBLIC FIRE PROTECTION , FIRE UNDERWRITERS SURVEY 2020
GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOWS

$F = 220 \times C \times \sqrt{A}$

Where:

F = required fire flow in liters per minute

C= Coefficient related to the type of construction
A = the total floor area in square meters (excluding basements) in the building

Coefficient related to type of construction	
1.5	Type V - Wood Frame
0.8	Type IV-A - Mass Timber Construction
0.9	Type IV-B - Mass Timber Construction
1	Type IV-C - Mass Timber Construction
1.5	Type IV-D - Mass Timber Construction
1	Type III - Ordinary Construction
0.8	Type II - Non combustible
0.6	Type I - Fire Resistive

LOCATION: Retail A - Food Store

OBC OCCUPANCY: Commercial

BUILDING FOOT PRINT (m2): 2527

OF STOREYS: 1

PROJECT No: 96206

PROJECT: Picton
Loyalist Parkway

Contents	Charge
Non-Combustible	-25%
limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Buring	25%

CONSTRUCTION CLASS: Fire Resistive

AUTOMATED SPRINKLER PROTECTION

		Credit	Total
NFPA 13 sprinkler standard	yes	30%	50%
Standard Water Supply	yes	10%	
Fully Supervised System	yes	10%	
		50%	

CONTENTS FACTOR: Limited Combustible — CHARGE: -15%

EXPOSURE 1 (south)	Distance to Exposure Building (m)	>30	0%
	Length - Height		
EXPOSURE 2 (east)	Distance to Exposure Building (m)	>30	0%
	Length - Height		
EXPOSURE 3 (west)	Distance to Exposure Building (m)	0	10%
	Length - Height		
EXPOSURE 4 (north)	Distance to Exposure Building (m)	>30	0%
	Length - Height		
		Total:	10%

no more than 75%

Separation	Charge
0-3 m	25%
3.1 -10 m	20%
10.1 - 20 m	15%
20.1 - 30 m	10%
Greater than 30m	0%

ARE BUILDINGS CONTIGUOUS: NO

FIRE RESISTANT BUILDING Are vertical openings and exterior vertical communications protected with a minimum one (1) hr ratin: No

CALCULATIONS

C =	0.6		TYPE I - Fire Resistive
A =	2527	m2	(2 largest floors + 50% floors above)
F =	6636	L/min	
Round to Nearest 1000 L/min F =	7000	L/min	must be > 2000 L/min

STOREY AREAS m2	
2527	Ground
	Mezzanine

CORRECTION FACTORS:

OCCUPANCY	-1050	L/min
FIRE FLOW ADJUSTED FOR OCCUPANCY	5950	L/min
REDUCTION FOR SPRINKLER	-2975	L/min
EXPOSURE CHARGE	595	L/min

REQUIRED FIRE FLOW F = 3570 L/min

Round to Nearest 1000 L/min F = 4000 L/min 1057 usgm

F = 67 L/sec

WATER SUPPLY FOR PUBLIC FIRE PROTECTION , FIRE UNDERWRITERS SURVEY 2020
GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOWS

$F = 220 \times C \times \sqrt{A}$

Where:

F = required fire flow in liters per minute

C= Coefficient related to the type of construction
A = the total floor area in square meters (excluding basements) in the building

Coefficient related to type of construction	
1.5	Type V - Wood Frame
0.8	Type IV-A - Mass Timber Construction
0.9	Type IV-B - Mass Timber Construction
1	Type IV-C - Mass Timber Construction
1.5	Type IV-D - Mass Timber Construction
1	Type III - Ordinary Construction
0.8	Type II - Non combustible
0.6	Type I - Fire Resistive

LOCATION:	Retail Pad B - Retail
OBC OCCUPANCY:	Commercial
BUILDING FOOT PRINT (m2):	1591
# OF STOREYS	1

PROJECT No.:96206

PROJECT: Picton Loyalist Parkway

Contents	Charge
Non-Combustible	-25%
limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Buring	25%

CONSTRUCTION CLASS: Fire Resistive

AUTOMATED SPRINKLER PROTECTION

		Credit	Total
NFPA 13 sprinkler standard	yes	30%	50%
Standard Water Supply	yes	10%	
Fully Supervised System	yes	10%	
		50%	

CONTENTS FACTOR: Limited Combustible — CHARGE: -15%

EXPOSURE 1 (south)	Distance to Exposure Building (m)	>30	0%
	Length - Height		
EXPOSURE 2 (east)	Distance to Exposure Building (m)	0	10%
	Length - Height		
EXPOSURE 3 (west)	Distance to Exposure Building (m)	>30	0%
	Length - Height		
EXPOSURE 4 (north)	Distance to Exposure Building (m)	>30	0%
	Length - Height		
		Total:	10%

no more than 75%

Separation	Charge
0-3 m	25%
3.1 -10 m	20%
10.1 - 20 m	15%
20.1 - 30 m	10%
Greater than 30m	0%

ARE BUILDINGS CONTIGUOUS: NO

FIRE RESISTANT BUILDING Are vertical openings and exterior vertical communications protected with a minimum one (1) hr ratin: No

CALCULATIONS

C =	0.6		TYPE I - Fire Resistive	
A =	1591	m2	(2 largest floors + 50% floors above)	
F =	5265	L/min		
Round to Nearest 1000 L/min F =	5000	L/min	must be > 2000 L/min	

STOREY AREAS m2	
1591	Ground
	Mezzanine

CORRECTION FACTORS:

OCCUPANCY	-750	L/min
FIRE FLOW ADJUSTED FOR OCCUPANCY	4250	L/min
REDUCTION FOR SPRINKLER	-2125	L/min
EXPOSURE CHARGE	425	L/min

REQUIRED FIRE FLOW F = 2550 L/min

Round to Nearest 1000 L/min

F =	3000	L/min	793	usgm
F =	50	L/sec		

WATER SUPPLY FOR PUBLIC FIRE PROTECTION , FIRE UNDERWRITERS SURVEY 2020
GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOWS

$F = 220 \times C \times \sqrt{A}$

Where:

F = required fire flow in liters per minute

C= Coefficient related to the type of construction
A = the total floor area in square meters
(excluding basements) in the building

Coefficient related to type of construction	
1.5	Type V - Wood Frame
0.8	Type IV-A - Mass Timber Construction
0.9	Type IV-B - Mass Timber Construction
1	Type IV-C - Mass Timber Construction
1.5	Type IV-D - Mass Timber Construction
1	Type III - Ordinary Construction
0.8	Type II - Non combustible
0.6	Type I - Fire Resistive

LOCATION: Retail C - Retail

OBC OCCUPANCY: Commercial

BUILDING FOOT PRINT (m2): 451

OF STOREYS: 1

PROJECT No.:96206

PROJECT: Picton Loyalist Parkway

Contents	Charge
Non-Combustible	-25%
limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Buring	25%

CONSTRUCTION CLASS: Fire Resistive

AUTOMATED SPRINKLER PROTECTION

		Credit	Total
NFPA 13 sprinkler standard	no	0%	0%
Standard Water Supply	no	0%	
Fully Supervised System	no	0%	
		0%	

CONTENTS FACTOR: Limited Combustible — CHARGE: -15%

EXPOSURE 1 (south)	Distance to Exposure Building (m)	>30	0%	
	Length - Height			
EXPOSURE 2 (east)	Distance to Exposure Building (m)	>30	0%	
	Length - Height			
EXPOSURE 3 (west)	Distance to Exposure Building (m)	>30	0%	
	Length - Height			
EXPOSURE 4 (north)	Distance to Exposure Building (m)	>30	0%	
	Length - Height			
		Total:	0%	no more than 75%

Separation	Charge
0-3 m	25%
3.1 -10 m	20%
10.1 - 20 m	15%
20.1 - 30 m	10%
Greater than 30m	0%

ARE BUILDINGS CONTIGUOUS: NO

FIRE RESISTANT BUILDING Are vertical openings and exterior vertical communications protected with a minimum one (1) hr ratin: No

CALCULATIONS

C =	0.6		TYPE I - Fire Resistive	
A =	451	m2	(2 largest floors + 50% floors above)	
F =	2803	L/min		
Round to Nearest 1000 L/min F =	3000	L/min	must be > 2000 L/min	

STOREY AREAS m2	
451	Ground
	Mezzanine

CORRECTION FACTORS:

OCCUPANCY	-450	L/min
FIRE FLOW ADJUSTED FOR OCCUPANCY	2550	L/min
REDUCTION FOR SPRINKLER	0	L/min
EXPOSURE CHARGE	0	L/min

REQUIRED FIRE FLOW F = 2550 L/min

Round to Nearest 1000 L/min	**F =**	3000	L/min	793 usgm
	F =	50	L/sec	

APPENDIX C

- Engineering Plans

  - PHASE 1 – RETAIL B – WEST SIDE
  - PHASE 1 & 2 – RETAIL B & C – EAST & WEST SIDES

CONTRACTOR TO VERIFY ALL INVERTS, SIZE, MATERIAL, AND LOCATION OF ALL SERVICES PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ODAN/DETECH GROUP

CONTRACTOR TO PROVIDE AS-BUILT SURVEY UPON COMPLETION OF ALL WORKS TO THE ODAN/DETECH GROUP SURVEY TO BE COMPLETED BY A CERTIFIED ONTARIO LAND SURVEYOR

SERVICING LEGEND:

- DENOTES EXISTING STORM MANHOLE
- DENOTES PROPOSED STORM MANHOLE
- DENOTES EXISTING CATCHBASIN MANHOLE
- DENOTES PROPOSED CATCHBASIN MANHOLE
- DENOTES EXISTING CATCH BASIN
- DENOTES PROPOSED CATCH BASIN
- DENOTES PROPOSED STORMCEPTOR
- DENOTES PROPOSED INLET CONTROL DEVICE (ICD)
- DENOTES EXISTING STORM SEWER
- DENOTES PROPOSED STORM SEWER
- DENOTES PROPOSED STORM SEWER (WITH INSULATION)
- DENOTES PROPOSED SUB-DRAIN
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES PROPOSED SANITARY MANHOLE
- DENOTES PROPOSED SANITARY SEWER
- DENOTES PROPOSED SANITARY SEWER (WITH INSULATION)
- DENOTES EXISTING SANITARY SEWER
- DENOTES EXISTING WATER MAIN
- DENOTES PROPOSED WATER MAIN
- DENOTES PROPOSED HYDRANT
- DENOTES EXISTING HYDRANT
- DENOTES PROPOSED WATER VALVE & BOX
- DENOTES EXISTING WATER VALVE & BOX
- DENOTES PROPOSED BACKFLOW PREVENTER
- DENOTES PROPOSED WATER METER
- DENOTES PROPOSED SIAMESE CONNECTION
- DENOTES PROPOSED CAP FOR SANITARY, STORM AND/OR WATER AS NOTED
- DENOTES PROPOSED ENTRANCE LOCATION
- DENOTES PROPOSED LIMIT OF CONSTRUCTION
- DENOTES PROPOSED SWALE
- DENOTES PROPOSED REMOVAL
- DENOTES PROPOSED PIPE INSULATION
- DENOTES PROPOSED HEAVY DUTY ASPHALT AREA
- DENOTES EXISTING EASEMENT
- DENOTES PROPOSED EASEMENT
- DENOTES EXTENT OF MAX. PONDING (0.30m) 100 YEAR STORM PROPOSED CONDITION
- DENOTES EXTENT OF MAX. PONDING (0.30m) 100 YEAR STORM EXISTING CONDITION

Construction North

LOYALIST PARKWAY
LOYALIST PARKWAY
(NAMED BY BY-LAW 1162, MARCH 15, 1995)
(FORMER HIGHWAY 14 & 33) (HIGHWAY'S PLAN 193)
LOYALIST PARKWAY
EX. FH
EX. 250mmø PVC W/M SDR-18
EXISTING SIGNALIZED INTERSECTION MODIFIED
EXISTING SIDEWALK
PROPOSED PYLON SIGN
EXISTING ACCESS
LIMIT OF CONSTRUCTION
SITE AREA
±9.35 AC.
±3.78 HA.
PHASE 1 LIMIT OF CONSTRUCTION GRADING & SERVICING ONLY REFER TO SITE PLAN FOR NEW PAVEMENT MARKING LAYOUT
5M FRONT YARD SETBACK
14M MTO SETBACK
EX. CURB TO BE REMOVED
EX. CURB TO REMAIN
DASHED LINES DENOTE EXISTING CURB TO BE DEMOLISHED (TYP.)
DASHED LINES DENOTE EXISTING PARKING SPACES TO BE RESTRIPED (TYP.)
EX. PARKING SPACES AND CURB TO REMAIN
PROP. CART CORRAL
EXISTING CART CORRAL TO BE DEMOLISHED TYP. FOR 2
RELOCATE EX. FIRE HYDRANT TO CENTRE OF MEDIAN
ADJUST EX. W/S TO SUIT PROP. GRADING
INSTALL NEW HEADWALL AND SIDEWALLS TO MATCH EXISTING GRADES TO PAD ASPHALT & PROVIDE POSITIVE DRAINAGE AROUND HEADWALL
REMOVE EX PAVEMENT MARKINGS & REPLACE WITH NEW AS PER PHASE 1 SITE PLAN GRADING & SERVICING PLAN. PARKING ELIMINATED (TYP.)
PROP. CONC. CURB
PROP. CONC. RAMP CURB (TYP.)
PROP. CBMH 4 RIM ELEV 98.25 SW INV EL 97.32 N INV. EL 97.35
PROP CB 1 RIM ELEV 98.40 S INV EL 97.46
EX CB 1 RIM ELEV 98.12 OUT INV 97.04
EX. CBMH RIM EL. 98.13 S INV 96.83 E INV 96.68 W INV 96.68
EX. 37.61m – 300mmø PVC STM @ 0.3%
EX. 375mmø PVC STM @ 0.3%
EX. 31.50m – 375mmø PVC STM @ 0.3%
EX. CB RIM EL. 98.98 W INV 97.12 E INV 97.12
EX. 9.85m–300mmø PVC STM @ 2.8%
EX. CB RIM EL. 98.95 OUT INV 97.33
EX. 4.95m –300mmø PVC STM @ 0.81%
EX. CB 1 RIM EL 98.35 INV 96.87
EX. 36.70m –300mmø PVC STM @ 0.41%
EX. STM MH 1 RIM EL 98.60 N INV 96.83 E INV 96.83 S INV 96.81
EX. 14.3m –300mmø PVC STM @ 0.77%
EX. 55.90m–150mmø @ 0.69%
EX. 7.93m–150mmø @ 8.7% INV @ BLDG 96.55
EX-SAN MH A RIM EL 99.08 E INV 96.00 S INV 95.75
EXISTING KIOSK
Subject to Easement as In Inst. No. ECT7614
Subject to Right-of-Way as In Inst. No. RE37893
Subject to Right-of-Way as In Inst. No. HW18981, HW19158
20.0m W/M EASEMENT TO COUNTY
PROP 14.1m –300mm CSP STM CULVERT @ 0.38%
PROP. SPILLWAY REFER TO DPSD 604.01
PROP STM MH 3 RIM ELEV 98.33 NE INV EL 97.20 SE INV EL 97.17
PROP 14.25m 375mm PVC STM @ 0.30%
PROP HW 2 AS PER DPSD-804.030 INV EL 97.80
EX. HYDRO POLE TO BE PROTECTED DURING THE CONSTRUCTION. PROVIDE FAST FENCE AROUND THE POLE.
PROP 24.29m 450mm PVC STM @ 0.30%
PROP 250m PVC STM @ 9.00% INV @ CAP 97.29
PROP STM MH 1 RIM ELEV 98.23 NE INV EL 97.02 SW INV EL 96.95 NW INV EL 97.02
PROP STM MH 2 RIM ELEV 98.14 NE INV EL 97.24 SW INV EL 97.09 NW INV EL 97.16
EX. 100mø P.E. STM @ 2.0% INV @ CAP 97.29
EX. 100mm P.E STM @ EX. POND 'B' TO BE REMOVED
PROPOSED BUILDING B RETAIL
F.F.E. 99.10m
NOTE: PROVIDE 4 ROOF DRAINS WITH 1 WEIR EACH. ROOF DRAINS TO BE CONTROL FLO ZOF-121 AND/OR APPROVED EQUAL. EMERGENCY ROOF OVERFLOW IS TO BE VIA ROOF SCUPPERS ALONG PERIMETER OF PARAPET ()
EXISTING BUILDING A RETAIL
F.F.E. 99.10m
INV. 96.15
EX. 250mmø PVC W/M SDR-18
EX. 150mmø PVC ROOF LEAD @ 2.0% INV EL 97.05
EX. MUNICIPAL DOMESTIC METER TO REMAIN AS PRIVATE METER AS PER MECH. (BACKFLOW BY MECH.)
EX. 200mm FIRE AS PER MECH. (BACKFLOW BY MECH.)
EX. SAN CB 1 RIM EL. 97.78 OUT INV 95.78
PROP. PRIVATE DOMESTIC METER & BACKFLOW AS PER MECH. FROM EX. FOOD STORE MUNICIPAL METER
PROP. 50mmø TYPE "K" SOFT COPPER W/S WITH V&B TO CONNECT TO EX. 50mm & 200mm (LIVETAP) WITH V&B
PROP 200mmø PVC W/M & VALVE, TO BE CAPPED 1.5m FROM BUILDING (BACKFLOW BY MECH.)
PROP. HIGH CURB
PROP 187m 150mmø PVC SAN @ 2.00% INV @ CAP 96.40
PROP. SPILLWAY TO POND REFER TO DPSD 604.01
SPILLOVER OUTLET EL. 96.90
PROPOSED RETAINING WALL REFER TO GRADING DRAWINGS
PROP SAN MH 2A RIM ELEV 97.42 NE INV EL 96.64 NW INV EL 96.62
PROP 200mm PVC WATER
EX. 250mmø PVC W/M SDR-18
EX. 110.5m–100mmø PVC SAN @ 2.0%
EX. 11.5m–150mmø PVC SAN @ 2.0% EXP. 2.0m FROM BLDG. CAP INV EL 95.73 CONTRACTOR TO INSULATE LEAD AS PER DETAIL
PROP. CONC. CURB MATCH TO EX CURB
LIMIT OF CONSTRUCTION (PHASE 1)
EX. CURB TO BE REMOVED
PROP. CONC. CURB MATCH TO EX CURB
MILLENNIUM TRAIL
EX. 90.41m–250mmø PVC SAN @0.33%
EX. 76.67m–250mmø PVC SAN @0.34%
EX. 64.98m–250mmø PVC SAN @0.2
EX. 250mmø PVC W/M DR-18
PROP SAN MH 1A DOGHOUSE RIM ELEV 97.69 E INV. 95.65 N INV. 96.79 NW INV. 96.70 SW INV EL 95.70
EX. 9.0m–150mmø PVC SAN @ 2.0%
SAN MH 98L RIM EL. 96.97 E INV. 95.23 W INV. 95.26
SAN MH 98M RIM EL. 96.70 N INV. 95.50 S INV. 95.47
EX. H&V 8 FLANGE EL. 97.24
EX. 6.25m – 300mmø CULVERT @ 0.5% N INV. 96.26 S INV. 96.23
EX. 34m–375mmø PVC STM @ 0.3%
EX. WATERMAIN EASEMENT TO REMAIN
EXISTING POND
EX CONCRETE HEADWALL AS PER O.P.S.D. 804.030 INVERT EL. 96.70
3.0m x 3.0m x 0.3m GABION MAT (TYP.)
STORMWATER TREATMENT POND "A" SAND FILTER
LINE OF POND EXPANSION
EXISTING FIRE HYDRANT
N8.20° W (MTO N35° E)
88.21 (96.17 FF)
EX. 150mm SUBDRAIN LEADER 4m PAST CULVERT
EX. 2–300mmø CSP @ 1.0% (8.0m LENGTH) N INV. 96.15 S INV. 96.07
INV 96.07
CONTRACTORS ARE STRICTLY PROHIBITED FROM ENCROACHING ON HYDRO ONE PROPERTY DURING THE CONSTRUCTION
SAN MH 98O RIM EL. 97.13 N INV 95.09 S INV 95.09 E INV (TO BE DETERMINED)
SAN MH 98K RIM EL. 97.13 E INV. 94.96 W INV. 94.96
SAN MH 98J RIM EL. 96.96 N INV. 94.70 E INV. 94.70 W INV. 94.70
EX. 57.7m–200mmø PVC SAN @0.44%
EX. 34.5m–200mmø PVC SAN @0.85%
PROP. POND "B" SAND FILTER BOTTOM AREA = 1218m² VOLUME = 250m³
BOTTOM OF POND 98.70m
100mmø P.E. DRAINAGE TILE (SUBDRAIN) AS PER DPSD FORM 405 C/W GEOTEXTILE/SOCK SPACED @ 1.2m O/C (TYP.)
SLOPE DOWN BY 3:01 TO MATCH EX. GRADES
PROP CHAIN LINK FENCE AROUND THE POND WITH THE GATE
PROP. RIP-RAP 150–150mm 2-LAYERS 300mm DEEP 96.30–93.00m GEOTEXTILE OVER FLOW
PROP. OVERFLOW SWALE RIP-RAP BOTTOM OF SLOPE NORTH OF HYDRO POLE
EX. HYDRO POLE TO BE PROTECTED DURING THE CONSTRUCTION. PROVIDE FAST FENCE AROUND THE POLE.
MATCH EX. DITCH BOTTOM OF SLOPE
EX. INFILTRATION TRENCH END CAP
CONNECT NEW 150mm P.E. LEADER WITHIN INFILTRATION GALLERY TO EX. 150mm P.E. PIPE
EX. SPILLWAY TO BE REMOVED
EX. 150mm P.E. LEADER WITHIN INFILTRATION TRENCH (30m LENGTH–CAP @ END)
CONTRACTOR TO LOCATE EX. WATER IN FIELD PRIOR TO CONSTRUCTION CONNECT PROP. 200mm FIRE TO EX. FIRE 200mm FIRE
PROP. WATER METER IN CHAMBER WITH BY-PASS INCL. METER & VALVING KROHNE METER W/ REMOTE READER-- RIM EL.=97.00m± PROVIDE WATER TIGHT LID REFER TO NOTES & DETAILS SHEET FOR DETAIL(S)
EX. 50mmø TYPE "K" COPPER WATER SERVICE W/ V&B REMOVE EX. 50mmø SERVICE & REMOVE FIRE UPON COMPLETING CONNECTION WITH NEW METER CHAMBER AND WATER 50mm DOM. & 200mm FIRE
EX. 200mmø PVC W/M SERVICE W/ V&B
EX. 2.34m–1050mmø CSP
EX. 1.34m–1050mmø CSP
EX. 1.34m–1050mmø CSP
EX. 1

CONTRACTOR TO VERIFY ALL INVERTS, SIZE, MATERIAL, AND LOCATION OF ALL SERVICES PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ODAN/DETECH GROUP

CONTRACTOR TO PROVIDE AS-BUILT SURVEY UPON COMPLETION OF ALL WORKS TO THE ODAN/DETECH GROUP SURVEY TO BE COMPLETED BY A CERTIFIED ONTARIO LAND SURVEYOR

GRADING LEGEND:

- DENOTES EXISTING STORM MANHOLE
- DENOTES PROPOSED STORM MANHOLE
- DENOTES EXISTING CATCHBASIN MANHOLE
- DENOTES PROPOSED CATCHBASIN MANHOLE
- DENOTES EXISTING CATCH BASIN
- DENOTES PROPOSED CATCHBASIN
- DENOTES PROPOSED STORMCEPTOR
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES PROPOSED SANITARY MANHOLE
- DENOTES PROPOSED HYDRANT
- DENOTES EXISTING HYDRANT
- DENOTES PROPOSED WATER VALVE & BOX
- DENOTES EXISTING WATER VALVE & BOX
- DENOTES PROPOSED WATER METER
- DENOTES PROPOSED SIAMESE CONNECTION
- DENOTES PROPOSED LIMIT OF CONSTRUCTION
- DENOTES PROPOSED SWALE
- DENOTES PROPOSED REMOVAL
- 113.62 x 100.00 DENOTES EXISTING SPOT ELEVATION
- (100.00) DENOTES EXISTING ELEVATION (PRE-DESIGNED)

- (100.00) DENOTES PROPOSED ELEVATION
- (100.00)T/C DENOTES PROPOSED TOP OF CURB ELEVATION
- (100.00)G/L DENOTES PROPOSED GUTTER LINE ELEVATION
- (100.00) HP DENOTES PROPOSED HIGH POINT
- (100.00)T/W DENOTES PROPOSED TOP OF WALL ELEVATION
- (100.00)B/W DENOTES PROPOSED BOTTOM OF WALL ELEVATION
- (100.00) DENOTES PROPOSED SWALE INVERT ELEVATION
- [100.00] DENOTES PROPOSED ELEVATION BY OTHERS
- 1.0% DENOTES PROPOSED FLOW ARROW AND SLOPE
- DENOTES PROPOSED SWALE
- DENOTES EMERGENCY OVERLAND FLOW
- DENOTES PROPOSED SLOPE (3:1 OR HIGHER)
- 195.50 DENOTES EXISTING CONTOUR
- DENOTES PROPOSED SILT FENCE
- DENOTES PROPOSED ENTRANCE LOCATION
- DENOTES EXTENT OF MAX. PONDING (0.30m) 100 YEAR STORM PROPOSED CONDITION
- DENOTES EXTENT OF MAX. PONDING (0.30m) 100 YEAR STORM EXISTING CONDITION
- DENOTES PROPOSED HEAVY DUTY ASPHALT AREA
- DENOTES EXISTING EASEMENT
- DENOTES PROPOSED EASEMENT

LOYALIST PARKWAY
LOYALIST PARKWAY
EXISTING ACCESS
EXISTING SIDEWALK
PROPOSED PYLON SIGN
PIN 55064-0219 (LT)
PART 15, PLAN 47R-9102
PIN 55064-0221 (LT)
PART 16, PLAN 47R-9102
PART 2, PLAN 31R-(P-2049-55)
PART 1, PLAN 47R-6273
PART 1, PLAN 47R-7988
PART 2, PLAN 47R-7988
PART 3, PLAN 47R-7988
PART 4, PLAN 47R-7988
PART 1, PLAN 47R-7123
PART 2, PLAN 47R-7123
PART 3, PLAN 47R-7123
PART 4, PLAN 47R-7123
PART 1, PLAN 47R-6274
PART 1, PLAN 47R-7123
PIN 55064-0158 (LT)
PIN 55064-0222 (LT)
PIN 55064-0214 (LT)
PIN 55064-0213 (LT)
LIMIT OF CONSTRUCTION
PHASE 1 LIMIT OF CONSTRUCTION GRADING & SERVICING ONLY REFER TO SITE PLAN FOR NEW PAVEMENT MARKING LAYOUT
SITE AREA ±9.35 AC. ±3.78 HA.
9M FRONT YARD SETBACK
14M MTO SETBACK
7.5m REAR YARD SETBACK
CURB CONNECTION POINT
DASHED LINES DENOTE EXISTING PARKING SPACES TO BE RESTRIPED (TYP.)
EX. PARKING SPACES AND CURB TO REMAIN
REMOVE EX. PAVEMENT MARKINGS & REPLACE WITH NEW AS PER ARCHITECTS SITE PLAN (TYP. FOR ALL PARKING LIMITS) (TYP.)
EX. CURB TO BE REMOVED
EX. CURB TO REMAIN
INSTALL NEW MEDIANS AND SIDEWALKS EXCAVATE, MILL & MATCH EXISTING GRADES (2) PAD ASPHALT & PROVIDE POSITIVE DRAINAGE AROUND MEDIANS)
PROP. CONC. CURB
PROP. CONC. CURB MATCH TO EX. CURB
EX. CURB TO BE REMOVED (TYP.)
EX. CONCRETE CURB TO BE REMOVED
EX. CART CORRAL TO BE DEMOLISHED (TYP. FOR 2)
PROP. CART CORRAL
EX CB 1 RIM ELEV 98.12
EXISTING CART CORRAL TO BE DEMOLISHED TYP. FOR 2)
EX. CBMH RIM EL. 98.13 S INV 96.83 E INV 96.88 W INV 96.88
EX. MTO OFFICE (FULL TURNING MOVEMENT ON SOUTH WEST)
LOT 21
CONCESSION 3
MILITARY TRACT
MILLENNIUM TRAIL
FIRE / TRUCK ROUTE HEAVY DUTY ASPHALT
PROP. CB 1 RIM ELEV 98.40
PROP CBMH 4 RIM ELEV 98.25
PROP. STM MH 3 RIM ELEV 98.39
PROP. STM MH 2 RIM ELEV 98.54
PROP STM MH 1 RIM ELEV 98.23
PROP. SPILLWAY REFER TO OPSD 604.01
PROP HW 2 AS PER OPSD 804.030 INV EL 97.60
PROP HW 1 AS PER OPSD 804.030 WITH RIP RAP INV EL 96.90
PROP. POND "B" SAND FILTER BOTTOM AREA = 1218m² VOLUME = 250m³
BOTTOM OF POND 96.70m
TOP OF WATER (96.90)
TOP OF POND (97.30)
TOP OF POND (97.34)
SPILLOVER OUTLET EL. 96.90
PROPOSED RETAINING WALL REFER TO CIVIL DRAWINGS
PROP. HIGH CURB
PROP. SPILLWAY TO POND REFER TO OPSD 604.01
PROP. RIP-RAP D50=150mm 2-LAYERS, 300mm DEEP 96.90-97.20m 3mx3mWEIR OVERFLOW
PROP. OVERFLOW SWALE TO MATCH BOTTOM OF SLOPE NORTH OF HYDRO POLE
MATCH EX. DITCH BOTTOM OF SLOPE
EX. HYDRO POLE TO BE PROTECTED DURING THE CONSTRUCTION. PROVIDE FAST FENCE AROUND THE POLE.
EX. HYDRO POLE TO BE PROTECTED DURING THE CONSTRUCTION. PROVIDE FAST FENCE AROUND THE POLE
PROP CHAIN LINK FENCE AROUND THE POND WITH THE GATE
SLOPE DOWN BY 3.0:1 TO MATCH EX. GRADES
2.00m (97.30)
11.00m
EX. OUTLET STRUCTURE AS PER OPSD 804.030 TO BE REMOVED
EX. ASPHALT TO BE RAISED
EX. MAIL BOX TO BE RELOCATED
EX. 150mmø PVC ROOF LEAD @ 2.0% INV EL 97.05
EX. 100mm P.E. DRAINAGE TILE & EX. POND 'B' TO BE REMOVED
EX. SAND TRAPPED POND TO SAND FILTER
PROPOSED BUILDING B RETAIL F.F.E. 99.10m
EXISTING BUILDING A RETAIL F.F.E. 99.10m
NOTE: PROVIDE 4 ROOF DRAINS WITH 1 WEIR EACH. ROOF DRAINS TO BE CONTROL FLO ZCF-121 AND/OR APPROVED EQUAL. EMERGENCY ROOF OVERFLOW IS TO BE VIA ROOF SCUPPERS ALONG PERIMETER OF PARAPET
METAL CLAD BLDG (1 STOREY)
PROP. FDC CONNECTION
EX. SAN CB 1 RIM EL. 97.78 OUT INV 95.78
EX. SAN MH 1A RIM ELEV 97.69
PROP. SAN MH 2A RIM ELEV. 97.42
CONNECT NEW CATCHBASIN LEADER WITHIN INFILTRATION GALLERY TO EX. 150mm P.E. FIRE LINE STUB
EX. SPILLWAY TO BE REMOVED
EX. SPILLWAY TO BE REMOVED
EX. 150mm P.E. LEADER WITHIN INFILTRATION TRENCH (30m LENGTH-CAP @ END)
EX. INFILTRATION TRENCH END CAP
PROP. WATER METER IN CHAMBER WITH BY-PASS INCL. METER & VALVING KROHNE METER W/ REMOTE READER RIM EL. 97.00m PROVIDE WATER TIGHT LID REFER TO NOTES & DETAILS SHEET FOR DETAIL(S)
SAN MH 98L RIM EL. 96.97 E INV. 95.23 W INV. 95.26
SAN MH 98M RIM EL. 96.70 N INV. 95.50 S INV. 95.47
EX. 6.25m – 300mmø CULVERT @ 0.5% N INV. 96.26 S INV. 96.23
EX. MATERMAIN EASEMENT TO REMAIN
EX. POND TO BE EXPANDED (APPROX. 100m²) SAND
1.0m±3.0m±0.3m GABION MAT (TYP.)
LINE OF POND EXPANSION
EXISTING FIRE HYDRANT
EX. 150mmø WATERMAIN
EX. 200mmø WATERMAIN
EX. 300mmø WATERMAIN
EX. 100mmø WATERMAIN
EX. 50mmø WATERMAIN
EX. 25mmø WATERMAIN
EX. 19mmø WATERMAIN
EX. 13mmø WATERMAIN
EX. 6mmø WATERMAIN
EX. 4mmø WATERMAIN
EX. 2mmø WATERMAIN
EX. 1mmø WATERMAIN
EX. 0.5mmø WATERMAIN
EX. 0.25mmø WATERMAIN
EX. 0.125mmø WATERMAIN
EX. 0.0625mmø WATERMAIN
EX. 0.03125mmø WATERMAIN
EX. 0.015625mmø WATERMAIN
EX. 0.0078125mmø WATERMAIN
EX. 0.00390625mmø WATERMAIN
EX. 0.001953125mmø WATERMAIN
EX. 0.0009765625mmø WATERMAIN
EX. 0.00048828125mmø WATERMAIN
EX. 0.000244140625mmø WATERMAIN
EX. 0.0001220703125mmø WATERMAIN
EX. 0.00006103515625mmø WATERMAIN
EX. 0.000030517578125mmø WATERMAIN
EX. 0.0000152587890625mmø WATERMAIN
EX. 0.00000762939453125mmø WATERMAIN
EX. 0.000003814697265625mmø WATERMAIN
EX. 0.0000019073486328125mmø WATERMAIN
EX. 0.00000095367431640625mmø WATERMAIN
EX. 0.000000476837158203125mmø WATERMAIN
EX. 0.0000002384185791015625mmø WATERMAIN
EX. 0.00000011920928955078125mmø WATERMAIN
EX. 0.000000059604644775390625mmø WATERMAIN
EX. 0.0000000298023223876953125mmø WATERMAIN
EX. 0.00000001490116119384765625mmø WATERMAIN
EX. 0.000000007450580596923828125mmø WATERMAIN
EX. 0.0000000037252902984619140625mmø WATERMAIN
EX. 0.00000000186264514923095703125mmø WATERMAIN
EX. 0.000000000931322574615478515625mmø WATERMAIN
EX. 0.0000000004656612873077392578125mmø WATERMAIN
EX. 0.00000000023283064365386962890625mmø WATERMAIN
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EX. 0.000000000001818989403545856475830078125mmø WATERMAIN
EX. 0.0000000000009094947017729282379150390625mmø WATERMAIN
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EX. 0.0000000000000000004336808689942017736029811203479766845703125mmø WATERMAIN
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EX. 0.00000000000000000000000082718061255302767487140869206996285356909036636352539062mmø WATERMAIN
EX. 0.000000000000000000000000413590306276513837435704346034981426784545183181762695312mmø WATERMAIN
EX. 0.0000000000000000000000002067951531382569187178521730174907133922725915908813476562mmø WATERMAIN
EX. 0.00000000000000000000000010339757656912845935892608650874535669613629579544067382812mmø WATERMAIN
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EX. 0.0000000000000000000000000000504870979341447555463506281780983186992853006813675165176391601562mmø WATERMAIN
EX. 0.00000000000000000000000000002524354896707237777317531408904915934964265034068375825881958007812mmø WATERMAIN
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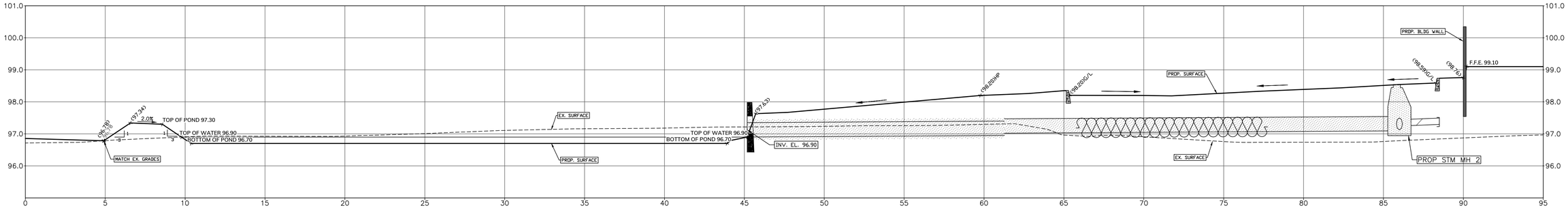
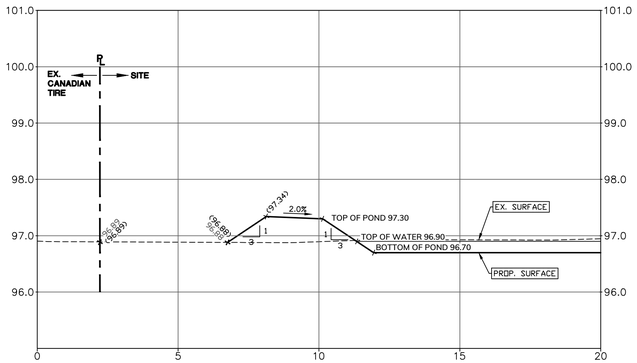


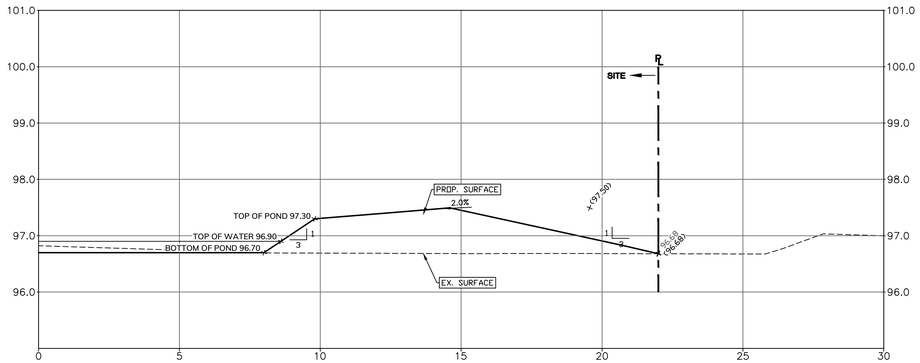
SECTION 1 (POND B)

scale H-1:120 V-1:60



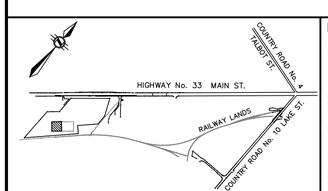
SECTION 2 (POND B)

scale H-1:100 V-1:50



SECTION 3 (POND B)

scale H-1:100 V-1:50



KEY PLAN
Scale : N.T.S.

SUBJECT LANDS

NOTES:

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND UNDERGROUND AND ABOVE GROUND UTILITIES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS. AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.BEFORE STARTING THE WORK THE CONTRACTOR SHALL CONFIRM OF THE EXACT LOCATION OF ALL UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

THE CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS ON THE JOB AND REPORT ANY DISCREPANCY TO THE ARCHITECTS/ENGINEERS BEFORE PROCEEDN1,7 G WITH THE WORKS.

ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF THE ENGINEER WHICH MUST BE RETURNED AT THE COMPLETION OF WORK.

THIS DRAWING IS NOT TO BE SCALED. CONTRACTOR TO USE DIGITAL FILES FOR LAYOUT PROVIDED BY ENGINEER. THIS PLAN MUST NOT BE USED TO SITE THE PROPOSED BUILDINGS.

THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S CONTRACTOR FROM OBTAINING, BUT NOT LIMITED TO THE FOLLOWING PERMITS: ROAD CUT, SEWER PERMITS, RELOCATION OF SERVICES, ENCROACHMENT AGREEMENTS, APPROACH APPROVAL PERMITS, ETC..

EXISTING TOPOGRAPHICAL INFORMATION, SERVICES AND TERRAIN INFORMATION WERE PROVIDED BY SPEIGHT, VAN NOSTRAND & GIBBSON LIMTIED, ONTARIO LAND SURVEYORS.

BENCH MARK:

ELEVATIONS ARE BASED ON THE CANADIAN GEODETIC DATUM AND WERE DERIVED FROM GEODETIC SURVEYS OF CANADA BENCH MARK 67U143 LOCATED ON TEH LIQUOR STORE BUILDING, HAVING A PUBLISH ELEVATION OF 95.856 metres.

BEARING NOTE:

BEARINGS SHOWN HEREON ARE GRID AND ARE REFERRED TO THE SOUTHERLY LIMIT OF PART 15 AS SHOWN ON PLAN 47R-9102, HAVING A BEARING OF N66°19'15"E.

METRIC NOTE:

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

NO.	REVISIONS	DATE	BY
20	ISSUED FOR SPA PHASE 1 & REVIEW & COORDINATION ISSUED FOR POST TENDER ADDENDUM #2	DEC 11/25	S.S.
19	ISSUED FOR POST TENDER ADDENDUM #1	NOV 11/25	S.S.
18	ISSUED FOR SPA PHASE 1 & REVIEW & COORDINATION	NOV 4/25	Z.Z.
17	ISSUED FOR REVIEW & COORDINATION PHASE 1 & COUNTY COMMENTS	OCT. 28/25	M.H.H.
16	ISSUED FOR MTO REVIEW AND APPROVAL	OCT 27/25	M.H.H.
15	ISSUED FOR MTO REVIEW AND APPROVAL	SEPT 16/25	M.H.H.
~~14~~	~~ISSUED FOR POST TENDER ADDENDUM #1~~	~~AUG 27/25~~	~~S.S.~~
13	ISSUED FOR REVIEW & COORDINATION - AS PER HYDRO ONE COMMENTS	AUG 19/25	S.S.
12	ISSUED FOR TENDER ADDENDUM #1	AUG 06/25	S.S.
11	ISSUED FOR TENDER	JULY 30/25	S.S.

CLIENT : Choice Properties REIT

PROJECT:

PROPOSED RETAIL B
(PHASE 1)
13311 LOYALIST PKWY
PICTON, ON

ODAN·DETECH CONSULTING ENGINEERS
The Odan/Detech Group Inc. P: (905) 632-3811 F: (905) 632-3363
5230 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7L 5K2

SCALE: 0 5 10
1:100 0 1 2 3 4 5
1:50

DRAWING : **CROSS SECTIONS (PHASE 1)**

96206 PROJECT NUMBER

SEP. 2023 DATE:

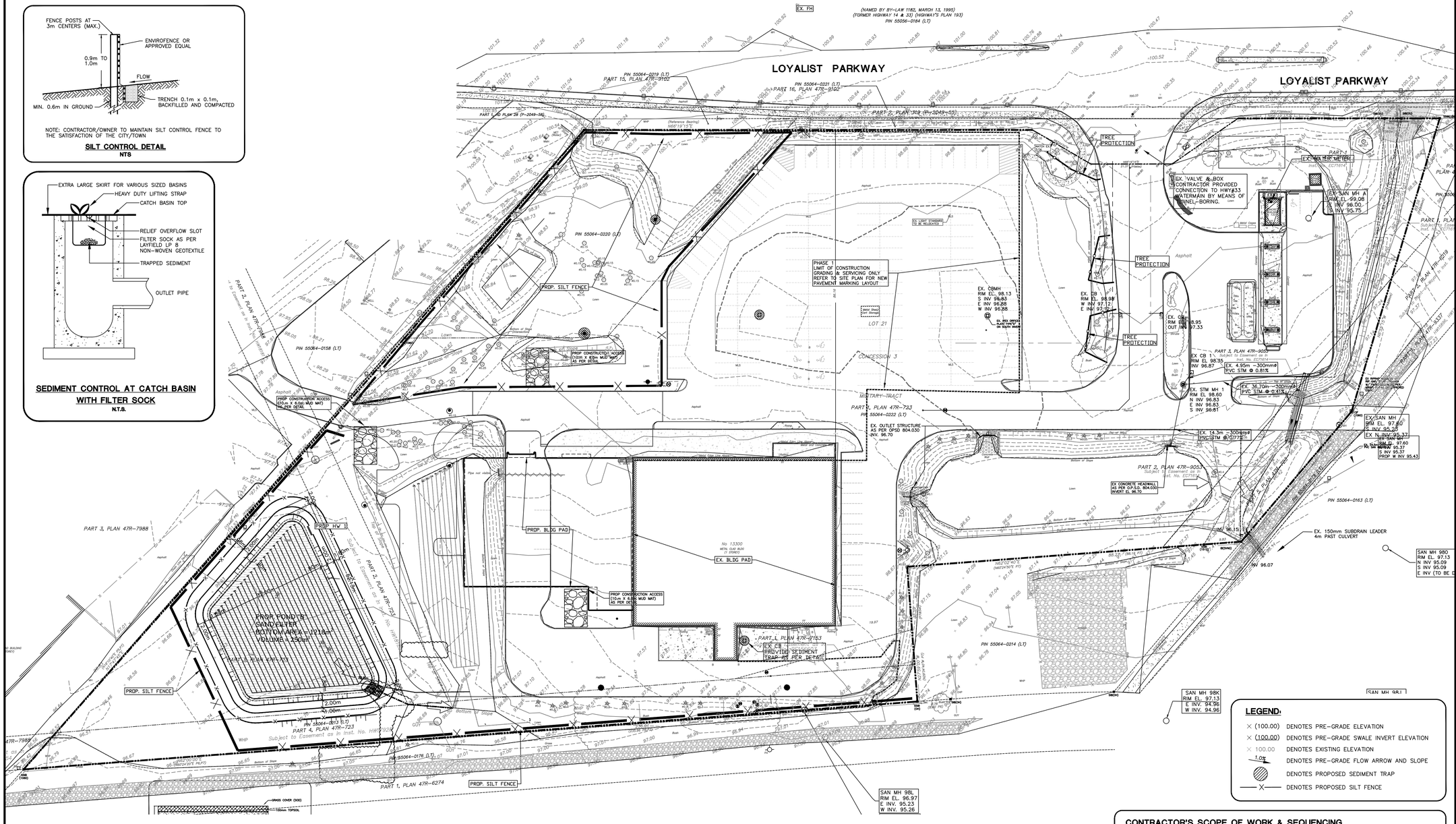
LICENCED PROFESSIONAL ENGINEER
DEC. 11/25
P.J. HECIMOVIC
100128660
PROVINCE OF ONTARIO
ENGINEER

DESIGN BY: M.H.H.
DRAWN BY: Z.Z.
CHECKED BY: M.H.H.
APPROVED BY: P.H.
DRWG. NO.: **3 OF 5**

NOTE: CONTRACTOR/OWNER TO MAINTAIN SILT CONTROL FENCE TO THE SATISFACTION OF THE CITY/TOWN

SILT CONTROL DETAIL
NTS

SEDIMENT CONTROL AT CATCH BASIN WITH FILTER SOCK
N.T.S.


LOYALIST PARKWAY
(NAMED BY BY-LAW 1183, MARCH 13, 1995)
(FORMER HIGHWAY 14 & 33) (HIGHWAY'S PLAN 193)
PIN 55056-0184 (LT)
EX. FH
PIN 55064-0219 (LT)
PART 15, PLAN 47R-9102
PIN 55064-0221 (LT)
PART 16, PLAN 47R-9102
PART 2, PLAN 319 (RS-2049-55)
PART 1, PLAN 58 (P-3049-58)
Reference Bearing N66°19'15"E
TREE PROTECTION
EX. WATER METER
EX. VALVE & BOX CONTRACTOR PROVIDED CONNECTION TO HWY#33 WATERMAIN BY MEANS OF TUNNEL-BORING.
EX. SAN MH A RIM EL. 99.06 IN/ OUT INV 95.75
PART 1, PLAN 47R-6819
PIN 55064-0220 (LT)
PROP. SILT FENCE
PHASE 1 LIMIT OF CONSTRUCTION GRADING & SERVICING ONLY REFER TO SITE PLAN FOR NEW PAVEMENT MARKING LAYOUT
EX. CBMH RM EL. 98.13 S INV 96.83 E INV 96.88 W INV 96.88
EX. DB RIM EL. 98.98 W INV 97.12 E INV 97.22
EX. MH RIM EL. 98.95 OUT INV 97.33
EX CB RIM EL 98.35 INV 96.87
EX. 4.95m ~300mm ø PVC STM @ 0.81%
EX. 36.70m ~300mm ø PVC STM @ 0.41%
EX. STM MH 1 RIM EL 98.60 N INV 96.83 E INV 96.83 S INV 96.81
EX. 14.3m ~300mm ø PVC STM @ 0.77%
EX/SAN MH RIM EL 97.80 S INV 95.28 EX N INV 94.37
SAN MH 98O RIM EL. 97.13 N INV 95.09 S INV 95.09 E INV (TO BE C
PART 1, PLAN 47R-9057
PART 2, PLAN 47R-9057
PART 1, PLAN 47R-9057
PART 2, PLAN 47R-7988
PART 3, PLAN 47R-7988
PART 2, PLAN 47R-7988
PART 2, PLAN 47R-723
PART 3, PLAN 47R-7988
PART 1, PLAN 47R-6219
PART 1, PLAN 47R-5337
PART 1, PLAN 47R-6274
PART 1, PLAN 47R-7153
PART 4, PLAN 47R-723
PART 1, PLAN 47R-6274
PIN 55064-0158 (LT)
PIN 55064-0222 (LT)
PIN 55064-0163 (LT)
PIN 55064-0214 (LT)
PIN 55064-0213 (LT)
PIN 55064-0176 (LT)
LOT 21
CONCESSION 3
MILITARY TRACT
PROP. BLDG PAD
EX. BLDG PAD
No 13300
METAL CLAD BLDG (1 STOREY)
PROP. CONSTRUCTION ACCESS (10m X 6.0m MUD MAT) AS PER DETAIL
PROP. CONSTRUCTION ACCESS (10m X 6.0m MUD MAT) AS PER DETAIL
PROP. HV 1
PROP. POND 1 SAND FILTER BOTTOM AREA = 1218m² VOLUME = 350m³
Bottom of Slope EL=97.00
Top of Slope EL=98.00
2.00m
1.00m
EX. OUTLET STRUCTURE AS PER OPSD 804.030 INV. 96.70
EX CONCRETE HEADWALL AS PER O.P.S.D. 804.030 INVERT EL 96.70
EX. 150mm SUBDRAIN LEADER 4m PAST CULVERT
INV. 96.15
INV. 96.07
EX. CB PROVIDE SEDIMENT TRAP AS PER DETAIL
SAN MH 98K RIM EL. 97.13 E INV. 94.96 W INV. 94.96
SAN MH 98L RIM EL. 96.97 E INV. 95.23 W INV. 95.26
SAN MH 98I
PROP. SILT FENCE
PROP. SILT FENCE
GRASS COVER (SOD) 100mm TOPSOIL
Subject to Easement as in Inst. No. HW73014
Subject to Easement as in Inst. No. HW73015
Subject to Easement as in Inst. No. HW73016
Subject to Easement as in Inst. No. HR1337
Subject to Easement as in Inst. No. HR1338
Subject to Easement as in Inst. No. HR1339
Subject to Easement as in Inst. No. HR1340
Subject to Easement as in Inst. No. HR1341
Subject to Easement as in Inst. No.

GENERAL NOTES

1. DRAWINGS ARE NOT TO BE SCALED.
2. DO NOT SITE BUILDINGS WITH THIS DRAWING.
3. ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE SITE PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER BEFORE PROCEEDING.
4. UNLESS OTHERWISE NOTED ON THE DRAWINGS THE STANDARD CITY, REGION/COUNTY, MTO AND OPSD AND OPSS ARE TO CONSTITUTE PART OF THIS CONTRACT AND SITE PLAN DRAWINGS.
5. REFER TO COUNTY STANDARDS AND SPECIFICATIONS FOR LIST OF APPROVED MANUFACTURERS AND MATERIALS.
6. EXISTING STRUCTURES ARE NOT TO BE DISTURBED, NOR ENCROACHMENT ON ADJACENT PROPERTIES UNLESS INSTRUCTED BY THE ENGINEER.
7. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNERS CONTRACTOR FROM OBTAINING AND PAYING FOR, BUT NOT LIMITED TO THE FOLLOWING PERMITS, ROAD CUTS, SEWER PERMITS, RELOCATION OF SERVICES, ENCROACHMENT AGREEMENTS, APPROACH APPROVAL PERMITS, ETC. ALL RESTORATION AS PER COUNTY STANDARDS.
8. PRIOR TO CONSTRUCTION, THE ENGINEER IS TO BE NOTIFIED BY THE OWNER AND THE CONTRACTOR AS TO THE EXTENT OF THE CONSTRUCTION LIMITS THEY PROPOSE. THE COUNTY IS TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
9. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE SITE PLAN, LANDSCAPE PLAN, SITE ELECTRICAL PLANS, AND ANY OTHER PLANS OR DRAWINGS WHICH DEPICT WORKS THAT ARE PROPOSED FOR THIS SITE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS. ALL SIGNS, ETC. SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS FOR THE COUNTY AND THE MTO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR ONTARIO.
11. THE CONTRACTOR SHALL ENDEAVOR TO PREVENT MUD TRACKING ONTO EXISTING RIGHT-OF-WAYS AND SHALL PROVIDE FOR CLEANUP AT HIS OWN EXPENSE AS DIRECTED BY THE COUNTY. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE TO CONTROL DUST ON THE PROJECT AND HE SHALL PROVIDE AT HIS OWN EXPENSE, CONTROLLING MEASURES AS DIRECTED BY THE COUNTY.
12. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION. LOCATION OF EXISTING UTILITIES TO BE VERIFIED IN THE FIELD.
13. THE CONTRACTOR SHALL RECTIFY ALL DISTURBED AREAS TO ORIGINAL CONDITION OR BETTER AND TO THE SATISFACTION OF THE COUNTY.
14. BLASTING WILL NOT BE ALLOWED UNLESS AUTHORIZED BY THE COUNTY.
15. ANY UTILITY RELOCATIONS DUE TO THIS DEVELOPMENT TO BE UNDERTAKEN AT THE EXPENSE OF THE OWNER/DEVELOPER.
16. ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF THE ENGINEER WHICH MUST BE RETURNED AT THE COMPLETION OF WORK.
17. DRIVEWAYS SHALL BE SETBACK A MINIMUM CLEARANCE OF 1.0 m. FROM ALL ABOVEGROUND SERVICES OR OTHER OBSTRUCTIONS.
18. ALL CONSTRUCTION WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
19. CONSTRUCTION ACCESS SHALL BE CONSTRUCTED WITH A MIN. OF 450mm THICK CRUSHED STONE BASE FROM MUNICIPAL CURB OR EDGE OF PAVEMENT TO THE PROPERTY LINE TO THE SATISFACTION OF THE COUNTY. LOCATION SHALL BE AS PER THE COUNTY.
20. MINIMUM CLEARANCE OF 1.0m FROM ALL ABOVE GROUND SERVICES AND UTILITIES.
21. OUTSIDE LIGHTING TO BE DIRECTED DOWNWARD AS WELL AS INWARD AND DESIGNED TO MAINTAIN ZERO CUTOFF LIGHT DISTRIBUTION AT THE PROPERTY LINE.
22. ALL WORKS WITHIN COUNTY RIGHT-OF-WAY TO BE PERFORMED BY COUNTY FORCES OR AN APPROVED CONTRACTOR AS PER COUNTY ACCEPTANCE, UNLESS OTHERWISE DIRECTED BY THIS ENGINEER.
23. ALL EXISTING SEWERS ARE TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION INCLUDING SEWER INVERTS, MATERIAL TYPE, AND SIZE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.
24. ALL RELOCATION, RECONSTRUCTION AND RESTORATION TO BE PERFORMED TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING.

GRADING

1. THE GRADING PLAN IS TO BE READ WITH THE SITE SERVICES DRAWING AND THE SITE PLAN. FOR BUILDING DETAILS REFER TO THE LATEST REVISION OF THE SITE PLAN AS PER THE ARCHITECT.
2. CONTRACTOR TO RESTORE ALL DISTURBED AREAS (I.E. PUBLIC R.O.W., ADJACENT LANDS) WHICH HAVE BEEN DISTURBED DURING CONSTRUCTION TO PREVIOUS OR BETTER CONDITION & TO THE SATISFACTION OF THE COUNTY.
3. ALL DRIVEWAY AND GRADING MATERIAL AND CONSTRUCTION METHODS MUST CONFORM TO CURRENT COUNTY STANDARDS AND SPECIFICATIONS.
4. ALL FILL WITHIN THE SITE TO BE COMPACTED TO A MIN. OF 100% STD. PROCTOR DENSITY. THE SUITABILITY OF ALL FILL MATERIALS ARE TO BE CONFIRMED BY A RECOGNIZED SOILS CONSULTANT TO THE DIRECTOR OF ENGINEERING PRIOR TO INSTALLATION OF ANY ROAD BASE MATERIALS.
5. LANDSCAPE SHALL NOT ENCROACH ON BOULEVARD NOR SHALL BOULEVARD GRADES BE ALTERED.
6. SILT FENCE(S) TO BE INSTALLED AND MAINTAINED TO PREVENT SILT FLOWING ONTO ADJACENT LANDS SILTATION CONTROL METHODS SUCH AS ENVIROFENCE OR APPROVED EQUAL SHALL BE ERECTED PRIOR TO ANY GRADING OR CONSTRUCTION AND SHALL BE
7. ANY CHANGES IN GRADES OR CATCH BASINS REQUIRE THE APPROVAL OF THE ODAN/DETECH GROUP INC.
8. ALL LANDSCAPING TO BE INSTALLED AS SOON AS POSSIBLE OR PRIOR TO THE END OF THE FIRST GROWING SEASON. LANDSCAPING TO BE MAINTAINED UNTIL IT IS ESTABLISHED.
9. ALL CONNECTIONS WITH PAVED PORTIONS OF EXISTING ROADS TO BE BACKFILLED WITH GRANULAR 'A' MATERIAL OR LATEST COUNTY SPECIFICATIONS AND COMPACTED TO 100 % SPD.
10. CONSTRUCTION ACCESS SHALL BE CONSTRUCTED WITH A MIN. OF 450mm THICK CRUSHED STONE BASE FROM MUNICIPAL CURB OR EDGE OF PAVEMENT TO THE PROPERTY LINE TO THE SATISFACTION OF THE COUNTY.
11. ALL CURBS ARE TO BE 150mm ABOVE THE PROPOSED GUTTER LINE (G/L) UNLESS NOTED OTHERWISE.
12. PAVEMENT GRADE (MIN. 0.5%, MAX. 8%).
13. DRAINAGE SWALES WITH GRADES (MIN. 0.2%, MAX. 5%).
14. SLOPES IN LANDSCAPE AREAS AND ON BERMS SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL.
15. THE PARKING AREAS AND DRIVEWAY HAVE BEEN DESIGNED ACCORDING TO A FROST SUSCEPTIBILITY FACTOR OF 5. THIS FACTOR IS TO BE VERIFIED BY A SOILS CONSULTANT.

STORM SEWERS

1. ALL STORM SEWERS 450mmø AND SMALLER TO BE PVC SDR 35 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS UNLESS OTHERWISE NOTED. 525mmø AND LARGER TO BE CONCRETE IN ACCORDANCE WITH CSA A257.2, CLASS 65D OR LATEST REVISIONS. UNLESS OTHERWISE NOTED. ROOF TOP STORM LEADS 150mmø AND SMALLER TO BE PVC SDR 28.
2. ULTRA RIBBED PVC PIPE SHALL NOT BE USED, UNLESS OTHERWISE DIRECTED BY THIS ENGINEER.
3. ALL CATCH BASIN LEADS TO BE A MINIMUM OF 300mmø PVC SDR 35 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS, UNLESS OTHERWISE NOTED.
4. BEDDING AND COVER FOR PVC SEWERS (FLEXIBLE PIPE) AS PER OPSD 802.010, GRANULAR "A" COMPACTED TO 100% SPD.
5. BEDDING AND COVER FOR CONCRETE SEWERS (RIGID PIPE) AS PER OPSD 802.030, CLASS B, GRANULAR 'A', COMPACTED TO 100% SPD. UNLESS OTHERWISE SPECIFIED.
6. ALL STORM SERVICES TO BUILDINGS SHALL BE AT A MINIMUM SLOPE OF 1.0%
7. THE CONTRACTOR IS TO CAP ALL STORM SERVICES 2.0 METRES AWAY FROM THE PROPOSED BUILDING LINES UNLESS OTHERWISE NOTED.
8. CULVERT THICKNESS SHALL BE 1.6mm MINIMUM WITH LENGTHS IN STANDARD INCREMENTS OF 3, 6, AND 7 METRES.
9. STORM MANHOLES SHALL BE AS PER OPSD-701.010, 701.011, 701.012, 701.013 AS SPECIFIED. BENCHING TO SPRINGLINE OF PIPE AS PER OPSD-701.021. FRAME & COVER AS PER OPSD-401.01, (TYPE A CLOSED COVER)
10. ALL CATCH BASIN MANHOLES AS PER OPSD 701.010. FRAME AND GRATE AS PER OPSD 400.02.
11. ALL MANHOLE AND CATCH BASIN ADJUSTMENTS SHALL BE AS PER OPSD-704.010. MAXIMUM OF THREE (3) UNITS AND 300mm HIGH, WHERE EXCEED CAST-IN-PLACE OR PRE-CAST RISER SECTIONS SHALL BE PROVIDED.
12. ALL SAFETY GRATES AS PER OPSD 404.020 FOR MANHOLES > 5.0m DEPTH.
13. EXISTING STORM MANHOLE(S) TO BE RE-BENCHED AS REQUIRED, AS PER OPSD-701.021.
14. ALL CATCH BASINS SHALL BE INSTALLED IN ACCORDANCE WITH OPSD 705.010, INCLUDE GOSS TRAP IF REQUIRED BY COUNTY. ALL CATCH BASIN FRAMES AND COVERS AS PER OPSD 400.02.
15. ALL DOUBLE CATCH BASINS SHALL BE INSTALLED IN ACCORDANCE WITH OPSD-705.020, INCLUDE GOSS TRAP IF REQUIRED BY COUNTY. ALL CATCH BASIN FRAMES AND COVERS AS PER OPSD 400.02.
16. ALL DITCH INLET CATCH BASINS SHALL BE AS PER OPSD-705.030, WITH RIP-RAP TREATMENT AS PER OPSD-810.02, WITH GEOTEXTILE (MIRAFI P-140N).
17. ALL CATCH BASIN CONNECTIONS SHALL BE AS PER OPSD-708.01 (RIGID PIPE) AND OPSD-708.03 (FLEXIBLE PIPE).
18. ALL CATCH BASINS CONSTRUCTED IN FILL AREAS TO BE SUPPORTED IN 14MPa. CONCRETE.
19. AT ALL CATCH BASIN & CATCH BASIN MANHOLE SAG POINTS INCLUDE FOUR (4) 4.0m LONG, 100mmø PVC SUBDRAINS WITH FILTER CLOTH. CAP ONE END AND CONNECT THE OTHER TO THE CATCH BASIN OR CATCH BASIN MANHOLE.
20. ALL SEWER SERVICE CONNECTIONS FOR RIGID PIPE SHALL BE AS PER OPSD-1006.01.
21. ALL SEWER SERVICE CONNECTIONS FOR FLEXIBLE PIPE SHALL BE AS PER OPSD-1006.02.
22. ALL CONCRETE OUTLETS AS PER OPSD 605.030 WITH ASPHALT SPILLWAY AND RIP-RAP.
23. ALL RIP-RAP TREATMENT FOR SEWER AND CULVERT OUTLETS SHALL BE AS PER OPSD-810.01, TYPE "B" WITH GEOTEXTILE (MIRAFI P-140N).
24. ALL PAVEMENT REINSTATEMENT SHALL BE AS PER OPSD-509.010, FOR UTILITY CUTS, BACKFILL AS PER COUNTY STD.
25. ALL TESTING OF STORM SERVICES TO BE IN ACCORDANCE WITH ONTARIO PROVINCIAL STANDARD SPECIFICATIONS.
26. CONTRACTOR SHALL PROVIDE COLOUR VIDEO OF STORM SEWER UPON COMPLETION TO THE ENGINEER.

SANITARY

1. ALL SANITARY SEWERS 200mmø AND GREATER ARE TO BE PVC-SDR 35 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS, RUBBER GASKET.
2. ALL SANITARY SEWERS 150mmø AND LESS ARE TO BE PVC-SDR 28 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS, RUBBER GASKET.
3. BEDDING AND COVER FOR PVC SANITARY SEWERS AS PER OPSD 802.010, GRANULAR "A" COMPACTED TO 100% SPD.
4. THE CONTRACTOR IS TO CAP ALL SANITARY SERVICES 2.0 METRES AWAY FROM THE PROPOSED BUILDING LINES UNLESS OTHERWISE NOTED.
5. ALL SANITARY SERVICES TO BUILDINGS SHALL BE AT A MINIMUM SLOPE OF 1.0%
6. SANITARY MANHOLES SHALL BE AS PER OPSD-701.010, 701.011, 701.012, 701.013 AS SPECIFIED. BENCHING TO SPRINGLINE OF PIPE AS PER OPSD-701.021. FRAME & COVER AS PER OPSD-401.01.
7. ALL SAFETY GRATES AS PER OPSD 404.020 FOR MANHOLES > 5.0m DEPTH.
8. ALL MANHOLE DROP STRUCTURES SHALL BE AS PER OPSD-1003.01 (TEE) AND 1003.02 (WYE) AS SPECIFIED.
9. ALL MANHOLE ADJUSTMENTS SHALL BE AS PER OPSD-704.010. MAXIMUM OF THREE (3) UNITS AND 300mm HIGH, WHERE EXCEED CAST-IN-PLACE OR PRE-CAST RISER SECTIONS SHALL BE PROVIDED.
10. PROVIDE WATER TIGHT COVERS FOR SANITARY MANHOLES LOCATED IN PONDING AREAS.
11. ALL SEWER SERVICE CONNECTIONS FOR FLEXIBLE PIPE SHALL BE AS PER OPSD-1006.02.
12. ALL PAVEMENT REINSTATEMENT SHALL BE AS PER OPSD-509.010, FOR UTILITY CUTS, BACKFILL AS PER CITY STD.
13. ALL TESTING OF SANITARY SERVICES TO BE IN ACCORDANCE WITH ONTARIO PROVINCIAL STANDARD SPECIFICATIONS.
14. CONTRACTOR SHALL PROVIDE COLOUR VIDEO OF SANITARY SEWER UPON COMPLETION TO THE ENGINEER.
15. CONTRACTOR SHALL PROVIDE INSULATION FOR SANITARY SEWERS WITH LESS THAN 1.7m OF COVER.

WATER

1. WATERMAIN PIPE TO BE PVC-SDR 18 CL 150 CONFORMING TO CSA B137.3, INCLUDING No. 8 TRACER WIRE BETWEEN HYDRANTS OR OTHER CONDUCTING APPURTENANCES. PIPE SHALL HAVE A MINIMUM COVER OF 1.7m. ALL WATER MAIN JOINTS TO BE APPROVED PUSH-ON. MECHANICAL OR FLANGE TYPE JOINTS AS REQUIRED FOR 1000 kPa RATED PRESSURE. CORROSION PROTECTION FOR ALL FITTINGS, VALVES AND HYDRANTS (HYPROTEC OR EQUAL).
2. ALL DOMESTIC WATER SERVICES SHALL BE TYPE "K" SOFT COPPER AND INSTALLED AS PER OPSD-1104.01 (20mm&25mm) AND OPSD-1104.02 (32mm, 38mm AND 50mm), SIZE AS PER PLAN.
3. BEDDING AND COVER AS PER OPSD 802.010, TYPE 1 & 2, GRANULAR 'A' COMPACTED TO 100% SPD.
4. ALL WATER MAIN FITTINGS AND APPURTENANCES TO BE SELECTED FROM CITY APPROVED MATERIAL LIST FOR WATER.
5. WATER MAINS SHALL HAVE A MINIMUM VERTICAL SEPARATION OF 0.50m BELOW AND 0.30m ABOVE AND A HORIZONTAL SEPARATION OF 2.5m BETWEEN ANY SEWER OR MANHOLE.
6. EXISTING WATER MAIN SHALL BE DEFLECTED BELOW PROPOSED GRADES TO MEET 1.7m COVER AS PER CITY STANDARDS AND SPECIFICATIONS. REPLACE WATER MAIN IF NECESSARY.
7. CONTRACTOR TO CONFIRM THE SIZE AND MATERIAL TYPE OF EXISTING WATER SERVICE AND WATER MAIN PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER.
8. EXISTING WATER MAIN OBVERTS TO BE CONFIRMED ON SITE AT THE TIME OF CONSTRUCTION.
9. WATER MAIN AND SERVICES SHALL BE CAPPED 2.0m FROM BUILDING, UNLESS OTHERWISE NOTED.
10. ALL TAPPING SLEEVES TO BE STAINLESS STEEL SIMILAR TO MUELLER TYPE, COMPLETE WITH VALVE.
11. ALL VALVE AND BOX ASSEMBLIES SHALL BE INSTALLED AS PER OPSD-1101.02.
12. ALL HYDRANTS SHALL BE INSTALLED AS PER OPSD 1105.01, WITH CATHODIC PROTECTION AS PER CITY STANDARDS. ALL HYDRANTS SHALL CONFORM TO AWWA SPECIFICATIONS C502-64. THE DIRECTION SHALL BE COUNTER CLOCKWISE AND THEY SHALL HAVE 2 63.5mm NOZZLES AND 1 100mm STORTZ CONNECTION.
13. ALL THRUST BLOCKING SHALL BE AS PER OPSD-1103.01 (HORIZONTAL) AND OPSD-1103.02 (VERTICAL).
14. FROST COLLARS ARE TO BE PROVIDED ON CURB STOPS AND VALVE BOXES WHEN LOCATED WITHIN THE LIMITS OF THE DRIVEWAY.
15. ALL WATER CHAMBERS SHALL BE AS PER OPSD-1101.010, VALVING SHALL BE AS PER OPSD-1101.030, VALVING AS SPECIFIED.
16. ALL WATER MAIN BLOW-OFF ASSEMBLIES SHALL BE AS PER OPSD-1104.03, 25mmø.
17. ALL PAVEMENT REINSTATEMENT SHALL BE AS PER OPSD-509.010, FOR UTILITY CUTS, BACKFILL AS PER CITY STD.
18. FLUSHING, SWABBING, AND TESTING OF WATER MAIN AS PER MUNICIPAL GUIDELINE: REV 6 – PROCEDURE FOR THE CLEANING, TESTING, DISINFECTION AND CONNECTION OF WATERMAINS JULY 2022.
THE CONTRACTOR MUST PROVIDE 7 DAYS NOTICE TO THE MUNICIPALITY PRIOR TO PERFORMING FLUSHING OF THE HYDRANTS AS PER MUNICIPAL GUIDELINE: REV 6 – PROCEDURE FOR THE CLEANING, TESTING, DISINFECTION AND CONNECTION OF WATERMAINS JULY 2022.

CURBING/SIDEWALKS/ASPHALT

1. ALL PROPOSED INTERNAL CURBING TO BE BARRIER TYPE AS PER ARCHITECT DETAIL. ALL TOPS OF CURBS TO BE 150mm ABOVE PROPOSED GUTTER LINE, UNLESS OTHERWISE NOTED.
2. PROPOSED CURB AND GUTTER ON TRAVELED ROADWAY AS PER CURRENT COUNTY STD.
3. ALL REQUIRED CURB CUTTING AT ENTRANCE AND CURB DEPRESSIONS AT SIDEWALK CROSSINGS SHALL BE INSTALLED TO THE SATISFACTION OF THE COUNTY AND AS PER COUNTY DRAWING
4. CURB CUTS WITHIN THE PUBLIC R.O.W. TO BE PERFORMED TO THE SATISFACTION OF THE COUNTY.
5. ALL PROPOSED ROAD CUTS TO BE PERFORMED AND RESTORED TO THE SATISFACTION OF THE COUNTY, AND IN ACCORDANCE WITH COUNTY STANDARDS & SPECIFICATIONS.
6. CONCRETE SIDEWALK WITHIN PUBLIC R.O.W. AS PER OPSD-310.010 AND OPSD-310.020 (ADJACENT TO CURB). ALL RAMPS SHALL BE AS PER OPSD-310.031. ALL SIDEWALKS SHALL BE 30MPa WITH 7% AIR. ALL CONCRETE SIDEWALKS TO BE MINIMUM 150mm THICK AT RESIDENTIAL DRIVEWAYS AND 200mm THICK THROUGH COMMERCIAL/INDUSTRIAL ENTRANCES HAVE 150mm GRANULAR 'A' BASE, COMPACTED TO 100% SPD.
7. ALL CONCRETE CURB FROM EXISTING ROAD CURB TO STREET LINE SHALL BE AS PER COUNTY STD. ALL CONCRETE CURB HEIGHTS SHALL BE 150mm UNLESS OTHERWISE NOTED. DRIVEWAY CURB TO BE DISCONTINUOUS AT SIDEWALK AND TAPERED BACK 450mm MINIMUM WHERE SIDEWALK CONTINUES THROUGH THE ENTRANCE AS PER OPSD-350.01.
8. APPROPRIATE CONSTRUCTION DETAILS SHOULD BE PROVIDED FOR RETAINING WALLS HIGHER THAN 1.0m. DETAILS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER UPON APPROVAL. HANDRAIL IS REQUIRED WHEN HEIGHT EXCEEDS 0.60m AND SHALL BE AS PER OPSD-980.101.
9. DRIVEWAY ENTRANCE SHALL BE CONSTRUCTED WITH HEAVY DUTY ASPHALT FROM THE BACK OF THE MUNICIPAL CURB OR EDGE OF PAVEMENT TO THE PROPERTY LINE IN ACCORDANCE WITH PRINCE EDWARD COUNTY STANDARDS AND SPECIFICATIONS.
10. PAVEMENT STRUCTURE
THE EXISTING NATIVE AND FILL SOILS MAY BE CONSIDERED ACCEPTABLE AS THE PAVEMENT SUBGRADE, PROVIDED IT IS FREE OF ORGANIC MATERIAL. USING GOOD ENGINEERING AND CONSTRUCTION PRACTICE, THE FOLLOWING MINIMUM PAVEMENT STRUCTURE SHOULD BE USED:

Pavement Structure	Compaction	Heavy Duty	Light Duty
HL-4 Asphaltic Concrete HL-8 Asphaltic Concrete	97 % Marshall Density	40mm 60mm	40mm 40mm
Granular 'A' Base	100 %	150mm	150mm
Granular 'B' Type I or II Sub-base	100 %	400mm	350mm

NOTE: HL-4 and HL-8 asphaltic concrete to conform to Ontario Provincial Specifications (OPSS) Form 310 and 1150.

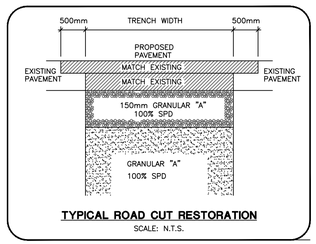
TO ENSURE THE LONGEVITY OF THE PAVEMENT, THE SUBGRADE SHOULD BE GRADED WITH A 1 TO 2% SLOPE AND THE ROADBED SHOULD BE WELL DRAINED AT ALL TIMES. WE RECOMMEND THAT FULLLENGTH PERFORATED SUB-DRAIN PIPES OF 150 MM DIAMETER BE INSTALLED ALONG CURBLINES AND AT ALL LOW POINTS AT CATCHBASINS IN A CRUCIFORM PATTERN, BELOW THE ROADBED LEVEL, TO ENSURE EFFECTIVE DRAINAGE. THE SUB-DRAIN PIPES SHOULD BE SURROUNDED BY 19 mm SIZE CLEAR STONE DRAINAGE ZONE OF MINIMUM 150 mm THICKNESS, WHICH SHOULD HAVE NON-WOVEN GEOTEXTILE (FILTER OPENING SIZE OF 75 TO 150 µm) WRAPAROUND TO MINIMIZE INFILTRATION OF FINES INTO THE PIPES. ALL SUBDRAINS SHOULD BE PROVIDED WITH A FROST FREE OUTLET.

11. ALL CONCRETE TOE WALLS SHALL BE AS PER OPSD 3120.100 TYPE I
12. ALL DEAD END BARRICADES SHALL BE AS PER OPSD-912.532.
13. ALL TEMPORARY STEEL BEAM GUIDE RAILS SHALL BE AS PER OPSD-912.532
14. ALL SECTIONAL PRE-CAST CONCRETE CURBING AS PER OPSD-603.02.
15. PERIMETER SUBDRAINS SHOULD BE PROVIDED AROUND PARKING AREAS AND ALONG DRIVEWAYS.

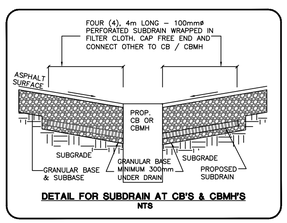
ODAN/DETECH GENERAL NOTES:

THE FOLLOWING NOTES SHALL APPLY IN ADDITION TO PRINCE EDWARD COUNTY STANDARDS AND SPECIFICATIONS.

1. NOTWITHSTANDING THE FOLLOWING GENERAL NOTES, ALL WATERMAIN AND WATER SERVICE INSTALLATIONS MUST BE COMPLETED IN ACCORDANCE WITH THE CURRENT COUNTY STANDARDS AND SPECIFICATIONS.
2. THESE NOTES ARE INTENDED TO SUMMARIZE THE COUNTY'S REQUIREMENTS. HOWEVER, THE CONTRACTOR IS TO CONSULT THE RESPECTIVE COUNTY STANDARD SPECIFICATIONS FOR FURTHER DETAIL AND NOT RELY SOLELY ON THESE NOTES.
3. UNLESS SPECIFIED OTHERWISE, ALL REFERENCES TO COUNTY STANDARD SPECIFICATIONS, STANDARD DRAWINGS OR INDUSTRY STANDARDS REFER TO THE LATEST EDITION.
4. THE COVER FOR ALL WATERMAINS AND WATER SERVICES IS TO BE A MINIMUM OF 1.8m.
5. WHERE A WATERMAIN CROSSES OVER OR UNDER A SANITARY SEWER OR STORM SEWER (INCLUDING LATERALS AND CATCH BASIN LEADS), A MINIMUM CLEAR SEPARATION OF 0.5 METRES MUST BE MAINTAINED, MEASURED FROM PIPE WALL TO PIPE WALL.
6. WHERE A WATERMAIN CROSSES OVER OR UNDER OTHER UTILITIES, 0.30 METRE CLEARANCE SHALL BE PROVIDED, SO THAT PROPER BEDDING CAN BE MAINTAINED.
7. UNLESS SPECIFIED OTHERWISE, A MINIMUM CLEAR HORIZONTAL SEPARATION OF 2.5 METRES MEASURED FROM PIPE WALL TO PIPE WALL, MUST BE MAINTAINED BETWEEN ALL WATERMAINS AND SANITARY MAINS OR STORM MAINS.
8. WHERE A WATERMAIN CROSSES WITHIN 1.5 METRES OF A CATCH BASIN, THE WATERMAIN IS TO BE PROTECTED IN ACCORDANCE WITH COUNTY STANDARDS.
9. WATERMAIN PIPE MATERIALS ARE TO BE AS SPECIFIED ACCORDING TO COUNTY STANDARD SPECIFICATIONS.
10. WATERMAIN FITTING MATERIALS ARE TO BE SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
11. JOINT RESTRAINTS ARE TO BE PROVIDED IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
12. FLOW CONTROL VALVES ARE TO BE AS SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
13. HYDRANTS ARE TO BE LOCATED AWAY FROM DRIVEWAYS, POLES, TRANSFORMERS, SECONDARY PEDESTALS, MAINTENANCE HOLES, AND ANY OTHER ABOVEGROUND APPURTENANCES IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
14. HYDRANTS ARE TO BE CONNECTED TO THE WATERMAIN AS SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
15. THE MINIMUM HORIZONTAL SEPARATION BETWEEN THE WATER SERVICE AND ANY OTHER SEWER LATERAL IS 2.5 METRES.
16. CURB STOPS ARE TO BE LOCATED AWAY FROM DRIVEWAYS, POLES TRANSFORMERS, SECONDARY PEDESTALS, MAINTENANCE HOLES, AND ANY OTHER ABOVE GROUND APPURTENANCES IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
17. CURB STOPS TO BE LOCATED ON THE COUNTY ROAD ALLOWANCE 150mm FROM THE PROPERTY LINE.
18. WATER SERVICES ARE TO BE A MINIMUM DIAMETER OF 25mm.
19. WATER SERVICE MATERIALS, INCLUDING PIPES, FITTINGS, VALVES AND CONNECTIONS, ARE TO BE AS SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
20. WATER SERVICES AT THE TIME OF INSTALLATION THAT ARE INSTALLED ONLY TO THE CURB STOP (E.G. IN A SUBDIVISION) ARE TO BE IDENTIFIED WITH A MARKER IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS. APPROVED SERVICE TUBING, A MINIMUM OF 19mm IN DIAMETER, IS TO BE INSTALLED FROM THE CURB STOP TO THE SURFACE, CAPPED AND STAPLED TO THE POST. THE TUBING IS TO BE USED FOR TESTING PURPOSES ONLY.
21. ALL NEW WATERMAIN AND WATER SERVICE INSTALLATIONS SHALL BE AS PER COUNTY PROCEDURE – MUNICIPAL GUIDELINE: REV 6 – PROCEDURE FOR CLEANING, TESTING, DISINFECTION AND CONNECTION OF WATERMAINS JULY 2022 AND COMMISSIONED IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
22. WATERMAIN PIPE AND FITTINGS, VALVES, HYDRANTS, SERVICES AND ALL OTHER APPURTENANCES ARE TO BE INSTALLED IN ACCORDANCE WITH THE RESPECTIVE COUNTY STANDARD SPECIFICATIONS.
23. THE INTERRUPTION OF EXISTING WATER SERVICE SHALL ONLY BE IN EFFECT IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
24. ANY EXISTING WATER SERVICES TO THE SITE THAT ARE NOT REQUIRED ARE TO BE DISCONNECTED AT THE MAIN IN ACCORDANCE WITH THE REQUIREMENTS OF THE COUNTY AT THE OWNER'S EXPENSE.
25. UNLESS SPECIFIED OTHERWISE ON THE PLAN VIEW DRAWINGS, MAIN LINE PIPES SHALL BE INSTALLED AT THE LOCATIONS IDENTIFIED ON THE TYPICAL CROSS SECTIONS.
26. THE CONTRACTOR SHALL SUBMIT ALL REQUIRED SHOP DRAWINGS AND OTHER SUBMITTALS IN ACCORDANCE WITH THE RESPECTIVE COUNTY STANDARD SPECIFICATIONS PRIOR TO COMMENCING CONSTRUCTION.



TYPICAL ROAD CUT RESTORATION
SCALE: N.T.S.



DETAIL FOR SUBDRAIN AT CB'S & CBMH'S
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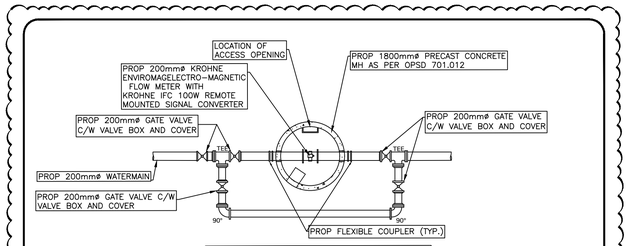
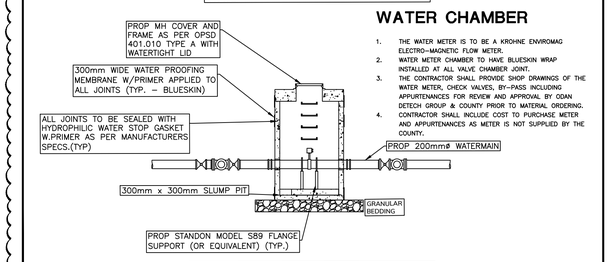


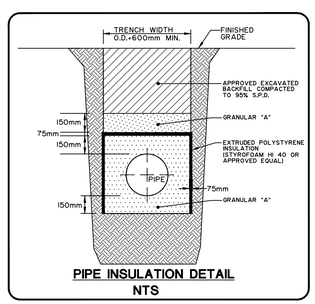
WATER METER CHAMBERS PLAN VIEW - N.T.S

WATER CHAMBER

1. THE WATER METER IS TO BE A KROHNE ENVIROMAG ELECTRO-MAGNETIC FLOW METER.
2. WATER METER CHAMBER TO HAVE BLUESKIN WRAP INSTALLED AT ALL VALVE CHAMBER JOINT.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE WATER METER, CHECK VALVES, BY-PASS INCLUDING APPURTENANCES FOR REVIEW AND APPROVAL BY ODAN DETECH GROUP & COUNTY PRIOR TO MATERIAL ORDERING.
4. CONTRACTOR SHALL INCLUDE COST TO PURCHASE METER AND APPURTENANCES AS METER IS NOT SUPPLIED BY THE COUNTY.



WATER METER CHAMBERS PROFILE VIEW - N.T.S


TRENCH WIDTH 0.D.+600mm MIN.
FINISHED GRADE
APPROVED EXCAVATED BACKFILL COMPACTED TO 95% S.P.D.
150mm
75mm
150mm
GRANULAR "A"
EXTRUDED POLYSTYRENE INSULATION (STYROFOAM HI 40 OR APPROVED EQUAL)
PIPE
75mm
150mm
GRANULAR "A"

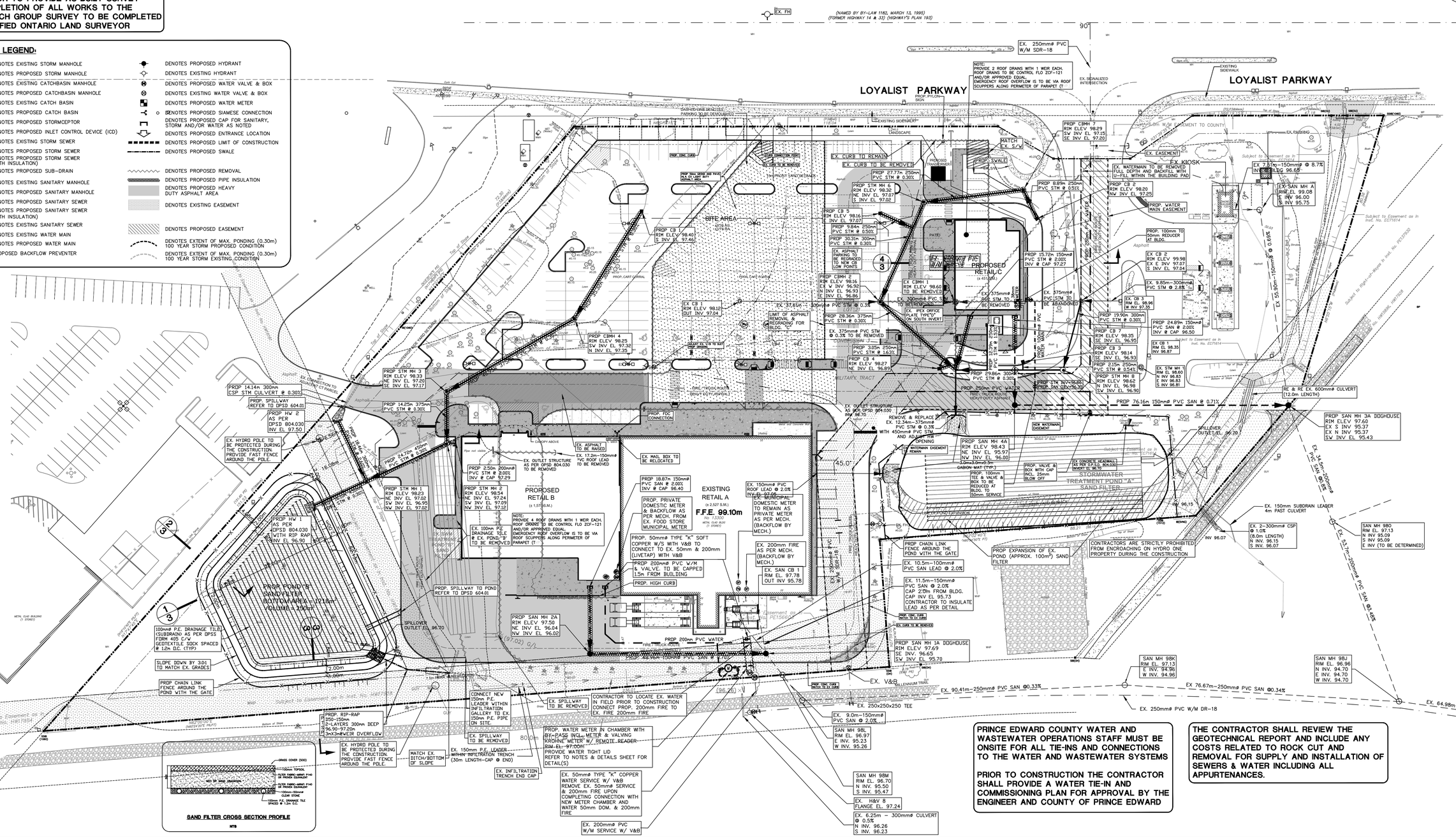
CONTRACTOR TO VERIFY ALL INVERTS, SIZE, MATERIAL, AND LOCATION OF ALL SERVICES PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ODAN/DETECH GROUP

CONTRACTOR TO PROVIDE AS-BUILT SURVEY UPON COMPLETION OF ALL WORKS TO THE ODAN/DETECH GROUP SURVEY TO BE COMPLETED BY A CERTIFIED ONTARIO LAND SURVEYOR

SERVICING LEGEND:

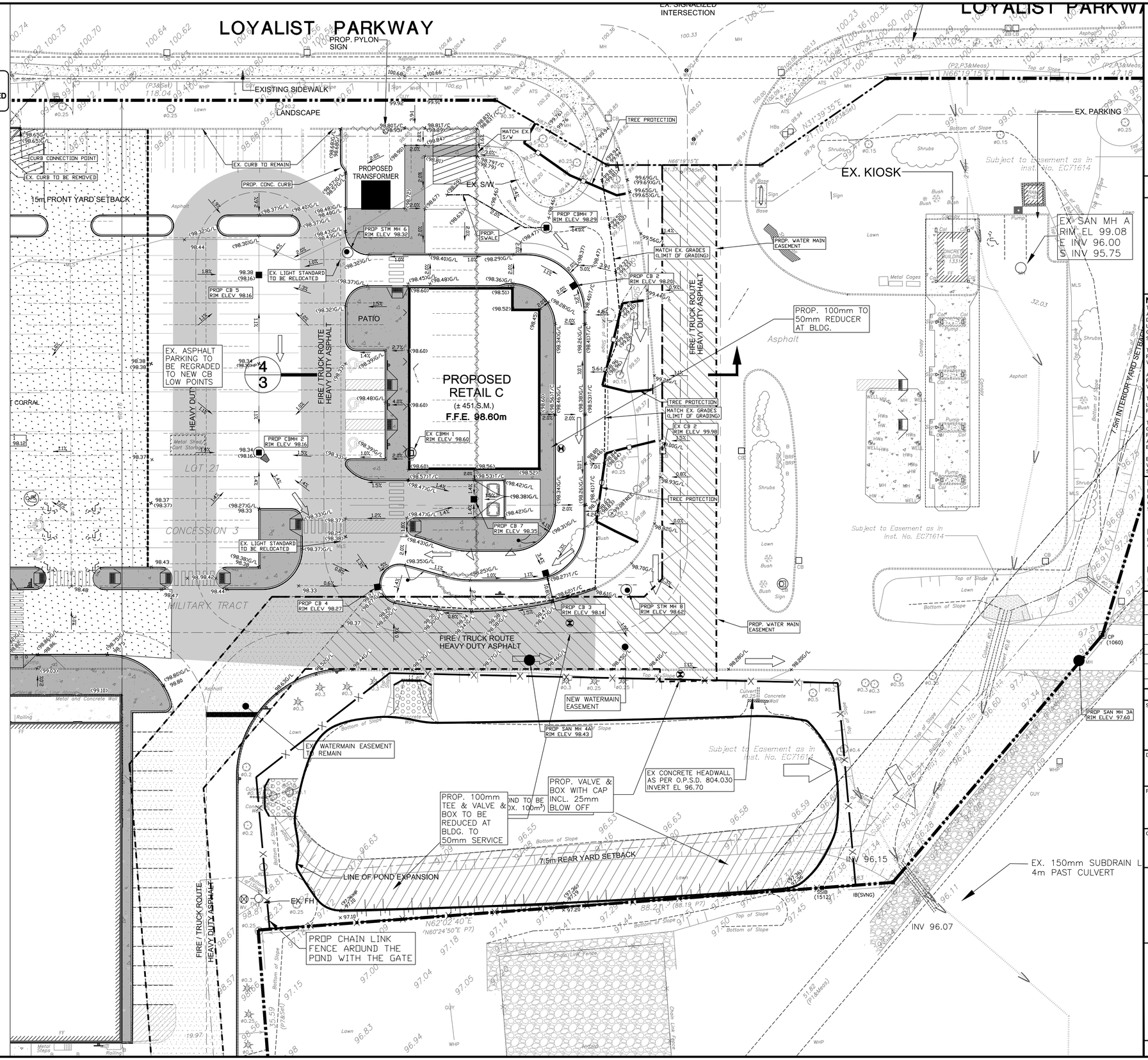
- DENOTES EXISTING STORM MANHOLE
- DENOTES PROPOSED STORM MANHOLE
- DENOTES EXISTING CATCHBASIN MANHOLE
- DENOTES PROPOSED CATCHBASIN MANHOLE
- DENOTES EXISTING CATCH BASIN
- DENOTES PROPOSED CATCH BASIN
- DENOTES PROPOSED STORMCEPTOR
- DENOTES PROPOSED INLET CONTROL DEVICE (ICD)
- DENOTES EXISTING STORM SEWER
- DENOTES PROPOSED STORM SEWER
- DENOTES PROPOSED STORM SEWER (WITH INSULATION)
- DENOTES PROPOSED SUB-DRAIN
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES PROPOSED SANITARY MANHOLE
- DENOTES PROPOSED SANITARY SEWER
- DENOTES PROPOSED SANITARY SEWER (WITH INSULATION)
- DENOTES EXISTING SANITARY SEWER
- DENOTES EXISTING WATER MAIN
- DENOTES PROPOSED WATER MAIN
- (BF) PROPOSED BACKFLOW PREVENTER
- DENOTES PROPOSED HYDRANT
- DENOTES EXISTING HYDRANT
- DENOTES PROPOSED WATER VALVE & BOX
- DENOTES EXISTING WATER VALVE & BOX
- DENOTES PROPOSED WATER METER
- DENOTES PROPOSED SIAMESE CONNECTION
- DENOTES PROPOSED CAP FOR SANITARY, STORM AND/OR WATER AS NOTED
- DENOTES PROPOSED ENTRANCE LOCATION
- DENOTES PROPOSED LIMIT OF CONSTRUCTION
- DENOTES PROPOSED SWALE
- DENOTES PROPOSED REMOVAL
- DENOTES PROPOSED PIPE INSULATION
- DENOTES PROPOSED HEAVY DUTY ASPHALT AREA
- DENOTES EXISTING EASEMENT
- DENOTES PROPOSED EASEMENT
- DENOTES EXTENT OF MAX. PONDING (0.30m) 100 YEAR STORM PROPOSED CONDITION
- DENOTES EXTENT OF MAX. PONDING (0.30m) 100 YEAR STORM EXISTING CONDITION

Construction North


LOYALIST PARKWAY
(NAMED BY BY-LAW 1162, MARCH 15, 1995)
(FORMER HIGHWAY 14 & 33) (HIGHWAY'S PLAN 193)
EX. FH
EX. 250mmø PVC W/M SDR-18
NOTE: PROVIDE 2 ROOF DRAINS WITH 1 WEIR EACH. ROOF DRAINS TO BE CONTROL FLO ZCF-121 AND/OR APPROVED EQUAL. EMERGENCY ROOF OVERFLOW IS TO BE VIA ROOF SCUPPERS ALONG PERIMETER OF PARAPET (T
EX. SIGNALIZED INTERSECTION
EXISTING SIDEWALK
LOYALIST PARKWAY
PROP. PYLON SIGN
EXISTING LANDSCAPE
EX. CURB TO REMAIN
EX. CURB TO BE REMOVED
PROP. CONC. CURB
PROP. SWALE
MATCH EX. S/W
PROP CBMH 7 RIM ELEV 98.29 SW INV EL 97.15 SE INV EL 97.20
EX. EASEMENT
EX. KIOSK
EX. WATERMAIN TO BE REMOVED FULL DEPTH AND BACKFILL WITH U-FILL WITHIN THE BUILDING PAD
EX. 7.0m–150mmø @ 8.7% PVC SAN
IN INV EL 96.65
EX. SAN MH A RIM EL 99.08 E INV 96.00 S INV 95.75
PROP CB 2 RIM ELEV 98.20 NW INV EL 97.25
PROP. WATER MAIN EASEMENT
PROP. 100mm TO 50mm REDUCER AT BLDG.
PROP 8.89m 250mm PVC STM @ 0.51%
PROP 15.72m 150mmø PVC STM @ 2.00% INV @ CAP 97.27
EX CB 2 RIM ELEV 99.98 EX E INV 97.07 S INV EL 97.04
EX. 9.85m–300mmø PVC STM @ 2.8%
EX. CB 1 RIM EL 98.96 N INV 97.35
EX. 55.80m–150mmø @ 0.69% PVC SAN
PROP 24.89m 150mmø PVC SAN @ 2.00% INV @ CAP 96.50
EX CB 1 RIM EL 98.35 INV 96.87
PROP CB 7 RIM ELEV 98.35 SE INV EL 96.95
PROP CB 3 RIM ELEV 98.14 SE INV EL 96.93
PROP 2.15m 250mm PVC STM @ 0.54%
EX. STM MH 1 RIM EL 98.60 N INV 96.83 E INV 96.81
PROP STM MH 8 RIM ELEV 98.62 N INV EL 96.98 SW INV EL 96.90
PROP 19.90m 300mm PVC STM @ 0.30%
PROP STM INV=96.65 PROP SAN DIV=96.50
PROP 76.16m 150mmø PVC SAN @ 0.71%
RE & RE EX. 600mmø CULVERT (12.0m LENGTH)
PROP SAN MH 3A DOGHOUSE RIM ELEV 97.60 EX S INV 95.37 EX N INV 95.37 SW INV EL 95.43
SPILLOVER OUTLET EL 96.70
EX. 34.5m–200mmø PVC SAN @1.45%
EX. 9.37m–200mmø PVC SAN @1.48%
EX. 150mm SUBDRAIN LEADER 4m PAST CULVERT
EX. 2–300mmø CSP @ 1.0% (8.0m LENGTH) N INV. 96.15 S INV. 96.07
INV 96.07
CONTRACTORS ARE STRICTLY PROHIBITED FROM ENCROACHING ON HYDRO ONE PROPERTY DURING THE CONSTRUCTION
PROP EXPANSION OF EX. POND (APPROX. 100m²) SAND FILTER
PROP CHAIN LINK FENCE AROUND THE POND WITH THE GATE
EX. 10.5m–100mmø PVC SAN LEAD @ 2.0%
EX. 11.5m–150mmø PVC SAN @ 2.0% CAP 2.0m FROM BLDG. CAP INV EL 95.73 CONTRACTOR TO INSULATE LEAD AS PER DETAIL
PROP SAN MH 1A DOGHOUSE RIM ELEV 97.69 SE INV. 96.65 SW INV EL 95.70
SAN MH 98K RIM EL. 97.13 E INV. 94.96 W INV. 94.96
SAN MH 98J RIM EL. 96.96 N INV. 94.70 E INV. 94.70 W INV. 94.70
EX. 76.67m–250mmø PVC SAN @0.34%
EX. 64.98m–250mmø PVC SAN @0.
EX. 250mmø PVC W/M DR-18
EX. 90.41m–250mmø PVC SAN @0.33%
EX. 250x250x250 TEE
EX. 9.0m–150mmø PVC SAN @ 2.0%
SAN MH 98L RIM EL. 96.97 E INV. 95.23 W INV. 95.26
SAN MH 98M RIM EL. 96.70 N INV. 95.50 S INV. 95.47
EX. H&V 8 FLANGE EL. 97.24
EX. 6.25m – 300mmø CULVERT @ 0.5% N INV. 96.26 S INV. 96.23
SITE AREA
PROP CB 5 RIM ELEV 98.16 E INV EL 97.07
PROP CB 1 RIM ELEV 98.40 S INV EL 97.46
PROP STM MH 6 RIM ELEV 98.35 NE INV EL 97.07 S INV EL 97.02
PROP 27.77m 250mm PVC STM @ 0.30%
PROP 9.84m 250mm PVC STM @ 0.50%
PROP 30.31m 300mm PVC STM @ 0.30%
EX. ASPHALT PARKING TO BE REGRADED TO NEW CB LOW POINTS
PROPOSED RETAIL C (1,410.00M.)
EX CBMH 1 RIM ELEV 98.60 TO BE REMOVED
EX. 300mmø PVC STM TO BE REMOVED
EX. 375mmø PVC STM TO BE ABANDONED
EX. IPEX ORIFICE PLATE TYPE"D" ON SOUTH INVERT
PROP CBMH 2 RIM ELEV 98.16 EX W INV EL 96.70 N INV EL 96.93 E INV EL 96.86
PROP CBMH 4 RIM ELEV 98.25 SW INV EL 97.32 N INV EL 97.35
EX CB 1 RIM ELEV 98.12 OUT INV 97.64
EX. 37.61m – 300mmø PVC STM @ 0.3%
LIMIT OF ASPHALT REMOVAL & REGRADING FOR BLDG. "C"
PROP 28.36m 375mm PVC STM @ 0.30%
EX. 375mmø PVC STM @ 0.3% TO BE REMOVED
PROP CB 4 RIM ELEV 98.27 NE INV EL 96.87
PROP 3.05m 250mm PVC STM @ 1.63%
PROP 29.86m 300mm PVC STM @ 0.30%
PROP. 250mm PVC WATER
PROP. TRUCK ROUTE HEAVY DUTY ASPHALT
MILITARY TRACT
PROP STM MH 3 RIM ELEV 98.33 NE INV EL 97.20 SE INV EL 97.17
PROP 14.14m 300mm CSP STM CULVERT @ 0.30%
EX. CONNECTION TO AQUACITY CT PARCEL
PROP. SPILLWAY REFER TO OPSD 604.01
PROP INV 2 AS PER OPSD 804.030 INV EL 97.50
PROP 14.25m 375mm PVC STM @ 0.30%
EX. HYDRO POLE TO BE PROTECTED DURING THE CONSTRUCTION. PROVIDE FAST FENCE AROUND THE POLE.
PROP 24.39m 450mm PVC STM @ 0.30%
PROP STM MH 1 RIM ELEV 98.23 NE INV EL 97.02 SW INV EL 96.95 NW INV EL 97.02
PROP INV 1 AS PER OPSD 804.030 WITH RIP RAP INV EL 96.90
PROP. FOC CONNECTION
CANOPY ABOVE
EX. ASPHALT TO BE RAISED
EX. 17.2m–150mmø PVC ROOF LEAD TO BE REMOVED
EX. MAIL BOX TO BE RELOCATED
PROP 2.50m 200mmø PVC STM @ 3.00% INV @ CAP 97.29
EX. OUTLET STRUCTURE AS PER OPSD 804.030 TO BE REMOVED
PROP STM MH 2 RIM ELEV 98.54 NE INV EL 97.24 SW INV EL 97.09 NW INV EL 97.12
EX. 100mm P.E. DRAINAGE TILE @ EX. POND "B" TO BE REMOVED
NOTE: PROVIDE 4 ROOF DRAINS WITH 1 WEIR EACH. ROOF DRAINS TO BE CONTROL FLO ZCF-121 AND/OR APPROVED EQUAL. EMERGENCY ROOF OVERFLOW IS TO BE VIA ROOF SCUPPERS ALONG PERIMETER OF PARAPET (T
PROPOSED RETAIL B (1,575.6 M.)
PROP 18.87m 150mmø PVC SAN @ 2.00% INV @ CAP 96.40
EXISTING RETAIL A (1,537.9 M.)
F.F.E. 99.10m
PROP. PRIVATE DOMESTIC METER & BACKFLOW AS PER MECH. FROM EX. FOOD STORE MUNICIPAL METER
EX. MUNICIPAL DOMESTIC METER TO REMAIN AS PRIVATE METER AS PER MECH. (BACKFLOW BY MECH.)
EX. 200mm FIRE AS PER MECH. (BACKFLOW BY MECH.)
PROP. 50mmø TYPE "K" SOFT COPPER W/S WITH V&B TO CONNECT TO EX. 50mm & 200mm (LIVETAP) WITH V&B
PROP 200mmø PVC W/M & VALVE, TO BE CAPPED 1.5m FROM BUILDING
PROP. HIGH CURB
EX. SAN CB 1 OUT INV 95.78
PROP SAN MH 2A RIM ELEV 97.50 NE INV EL 96.04 NW INV EL 96.02
PROP. SPILLWAY TO POND REFER TO OPSD 604.01
PROP 200mm PVC WATER
PROP 49.95m 150mmø PVC SAN @ 1.0%
PROP. POND "B" SAND FILTER BOTTOM AREA=1218m² VOLUME=1,290m³
SPILLOVER OUTLET EL 96.70
100mmø P.E. DRAINAGE TILE (SUBDRAIN AS PER OPSS FORM 405 C/W GEOTEXTILE SOCK SPACED @ 12m O.C. (TYP.)
SLOPE DOWN BY 3.0:1 TO MATCH EX. GRADES
PROP CHAIN LINK FENCE AROUND THE POND WITH THE GATE
2.00m
1.00m
CONNECT NEW 150mm P.E. LEADER WITHIN INFILTRATION GALLERY TO EX. 150mm P.E. PIPE ON SITE.
EX. SPILLWAY TO BE REMOVED
CONTRACTOR TO LOCATE EX. WATER IN FIELD PRIOR TO CONSTRUCTION CONNECT PROP. 200mm FIRE TO EX. FIRE 200mm FIRE
PROP. RIP-RAP 250–150mm D=LAYERS 300mm DEEP 96.90–97.20m 3m×3m×WEIR OVERFLOW
EX. HYDRO POLE TO BE PROTECTED DURING THE CONSTRUCTION. PROVIDE FAST FENCE AROUND THE POLE.
MATCH EX. DITCH/BOTTOM OF SLOPE
EX. 150mm P.E. LEADER WITHIN INFILTRATION TRENCH (30m LENGTH–CAP @ END)
EX. INFILTRATION TRENCH END CAP
PROP. WATER METER IN CHAMBER WITH BY-PASS INCL. METER & VALVING. KROHNE METER W/ REMOTE READER RIM EL. 97.00m PROVIDE WATER TIGHT LID REFER TO NOTES & DETAILS SHEET FOR DETAIL(S)
EX. 50mmø TYPE "K" COPPER WATER SERVICE W/ V&B REMOVE EX. 50mmø SERVICE & 200mm FIRE UPON COMPLETING CONNECTION WITH NEW METER CHAMBER AND WATER 50mm DOM. & 200mm FIRE
EX. 200mmø PVC W/M SERVICE W/ V&B
EX. V&R
PROP. VALVE & BOX WITH CAP INCL. 25mm BLOW OFF
PROP. 100mm TEE & VALVE & BOX TO BE REDUCED AT BLDG. TO 150mm SERVICE
EX CONCRETE HEADWALL TO BE REMOVED
EX. WATERMAIN EASEMENT TO REMAIN
NEW WATERMAIN EASEMENT
EX. OPENING
PROP SAN MH 4A RIM ELEV 98.43 NE INV EL 95.97 NW INV EL 96.00
3.0m×3.0m×0.3m GABION MAT (TYP.)
REMOVE & REPLACE EX. 12.34m–375mm PVC STM @ 0.3% WITH 450mm PVC STM AND ADJUST MH
45.0°
STORMWATER TREATMENT POND "A" SAND FILTER
EX. 100mm P.E. DRAINAGE TILE @ EX. POND "B" TO BE REMOVED
EX. ASPHALT PARKING TO BE REGRADED TO NEW CB LOW POINTS
EX. 200mm PVC W/M
EX. 250mmø PVC W/M
EX. 375mmø PVC W/M
EX. 300mmø PVC W/M
EX. 150mmø PVC W/M
EX. 100mmø PVC W/M
EX. 200mmø PVC W/M
EX. 50mmø PVC W/M
EX. 600mmø

CONTRACTOR TO VERIFY ALL INVERTS, SIZE, MATERIAL, AND LOCATION OF ALL SERVICES PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ODAN/DETECH GROUP

CONTRACTOR TO PROVIDE AS-BUILT SURVEY UPON COMPLETION OF ALL WORKS TO THE ODAN/DETECH GROUP SURVEY TO BE COMPLETED BY A CERTIFIED ONTARIO LAND SURVEYOR



GRADING LEGEND:

- DENOTES EXISTING STORM MANHOLE
- DENOTES PROPOSED STORM MANHOLE
- DENOTES EXISTING CATCHBASIN MANHOLE
- DENOTES PROPOSED CATCHBASIN MANHOLE
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- DENOTES PROPOSED CATCHBASIN
- DENOTES PROPOSED STORMCEPTOR
- DENOTES EXISTING SANITARY MANHOLE
- DENOTES PROPOSED SANITARY MANHOLE
- DENOTES PROPOSED HYDRANT
- DENOTES EXISTING HYDRANT
- DENOTES PROPOSED WATER VALVE & BOX
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- DENOTES PROPOSED WATER METER
- DENOTES PROPOSED SIAMESE CONNECTION
- DENOTES PROPOSED LIMIT OF CONSTRUCTION
- DENOTES PROPOSED SWALE
- DENOTES PROPOSED REMOVAL
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- (100.00) DENOTES EXISTING ELEVATION (PRE-DESIGNED)
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- <100.00>T/C DENOTES PROPOSED TOP OF CURB ELEVATION
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- DENOTES EMERGENCY OVERLAND FLOW
- DENOTES PROPOSED SLOPE (3:1 OR HIGHER)
- 195.50 DENOTES EXISTING CONTOUR
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- DENOTES PROPOSED ENTRANCE LOCATION
- DENOTES EXTENT OF MAX. PONDING (0.30m) 100 YEAR STORM PROPOSED CONDITION
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- DENOTES PROPOSED HEAVY DUTY ASPHALT AREA
- DENOTES EXISTING EASEMENT
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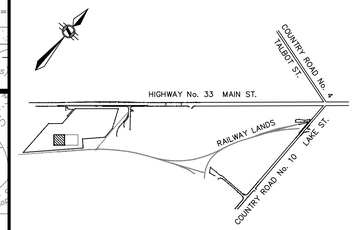

KEY PLAN Scale : N.T.S.

SUBJECT LANDS

NOTES:

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND UNDERGROUND AND ABOVE GROUND UTILITIES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.BEFORE STARTING THE WORK THE CONTRACTOR SHALL CONFIRM OF THE EXACT LOCATION OF ALL UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

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THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S CONTRACTOR FROM OBTAINING, BUT NOT LIMITED TO THE FOLLOWING PERMITS: ROAD CUT, SEWER PERMITS, RELOCATION OF SERVICES, ENCROACHMENT AGREEMENTS, APPROACH APPROVAL PERMITS, ETC..

EXISTING TOPOGRAPHICAL INFORMATION, SERVICES AND TERRAIN INFORMATION WERE PROVIDED BY SPEIGHT, VAN NOSTRAND & GIBSON LIMTIED, ONTARIO LAND SURVEYORS.

BENCH MARK:

ELEVATIONS ARE BASED ON THE CANADIAN GEODETIC DATUM AND WERE DERIVED FROM GEODETIC SURVEYS OF CANADA BENCH MARK 67U143 LOCATED ON TEH LIQUOR STORE BUILDING, HAVING A PUBLISH ELEVATION OF 95.856 metres.

BEARING NOTE:

BEARINGS SHOWN HEREON ARE GRID AND ARE REFERRED TO THE SOUTHERLY LIMIT OF PART 15 AS SHOWN ON PLAN 47R-9102, HAVING A BEARING OF N66°19'15"E.

METRIC NOTE:

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

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13	ISSUED FOR REVIEW & COORDINATION - AS PER HYDRO ONE COMMENTS	AUG. 19/25	S.S.
12	ISSUED FOR TENDER ADDENDUM #1	AUG. 06/25	S.S.

SCALE(S):

1:250 0 5 10 15 20 25

DRAWING TITLE:

SITE GRADING PLAN (EAST) (PHASE 1 & PHASE 2)

PROJECT:

PROPOSED RETAIL B & C

13311 LOYALIST PKWY PICTON, ON

CLIENT:

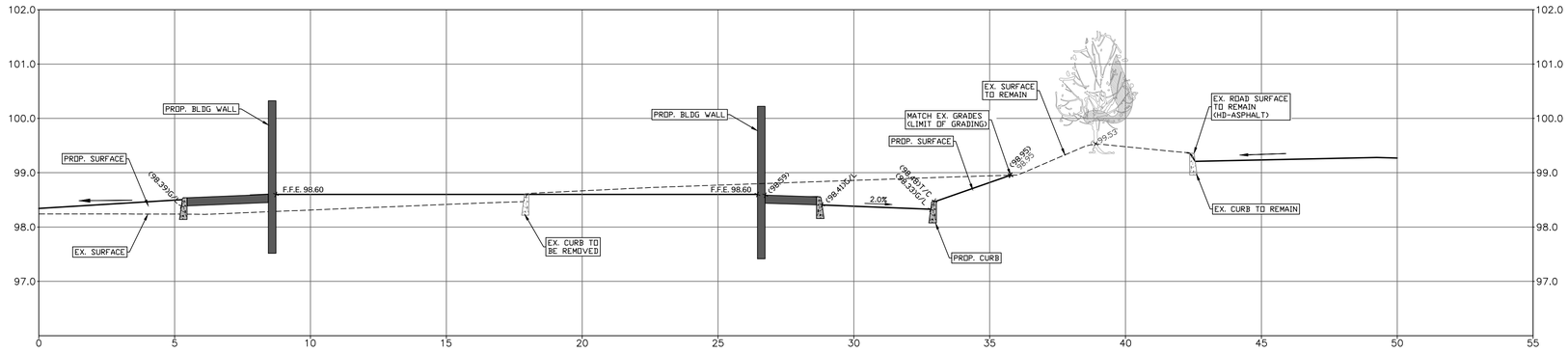
Choice Properties REIT

ODAN·DETECH CONSULTING ENGINEERS

The Odan/Detech Group Inc. P: (905) 632-3811 F: (905) 632-3363
5230 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7L 5K2

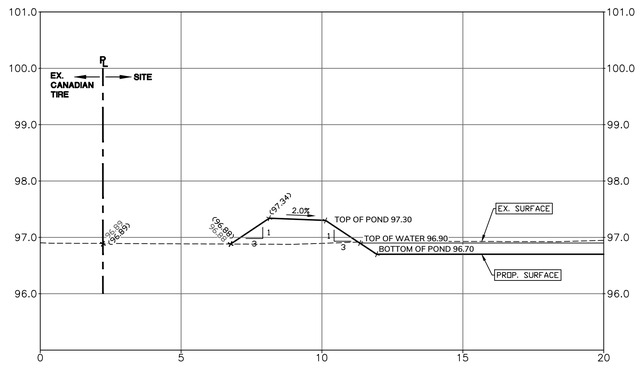
DESIGNED BY:	M.H.H.
DRAWN BY:	Z.Z.
CHECKED BY:	M.H.H.
APPROVED BY:	P.H.
PROJECT No:	96206
DATE:	SEP. 2023
DRAWING No.:	3 OF 6

ENGINEER



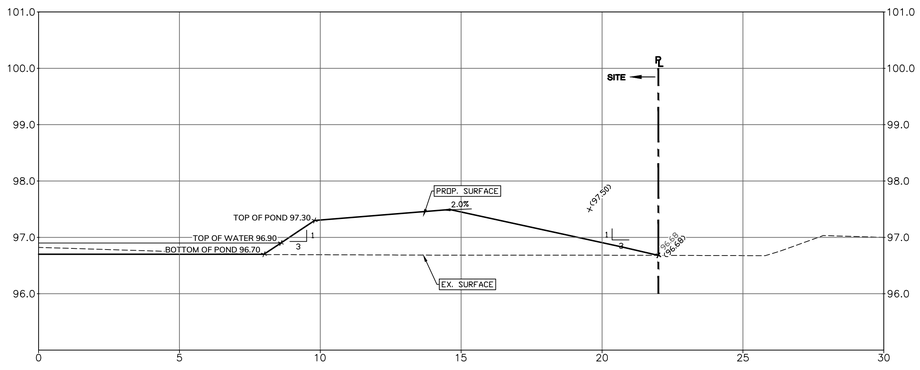
SECTION 4 (BLDG C)

scale H-1:100 V-1:50



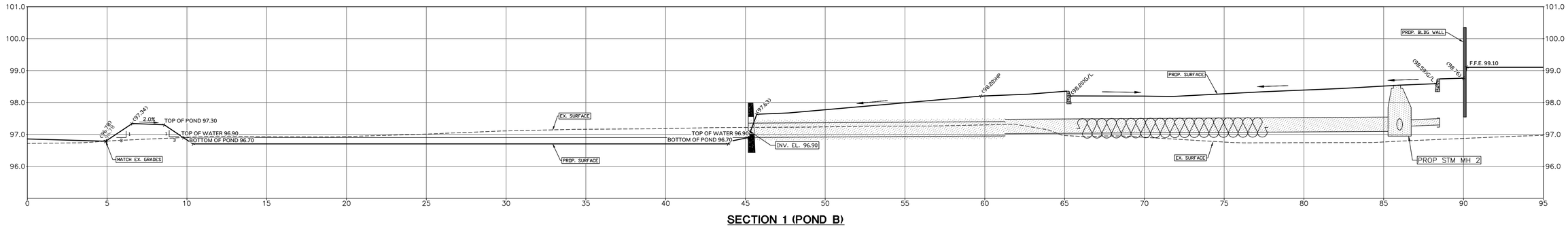
SECTION 2 (POND B)

scale H-1:100 V-1:50



SECTION 3 (POND B)

scale H-1:100 V-1:50



SECTION 1 (POND B)

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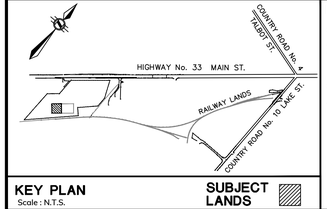

KEY PLAN
Scale : N.T.S.

SUBJECT LANDS

NOTES:

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11	ISSUED FOR TENDER	JULY 30/25	S.S.
10	ISSUED FOR SPA	JULY 17/25	Z.Z.

CLIENT : Choice Properties REIT

PROJECT:

PROPOSED RETAIL B & C

13311 LOYALIST PKWY
PICTON, ON

ODAN·DETECH CONSULTING ENGINEERS
The Odan/Detech Group Inc. P: (905) 632-3811 F: (905) 632-3363
5230 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7L 5K2

SCALE: 0 5 10
1:100
0 1 2 3 4 5
1:50

DRAWING : **CROSS SECTIONS (PHASE 1 & PHASE 2)**

96206
PROJECT NUMBER

SEP. 2023
DATE:

ENGINEER

DESIGN BY: M.H.H.
DRAWN BY: Z.Z.
CHECKED BY: M.H.H.
APPROVED BY: P.H.
DRWG. NO.: 4 OF 6

CONTRACTOR TO VERIFY ALL INVERTS, SIZE, MATERIAL, AND LOCATION OF ALL SERVICES PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ODAN/DETECH GROUP

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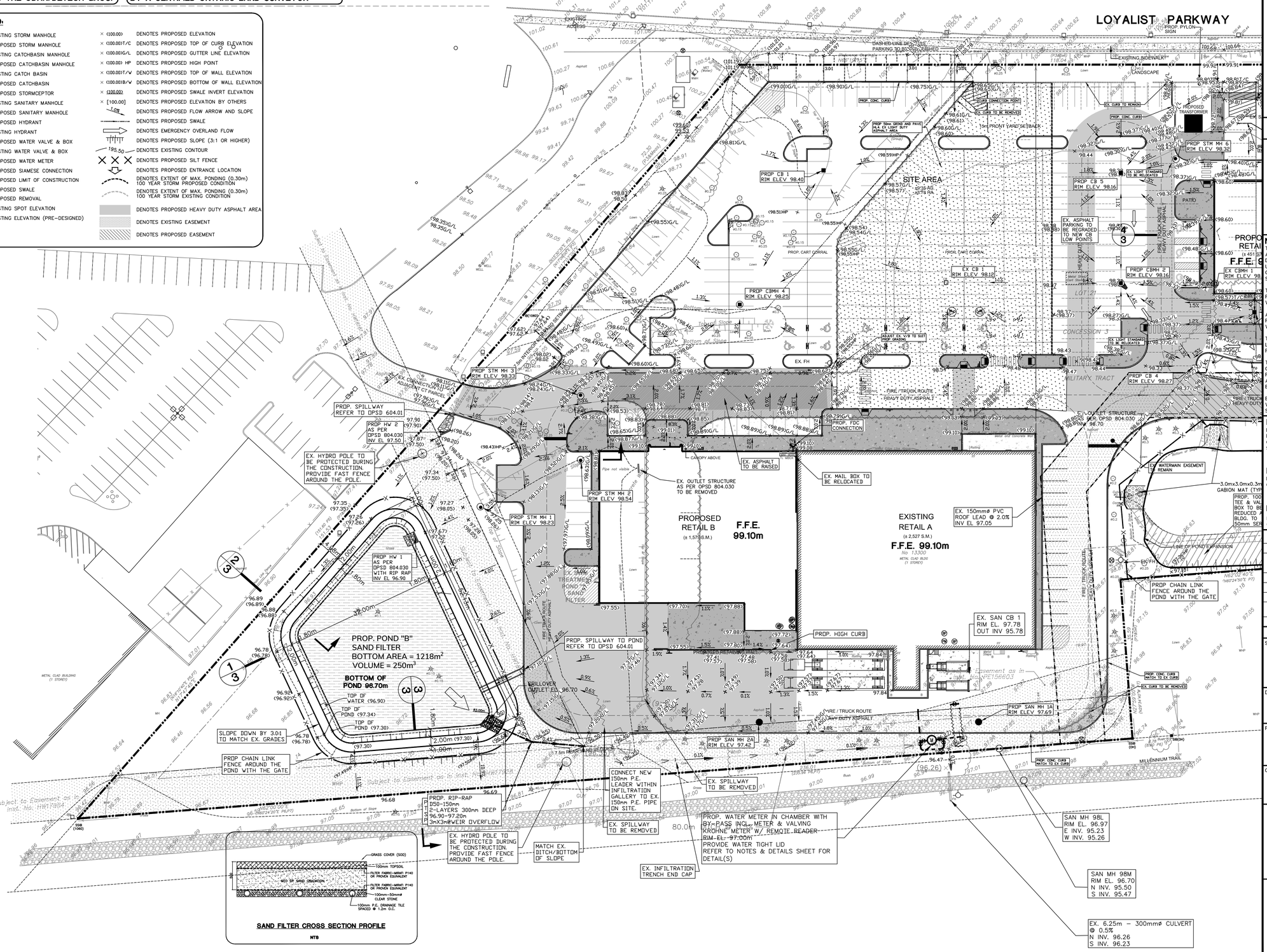
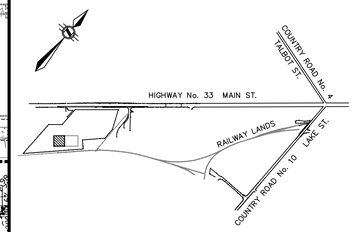


SAND FILTER CROSS SECTION PROFILE

NTS



KEY PLAN Scale : N.T.S.

SUBJECT LANDS

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12	ISSUED FOR TENDER ADDENDUM #1	AUG. 06/25	S.S.

SCALE(S): 1:400 (0 5 10 20 30 40)

DRAWING TITLE:

SITE GRADING PLAN (WEST) (PHASE 1 & PHASE 2)

PROJECT:

PROPOSED RETAIL B & C
13311 LOYALIST PKWY
PICTON, ON

CLIENT: Choice Properties REIT

ODAN·DETECH CONSULTING ENGINEERS
The Odan/Detech Group Inc. P: (905) 632-3811 F: (905) 632-3363
5230 SOUTH SERVICE ROAD, BURLINGTON, ONTARIO, L7L 5K2

DESIGNED BY: M.H.H.	PROJECT No: 96206
DRAWN BY: Z.Z.	DATE: SEP. 2023
CHECKED BY: M.H.H.	DRAWING No.: 2 OF 6
APPROVED BY: P.H.	

ENGINEER

GENERAL NOTES

1. DRAWINGS ARE NOT TO BE SCALED.
2. DO NOT SITE BUILDINGS WITH THIS DRAWING.
3. ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE SITE PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER BEFORE PROCEEDING.
4. UNLESS OTHERWISE NOTED ON THE DRAWINGS THE STANDARD CITY, REGION/COUNTY, MTO AND OPSD AND OPSS ARE TO CONSTITUTE PART OF THIS CONTRACT AND SITE PLAN DRAWINGS.
5. REFER TO COUNTY STANDARDS AND SPECIFICATIONS FOR LIST OF APPROVED MANUFACTURERS AND MATERIALS.
6. EXISTING STRUCTURES ARE NOT TO BE DISTURBED, NOR ENCROACHMENT ON ADJACENT PROPERTIES UNLESS INSTRUCTED BY THE ENGINEER.
7. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNERS CONTRACTOR FROM OBTAINING AND PAYING FOR, BUT NOT LIMITED TO THE FOLLOWING PERMITS, ROAD CUTS, SEWER PERMITS, RELOCATION OF SERVICES, ENCROACHMENT AGREEMENTS, APPROACH APPROVAL PERMITS, ETC. ALL RESTORATION AS PER COUNTY STANDARDS.
8. PRIOR TO CONSTRUCTION, THE ENGINEER IS TO BE NOTIFIED BY THE OWNER AND THE CONTRACTOR AS TO THE EXTENT OF THE CONSTRUCTION LIMITS THEY PROPOSE. THE COUNTY IS TO BE NOTIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
9. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE SITE PLAN, LANDSCAPE PLAN, SITE ELECTRICAL PLANS, AND ANY OTHER PLANS OR DRAWINGS WHICH DEPICT WORKS THAT ARE PROPOSED FOR THIS SITE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION AND REMOVAL OF ALL NECESSARY SIGNAGE, DELINEATORS, MARKERS AND BARRIERS. ALL SIGNS, ETC. SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS FOR THE COUNTY AND THE MTO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR ONTARIO.
11. THE CONTRACTOR SHALL ENDEAVOR TO PREVENT MUD TRACKING ONTO EXISTING RIGHT-OF-WAYS AND SHALL PROVIDE FOR CLEANUP AT HIS OWN EXPENSE AS DIRECTED BY THE COUNTY. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE TO CONTROL DUST ON THE PROJECT AND HE SHALL PROVIDE AT HIS OWN EXPENSE, CONTROLLING MEASURES AS DIRECTED BY THE COUNTY.
12. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION. LOCATION OF EXISTING UTILITIES TO BE VERIFIED IN THE FIELD.
13. THE CONTRACTOR SHALL RECTIFY ALL DISTURBED AREAS TO ORIGINAL CONDITION OR BETTER AND TO THE SATISFACTION OF THE COUNTY.
14. BLASTING WILL NOT BE ALLOWED UNLESS AUTHORIZED BY THE COUNTY.
15. ANY UTILITY RELOCATIONS DUE TO THIS DEVELOPMENT TO BE UNDERTAKEN AT THE EXPENSE OF THE OWNER/DEVELOPER.
16. ALL DRAWINGS AND SPECIFICATIONS ARE INSTRUMENTS OF SERVICE AND THE PROPERTY OF THE ENGINEER WHICH MUST BE RETURNED AT THE COMPLETION OF WORK.
17. DRIVEWAYS SHALL BE SETBACK A MINIMUM CLEARANCE OF 1.0 m. FROM ALL ABOVEGROUND SERVICES OR OTHER OBSTRUCTIONS.
18. ALL CONSTRUCTION WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
19. CONSTRUCTION ACCESS SHALL BE CONSTRUCTED WITH A MIN. OF 450mm THICK CRUSHED STONE BASE FROM MUNICIPAL CURB OR EDGE OF PAVEMENT TO THE PROPERTY LINE TO THE SATISFACTION OF THE COUNTY. LOCATION SHALL BE AS PER THE COUNTY.
20. MINIMUM CLEARANCE OF 1.0m FROM ALL ABOVE GROUND SERVICES AND UTILITIES.
21. OUTSIDE LIGHTING TO BE DIRECTED DOWNWARD AS WELL AS INWARD AND DESIGNED TO MAINTAIN ZERO CUTOFF LIGHT DISTRIBUTION AT THE PROPERTY LINE.
22. ALL WORKS WITHIN COUNTY RIGHT-OF-WAY TO BE PERFORMED BY COUNTY FORCES OR AN APPROVED CONTRACTOR AS PER COUNTY ACCEPTANCE, UNLESS OTHERWISE DIRECTED BY THIS ENGINEER.
23. ALL EXISTING SEWERS ARE TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION INCLUDING SEWER INVERTS, MATERIAL TYPE, AND SIZE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.
24. ALL RELOCATION, RECONSTRUCTION AND RESTORATION TO BE PERFORMED TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING.

GRADING

1. THE GRADING PLAN IS TO BE READ WITH THE SITE SERVICES DRAWING AND THE SITE PLAN. FOR BUILDING DETAILS REFER TO THE LATEST REVISION OF THE SITE PLAN AS PER THE ARCHITECT.
2. CONTRACTOR TO RESTORE ALL DISTURBED AREAS (I.E. PUBLIC R.O.W., ADJACENT LANDS) WHICH HAVE BEEN DISTURBED DURING CONSTRUCTION TO PREVIOUS OR BETTER CONDITION & TO THE SATISFACTION OF THE COUNTY.
3. ALL DRIVEWAY AND GRADING MATERIAL AND CONSTRUCTION METHODS MUST CONFORM TO CURRENT COUNTY STANDARDS AND SPECIFICATIONS.
4. ALL FILL WITHIN THE SITE TO BE COMPACTED TO A MIN. OF 100% STD. PROCTOR DENSITY. THE SUITABILITY OF ALL FILL MATERIALS ARE TO BE CONFIRMED BY A RECOGNIZED SOILS CONSULTANT TO THE DIRECTOR OF ENGINEERING PRIOR TO INSTALLATION OF ANY ROAD BASE MATERIALS.
5. LANDSCAPE SHALL NOT ENCROACH ON BOULEVARD NOR SHALL BOULEVARD GRADES BE ALTERED.
6. SILT FENCE(S) TO BE INSTALLED AND MAINTAINED TO PREVENT SILT FLOWING ONTO ADJACENT LANDS SILTATION CONTROL METHODS SUCH AS ENVIROFENCE OR APPROVED EQUAL SHALL BE ERECTED PRIOR TO ANY GRADING OR CONSTRUCTION AND SHALL BE
7. ANY CHANGES IN GRADES OR CATCH BASINS REQUIRE THE APPROVAL OF THE ODAN/DETECH GROUP INC.
8. ALL LANDSCAPING TO BE INSTALLED AS SOON AS POSSIBLE OR PRIOR TO THE END OF THE FIRST GROWING SEASON. LANDSCAPING TO BE MAINTAINED UNTIL IT IS ESTABLISHED.
9. ALL CONNECTIONS WITH PAVED PORTIONS OF EXISTING ROADS TO BE BACKFILLED WITH GRANULAR 'A' MATERIAL OR LATEST COUNTY SPECIFICATIONS AND COMPACTED TO 100 % SPD.
10. CONSTRUCTION ACCESS SHALL BE CONSTRUCTED WITH A MIN. OF 450mm THICK CRUSHED STONE BASE FROM MUNICIPAL CURB OR EDGE OF PAVEMENT TO THE PROPERTY LINE TO THE SATISFACTION OF THE COUNTY.
11. ALL CURBS ARE TO BE 150mm ABOVE THE PROPOSED GUTTER LINE (G/L) UNLESS NOTED OTHERWISE.
12. PAVEMENT GRADE (MIN. 0.5%, MAX. 8%).
13. DRAINAGE SWALES WITH GRADES (MIN. 0.2%, MAX. 5%).
14. SLOPES IN LANDSCAPE AREAS AND ON BERMS SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL.
15. THE PARKING AREAS AND DRIVEWAY HAVE BEEN DESIGNED ACCORDING TO A FROST SUSCEPTIBILITY FACTOR OF 5. THIS FACTOR IS TO BE VERIFIED BY A SOILS CONSULTANT.

STORM SEWERS

1. ALL STORM SEWERS 450mmø AND SMALLER TO BE PVC SDR 35 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS UNLESS OTHERWISE NOTED. 525mmø AND LARGER TO BE CONCRETE IN ACCORDANCE WITH CSA A257.2, CLASS 65D OR LATEST REVISIONS. UNLESS OTHERWISE NOTED. ROOF TOP STORM LEADS 150mmø AND SMALLER TO BE PVC SDR 28.
2. ULTRA RIBBED PVC PIPE SHALL NOT BE USED, UNLESS OTHERWISE DIRECTED BY THIS ENGINEER.
3. ALL CATCH BASIN LEADS TO BE A MINIMUM OF 300mmø PVC SDR 35 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS, UNLESS OTHERWISE NOTED.
4. BEDDING AND COVER FOR PVC SEWERS (FLEXIBLE PIPE) AS PER OPSD 802.010, GRANULAR "A" COMPACTED TO 100% SPD.
5. BEDDING AND COVER FOR CONCRETE SEWERS (RIGID PIPE) AS PER OPSD 802.030, CLASS B, GRANULAR 'A', COMPACTED TO 100% SPD. UNLESS OTHERWISE SPECIFIED.
6. ALL STORM SERVICES TO BUILDINGS SHALL BE AT A MINIMUM SLOPE OF 1.0%
7. THE CONTRACTOR IS TO CAP ALL STORM SERVICES 2.0 METRES AWAY FROM THE PROPOSED BUILDING LINES UNLESS OTHERWISE NOTED.
8. CULVERT THICKNESS SHALL BE 1.6mm MINIMUM WITH LENGTHS IN STANDARD INCREMENTS OF 3, 6, AND 7 METRES.
9. STORM MANHOLES SHALL BE AS PER OPSD-701.010, 701.011, 701.012, 701.013 AS SPECIFIED. BENCHING TO SPRINGLINE OF PIPE AS PER OPSD-701.021. FRAME & COVER AS PER OPSD-401.01, (TYPE A CLOSED COVER)
10. ALL CATCH BASIN MANHOLES AS PER OPSD 701.010. FRAME AND GRATE AS PER OPSD 400.02.
11. ALL MANHOLE AND CATCH BASIN ADJUSTMENTS SHALL BE AS PER OPSD-704.010. MAXIMUM OF THREE (3) UNITS AND 300mm HIGH, WHERE EXCEED CAST-IN-PLACE OR PRE-CAST RISER SECTIONS SHALL BE PROVIDED.
12. ALL SAFETY GRATES AS PER OPSD 404.020 FOR MANHOLES > 5.0m DEPTH.
13. EXISTING STORM MANHOLE(S) TO BE RE-BENCHED AS REQUIRED, AS PER OPSD-701.021.
14. ALL CATCH BASINS SHALL BE INSTALLED IN ACCORDANCE WITH OPSD 705.010, INCLUDE GOSS TRAP IF REQUIRED BY COUNTY. ALL CATCH BASIN FRAMES AND COVERS AS PER OPSD 400.02.
15. ALL DOUBLE CATCH BASINS SHALL BE INSTALLED IN ACCORDANCE WITH OPSD-705.020, INCLUDE GOSS TRAP IF REQUIRED BY COUNTY. ALL CATCH BASIN FRAMES AND COVERS AS PER OPSD 400.02.
16. ALL DITCH INLET CATCH BASINS SHALL BE AS PER OPSD-705.030, WITH RIP-RAP TREATMENT AS PER OPSD-810.02, WITH GEOTEXTILE (MIRAFI P-140N).
17. ALL CATCH BASIN CONNECTIONS SHALL BE AS PER OPSD-708.01 (RIGID PIPE) AND OPSD-708.03 (FLEXIBLE PIPE).
18. ALL CATCH BASINS CONSTRUCTED IN FILL AREAS TO BE SUPPORTED IN 14MPa. CONCRETE.
19. AT ALL CATCH BASIN & CATCH BASIN MANHOLE SAG POINTS INCLUDE FOUR (4) 4.0m LONG, 100mmø PVC SUBDRAINS WITH FILTER CLOTH. CAP ONE END AND CONNECT THE OTHER TO THE CATCH BASIN OR CATCH BASIN MANHOLE.
20. ALL SEWER SERVICE CONNECTIONS FOR RIGID PIPE SHALL BE AS PER OPSD-1006.01.
21. ALL SEWER SERVICE CONNECTIONS FOR FLEXIBLE PIPE SHALL BE AS PER OPSD-1006.02.
22. ALL CONCRETE OUTLETS AS PER OPSD 605.030 WITH ASPHALT SPILLWAY AND RIP-RAP.
23. ALL RIP-RAP TREATMENT FOR SEWER AND CULVERT OUTLETS SHALL BE AS PER OPSD-810.01, TYPE "B" WITH GEOTEXTILE (MIRAFI P-140N).
24. ALL PAVEMENT REINSTATEMENT SHALL BE AS PER OPSD-509.010, FOR UTILITY CUTS, BACKFILL AS PER COUNTY STD.
25. ALL TESTING OF STORM SERVICES TO BE IN ACCORDANCE WITH ONTARIO PROVINCIAL STANDARD SPECIFICATIONS.
26. CONTRACTOR SHALL PROVIDE COLOUR VIDEO OF STORM SEWER UPON COMPLETION TO THE ENGINEER.

SANITARY

1. ALL SANITARY SEWERS 200mmø AND GREATER ARE TO BE PVC-SDR 35 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS, RUBBER GASKET.
2. ALL SANITARY SEWERS 150mmø AND LESS ARE TO BE PVC-SDR 28 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS, RUBBER GASKET.
3. BEDDING AND COVER FOR PVC SANITARY SEWERS AS PER OPSD 802.010, GRANULAR "A" COMPACTED TO 100% SPD.
4. THE CONTRACTOR IS TO CAP ALL SANITARY SERVICES 2.0 METRES AWAY FROM THE PROPOSED BUILDING LINES UNLESS OTHERWISE NOTED.
5. ALL SANITARY SERVICES TO BUILDINGS SHALL BE AT A MINIMUM SLOPE OF 1.0%
6. SANITARY MANHOLES SHALL BE AS PER OPSD-701.010, 701.011, 701.012, 701.013 AS SPECIFIED. BENCHING TO SPRINGLINE OF PIPE AS PER OPSD-701.021. FRAME & COVER AS PER OPSD-401.01.
7. ALL SAFETY GRATES AS PER OPSD 404.020 FOR MANHOLES > 5.0m DEPTH.
8. ALL MANHOLE DROP STRUCTURES SHALL BE AS PER OPSD-1003.01 (TEE) AND 1003.02 (WYE) AS SPECIFIED.
9. ALL MANHOLE ADJUSTMENTS SHALL BE AS PER OPSD-704.010. MAXIMUM OF THREE (3) UNITS AND 300mm HIGH, WHERE EXCEED CAST-IN-PLACE OR PRE-CAST RISER SECTIONS SHALL BE PROVIDED.
10. PROVIDE WATER TIGHT COVERS FOR SANITARY MANHOLES LOCATED IN PONDING AREAS.
11. ALL SEWER SERVICE CONNECTIONS FOR FLEXIBLE PIPE SHALL BE AS PER OPSD-1006.02.
12. ALL PAVEMENT REINSTATEMENT SHALL BE AS PER OPSD-509.010, FOR UTILITY CUTS, BACKFILL AS PER CITY STD.
13. ALL TESTING OF SANITARY SERVICES TO BE IN ACCORDANCE WITH ONTARIO PROVINCIAL STANDARD SPECIFICATIONS.
14. CONTRACTOR SHALL PROVIDE COLOUR VIDEO OF SANITARY SEWER UPON COMPLETION TO THE ENGINEER.
15. CONTRACTOR SHALL PROVIDE INSULATION FOR SANITARY SEWERS WITH LESS THAN 1.7m OF COVER.

WATER

1. WATERMAIN PIPE TO BE PVC-SDR 18 CL 150 CONFORMING TO CSA B137.3, INCLUDING No. 8 TRACER WIRE BETWEEN HYDRANTS OR OTHER CONDUCTING APPURTENANCES. PIPE SHALL HAVE A MINIMUM COVER OF 1.7m. ALL WATER MAIN JOINTS TO BE APPROVED PUSH-ON. MECHANICAL OR FLANGE TYPE JOINTS AS REQUIRED FOR 1000 kPa RATED PRESSURE. CORROSION PROTECTION FOR ALL FITTINGS, VALVES AND HYDRANTS (HYPROTEC OR EQUAL).
2. ALL DOMESTIC WATER SERVICES SHALL BE TYPE "K" SOFT COPPER AND INSTALLED AS PER OPSD-1104.01 (20mmø&25mm) AND OPSD-1104.02 (32mm, 38mm AND 50mm), SIZE AS PER PLAN.
3. BEDDING AND COVER AS PER OPSD 802.010, TYPE 1 & 2, GRANULAR 'A' COMPACTED TO 100% SPD.
4. ALL WATER MAIN FITTINGS AND APPURTENANCES TO BE SELECTED FROM CITY APPROVED MATERIAL LIST FOR WATER.
5. WATER MAINS SHALL HAVE A MINIMUM VERTICAL SEPARATION OF 0.50m BELOW AND 0.30m ABOVE AND A HORIZONTAL SEPARATION OF 2.5m BETWEEN ANY SEWER OR MANHOLE.
6. EXISTING WATER MAIN SHALL BE DEFLECTED BELOW PROPOSED GRADES TO MEET 1.7m COVER AS PER CITY STANDARDS AND SPECIFICATIONS. REPLACE WATER MAIN IF NECESSARY.
7. CONTRACTOR TO CONFIRM THE SIZE AND MATERIAL TYPE OF EXISTING WATER SERVICE AND WATER MAIN PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER.
8. EXISTING WATER MAIN OBVERTS TO BE CONFIRMED ON SITE AT THE TIME OF CONSTRUCTION.
9. WATER MAIN AND SERVICES SHALL BE CAPPED 2.0m FROM BUILDING, UNLESS OTHERWISE NOTED.
10. ALL TAPPING SLEEVES TO BE STAINLESS STEEL SIMILAR TO MUELLER TYPE, COMPLETE WITH VALVE.
11. ALL VALVE AND BOX ASSEMBLIES SHALL BE INSTALLED AS PER OPSD-1101.02.
12. ALL HYDRANTS SHALL BE INSTALLED AS PER OPSD 1105.01, WITH CATHODIC PROTECTION AS PER CITY STANDARDS. ALL HYDRANTS SHALL CONFORM TO AWWA SPECIFICATIONS C502-64. THE DIRECTION SHALL BE COUNTER CLOCKWISE AND THEY SHALL HAVE 2 63.5mm NOZZLES AND 1 100mm STORTZ CONNECTION.
13. ALL THRUST BLOCKING SHALL BE AS PER OPSD-1103.01 (HORIZONTAL) AND OPSD-1103.02 (VERTICAL).
14. FROST COLLARS ARE TO BE PROVIDED ON CURB STOPS AND VALVE BOXES WHEN LOCATED WITHIN THE LIMITS OF THE DRIVEWAY.
15. ALL WATER CHAMBERS SHALL BE AS PER OPSD-1101.010, VALVING SHALL BE AS PER OPSD-1101.030, VALVING AS SPECIFIED.
16. ALL WATER MAIN BLOW-OFF ASSEMBLIES SHALL BE AS PER OPSD-1104.03, 25mmø.
17. ALL PAVEMENT REINSTATEMENT SHALL BE AS PER OPSD-509.010, FOR UTILITY CUTS, BACKFILL AS PER CITY STD.
    FLUSHING, SWABBING, AND TESTING OF WATER MAIN AS PER MUNICIPAL GUIDELINE: REV 6 – PROCEDURE FOR THE CLEANING, TESTING, DISINFECTION AND CONNECTION OF WATERMAINS JULY 2022.
18. THE CONTRACTOR MUST PROVIDE 7 DAYS NOTICE TO THE MUNICIPALITY PRIOR TO PERFORMING FLUSHING OF THE HYDRANTS AS PER MUNICIPAL GUIDELINE: REV 6 – PROCEDURE FOR THE CLEANING, TESTING, DISINFECTION AND CONNECTION OF WATERMAINS JULY 2022.

CURBING/SIDEWALKS/ASPHALT

1. ALL PROPOSED INTERNAL CURBING TO BE BARRIER TYPE AS PER ARCHITECT DETAIL. ALL TOPS OF CURBS TO BE 150mm ABOVE PROPOSED GUTTER LINE, UNLESS OTHERWISE NOTED.
2. PROPOSED CURB AND GUTTER ON TRAVELED ROADWAY AS PER CURRENT COUNTY STD.
3. ALL REQUIRED CURB CUTTING AT ENTRANCE AND CURB DEPRESSIONS AT SIDEWALK CROSSINGS SHALL BE INSTALLED TO THE SATISFACTION OF THE COUNTY AND AS PER COUNTY DRAWING
4. CURB CUTS WITHIN THE PUBLIC R.O.W. TO BE PERFORMED TO THE SATISFACTION OF THE COUNTY.
5. ALL PROPOSED ROAD CUTS TO BE PERFORMED AND RESTORED TO THE SATISFACTION OF THE COUNTY, AND IN ACCORDANCE WITH COUNTY STANDARDS & SPECIFICATIONS.
6. CONCRETE SIDEWALK WITHIN PUBLIC R.O.W. AS PER OPSD-310.010 AND OPSD-310.020 (ADJACENT TO CURB). ALL RAMPS SHALL BE AS PER OPSD-310.031. ALL SIDEWALKS SHALL BE 30MPa WITH 7% AIR. ALL CONCRETE SIDEWALKS TO BE MINIMUM 150mm THICK AT RESIDENTIAL DRIVEWAYS AND 200mm THICK THROUGH COMMERCIAL/INDUSTRIAL ENTRANCES HAVE 150mm GRANULAR 'A' BASE, COMPACTED TO 100% SPD.
7. ALL CONCRETE CURB FROM EXISTING ROAD CURB TO STREET LINE SHALL BE AS PER COUNTY STD. ALL CONCRETE CURB HEIGHTS SHALL BE 150mm UNLESS OTHERWISE NOTED. DRIVEWAY CURB TO BE DISCONTINUOUS AT SIDEWALK AND TAPERED BACK 450mm MINIMUM WHERE SIDEWALK CONTINUES THROUGH THE ENTRANCE AS PER OPSD-350.01.
8. APPROPRIATE CONSTRUCTION DETAILS SHOULD BE PROVIDED FOR RETAINING WALLS HIGHER THAN 1.0m. DETAILS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER UPON APPROVAL. HANDRAIL IS REQUIRED WHEN HEIGHT EXCEEDS 0.60m AND SHALL BE AS PER OPSD-980.101.
9. DRIVEWAY ENTRANCE SHALL BE CONSTRUCTED WITH HEAVY DUTY ASPHALT FROM THE BACK OF THE MUNICIPAL CURB OR EDGE OF PAVEMENT TO THE PROPERTY LINE IN ACCORDANCE WITH PRINCE EDWARD COUNTY STANDARDS AND SPECIFICATIONS.
10. PAVEMENT STRUCTURE
    THE EXISTING NATIVE AND FILL SOILS MAY BE CONSIDERED ACCEPTABLE AS THE PAVEMENT SUBGRADE, PROVIDED IT IS FREE OF ORGANIC MATERIAL. USING GOOD ENGINEERING AND CONSTRUCTION PRACTICE, THE FOLLOWING MINIMUM PAVEMENT STRUCTURE SHOULD BE USED:

Pavement Structure	Compaction	Heavy Duty	Light Duty
HL-4 Asphaltic Concrete HL-8 Asphaltic Concrete	97 % Marshall Density	40mm 60mm	40mm 40mm
Granular 'A' Base	100 %	150mm	150mm
Granular 'B' Type I or II Sub-base	100 %	400mm	350mm

NOTE: HL-4 and HL-8 asphaltic concrete to conform to Ontario Provincial Specifications (OPSS) Form 310 and 1150.

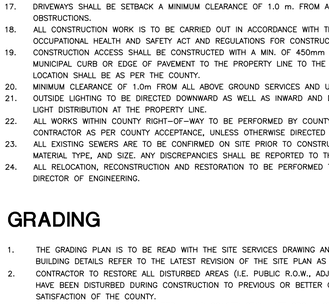
TO ENSURE THE LONGEVITY OF THE PAVEMENT, THE SUBGRADE SHOULD BE GRADED WITH A 1 TO 2% SLOPE AND THE ROADBED SHOULD BE WELL DRAINED AT ALL TIMES. WE RECOMMEND THAT FULLLENGTH PERFORATED SUB-DRAIN PIPES OF 150 MM DIAMETER BE INSTALLED ALONG CURBLINES AND AT ALL LOW POINTS AT CATCHBASINS IN A CRUCIFORM PATTERN, BELOW THE ROADBED LEVEL, TO ENSURE EFFECTIVE DRAINAGE. THE SUB-DRAIN PIPES SHOULD BE SURROUNDED BY 19 mm SIZE CLEAR STONE DRAINAGE ZONE OF MINIMUM 150 mm THICKNESS, WHICH SHOULD HAVE NON-WOVEN GEOTEXTILE (FILTER OPENING SIZE OF 75 TO 150 µm) WRAPAROUND TO MINIMIZE INFILTRATION OF FINES INTO THE PIPES. ALL SUBDRAINS SHOULD BE PROVIDED WITH A FROST FREE OUTLET.

11. ALL CONCRETE TOE WALLS SHALL BE AS PER OPSD 3120.100 TYPE I
12. ALL DEAD END BARRICADES SHALL BE AS PER OPSD-912.532.
13. ALL TEMPORARY STEEL BEAM GUIDE RAILS SHALL BE AS PER OPSD-912.532
14. ALL SECTIONAL PRE-CAST CONCRETE CURBING AS PER OPSD-603.02.
15. PERIMETER SUBDRAINS SHOULD BE PROVIDED AROUND PARKING AREAS AND ALONG DRIVEWAYS.

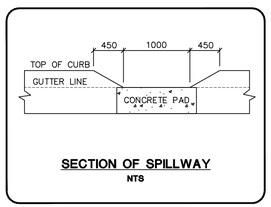
ODAN/DETECH GENERAL NOTES:

THE FOLLOWING NOTES SHALL APPLY IN ADDITION TO PRINCE EDWARD COUNTY STANDARDS AND SPECIFICATIONS.

1. NOTWITHSTANDING THE FOLLOWING GENERAL NOTES, ALL WATERMAIN AND WATER SERVICE INSTALLATIONS MUST BE COMPLETED IN ACCORDANCE WITH THE CURRENT COUNTY STANDARDS AND SPECIFICATIONS.
2. THESE NOTES ARE INTENDED TO SUMMARIZE THE COUNTY'S REQUIREMENTS. HOWEVER, THE CONTRACTOR IS TO CONSULT THE RESPECTIVE COUNTY STANDARD SPECIFICATIONS FOR FURTHER DETAIL AND NOT RELY SOLELY ON THESE NOTES.
3. UNLESS SPECIFIED OTHERWISE, ALL REFERENCES TO COUNTY STANDARD SPECIFICATIONS, STANDARD DRAWINGS OR INDUSTRY STANDARDS REFER TO THE LATEST EDITION.
4. THE COVER FOR ALL WATERMAINS AND WATER SERVICES IS TO BE A MINIMUM OF 1.8m.
5. WHERE A WATERMAIN CROSSES OVER OR UNDER A SANITARY SEWER OR STORM SEWER (INCLUDING LATERALS AND CATCH BASIN LEADS), A MINIMUM CLEAR SEPARATION OF 0.5 METRES MUST BE MAINTAINED, MEASURED FROM PIPE WALL TO PIPE WALL.
6. WHERE A WATERMAIN CROSSES OVER OR UNDER OTHER UTILITIES, 0.30 METRE CLEARANCE SHALL BE PROVIDED, SO THAT PROPER BEDDING CAN BE MAINTAINED.
7. UNLESS SPECIFIED OTHERWISE, A MINIMUM CLEAR HORIZONTAL SEPARATION OF 2.5 METRES MEASURED FROM PIPE WALL TO PIPE WALL, MUST BE MAINTAINED BETWEEN ALL WATERMAINS AND SANITARY MAINS OR STORM MAINS.
8. WHERE A WATERMAIN CROSSES WITHIN 1.5 METRES OF A CATCH BASIN, THE WATERMAIN IS TO BE PROTECTED IN ACCORDANCE WITH COUNTY STANDARDS.
9. WATERMAIN PIPE MATERIALS ARE TO BE AS SPECIFIED ACCORDING TO COUNTY STANDARD SPECIFICATIONS.
10. WATERMAIN FITTING MATERIALS ARE TO BE SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
11. JOINT RESTRAINTS ARE TO BE PROVIDED IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
12. FLOW CONTROL VALVES ARE TO BE AS SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
13. HYDRANTS ARE TO BE LOCATED AWAY FROM DRIVEWAYS, POLES, TRANSFORMERS, SECONDARY PEDESTALS, MAINTENANCE HOLES, AND ANY OTHER ABOVEGROUND APPURTENANCES IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
14. HYDRANTS ARE TO BE CONNECTED TO THE WATERMAIN AS SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
15. THE MINIMUM HORIZONTAL SEPARATION BETWEEN THE WATER SERVICE AND ANY OTHER SEWER LATERAL IS 2.5 METRES.
16. CURB STOPS ARE TO BE LOCATED AWAY FROM DRIVEWAYS, POLES TRANSFORMERS, SECONDARY PEDESTALS, MAINTENANCE HOLES, AND ANY OTHER ABOVE GROUND APPURTENANCES IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
17. CURB STOPS TO BE LOCATED ON THE COUNTY ROAD ALLOWANCE 150mm FROM THE PROPERTY LINE.
18. WATER SERVICES ARE TO BE A MINIMUM DIAMETER OF 25mm.
19. WATER SERVICE MATERIALS, INCLUDING PIPES, FITTINGS, VALVES AND CONNECTIONS, ARE TO BE AS SPECIFIED IN COUNTY STANDARD SPECIFICATIONS.
20. WATER SERVICES AT THE TIME OF INSTALLATION THAT ARE INSTALLED ONLY TO THE CURB STOP (E.G. IN A SUBDIVISION) ARE TO BE IDENTIFIED WITH A MARKER IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS. APPROVED SERVICE TUBING, A MINIMUM OF 19mm IN DIAMETER, IS TO BE INSTALLED FROM THE CURB STOP TO THE SURFACE, CAPPED AND STAPLED TO THE POST. THE TUBING IS TO BE USED FOR TESTING PURPOSES ONLY.
21. ALL NEW WATERMAIN AND WATER SERVICE INSTALLATIONS SHALL BE AS PER COUNTY PROCEDURE – MUNICIPAL GUIDELINE: REV 6 – PROCEDURE FOR CLEANING, TESTING, DISINFECTION AND CONNECTION OF WATERMAINS JULY 2022 AND COMMISSIONED IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
22. WATERMAIN PIPE AND FITTINGS, VALVES, HYDRANTS, SERVICES AND ALL OTHER APPURTENANCES ARE TO BE INSTALLED IN ACCORDANCE WITH THE RESPECTIVE COUNTY STANDARD SPECIFICATIONS.
23. THE INTERRUPTION OF EXISTING WATER SERVICE SHALL ONLY BE IN EFFECT IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS.
24. ANY EXISTING WATER SERVICES TO THE SITE THAT ARE NOT REQUIRED ARE TO BE DISCONNECTED AT THE MAIN IN ACCORDANCE WITH THE REQUIREMENTS OF THE COUNTY AT THE OWNER'S EXPENSE.
25. UNLESS SPECIFIED OTHERWISE ON THE PLAN VIEW DRAWINGS, MAIN LINE PIPES SHALL BE INSTALLED AT THE LOCATIONS IDENTIFIED ON THE TYPICAL CROSS SECTIONS.
26. THE CONTRACTOR SHALL SUBMIT ALL REQUIRED SHOP DRAWINGS AND OTHER SUBMITTALS IN ACCORDANCE WITH THE RESPECTIVE COUNTY STANDARD SPECIFICATIONS PRIOR TO COMMENCING CONSTRUCTION.



PIPE INSULATION DETAIL
NTS



SECTION OF SPILLWAY
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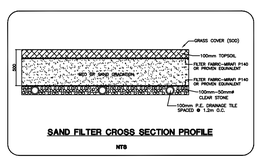

SAND FILTER CROSS SECTION PROFILE
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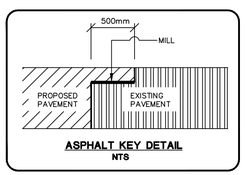
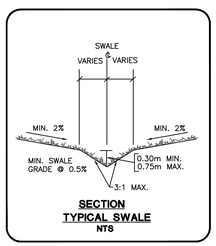
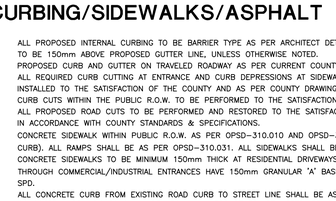


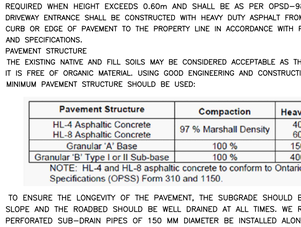
ASPHALT KEY DETAIL
NTS



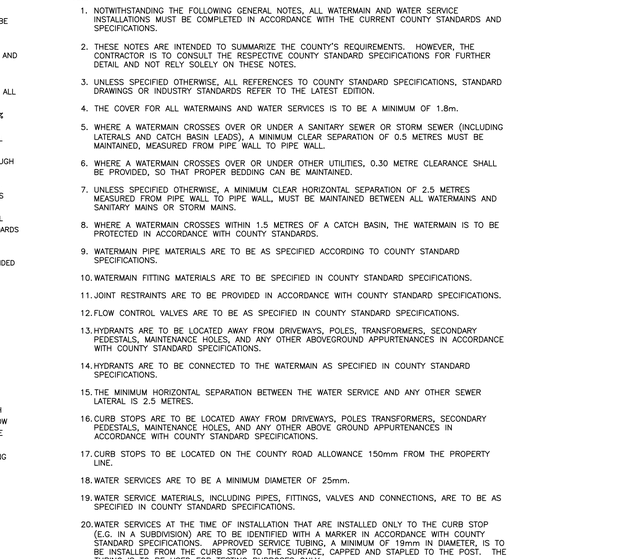
SECTION
TYPICAL SWALE
NTS



TYPICAL ROAD CUT RESTORATION
SCALE: N.T.S.



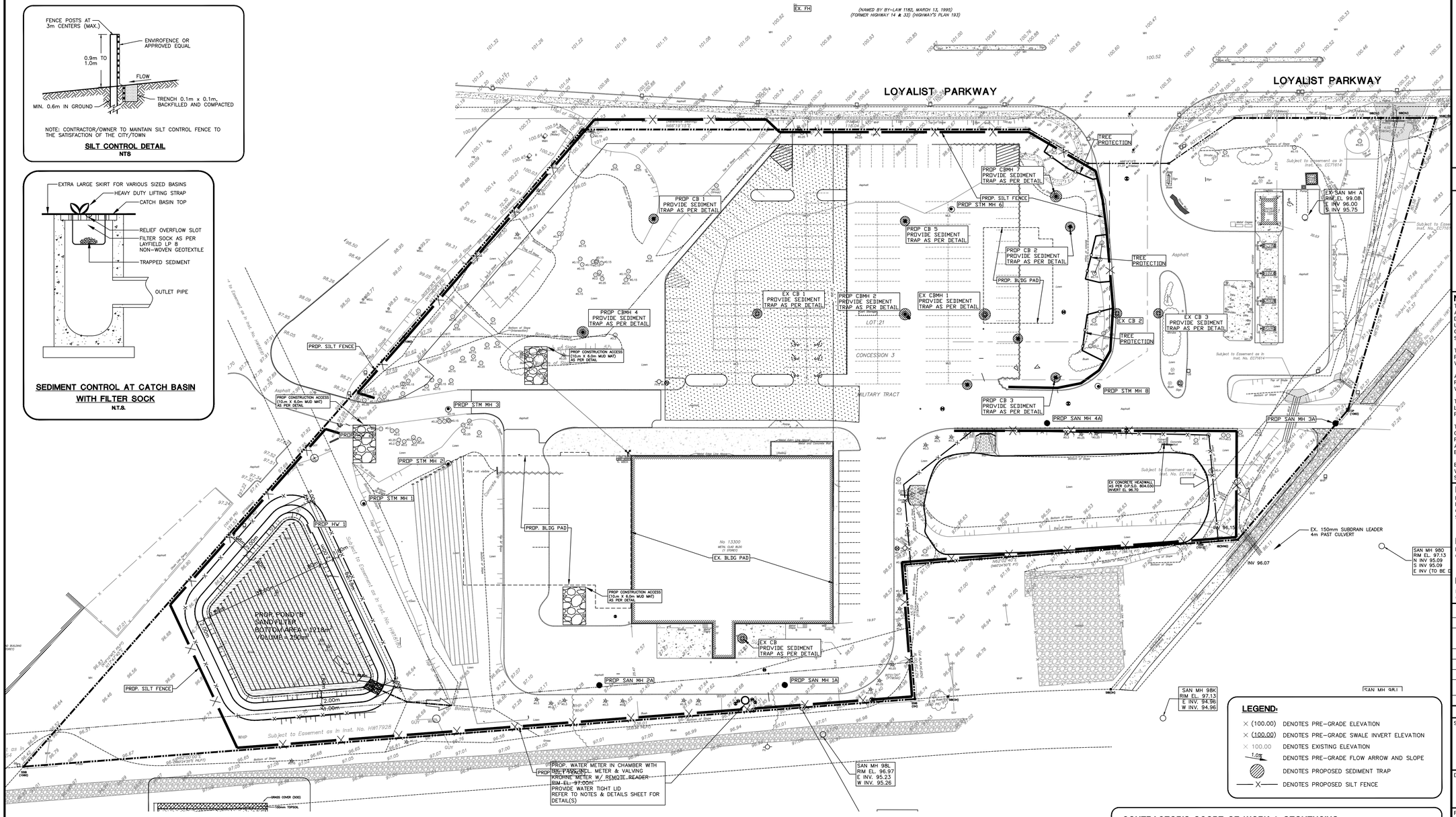
DETAIL FOR SUBDRAIN AT CB'S & CBMH'S
NTS


LOCATION OF ACCESS OPENING
PROP 1800mmø PRECAST CONCRETE MH AS PER OPSD 701.012
PROP 200mmø KROHNE ENVIROMAGELECTRO-MAGNETIC FLOW METER WITH KROHNE IFC 100W REMOTE MOUNTED SIGNAL CONVERTER
PROP 200mmø GATE VALVE C/W VALVE BOX AND COVER
PROP 200mmø GATE VALVE C/W VALVE BOX AND COVER
TEE
TEE
PROP 200mmø WATERMAIN
PROP 200mmø GATE VALVE C/W VALVE BOX AND COVER
90°
90°
PROP FLEXIBLE COUPLER (TYP.)
PROP MH COVER AND FRAME AS PER OPSD 401.010 TYPE A WITH WATERTIGHT LID
300mm WIDE WATER PROOFING MEMBRANE W/PRI

NOTE: CONTRACTOR/OWNER TO MAINTAIN SILT CONTROL FENCE TO THE SATISFACTION OF THE CITY/TOWN

SILT CONTROL DETAIL
NTS

SEDIMENT CONTROL AT CATCH BASIN WITH FILTER SOCK
N.T.S.


EX. FH
(NAMED BY BY-LAW 1183, MARCH 13, 1995)
(FORMER HIGHWAY 14 & 33) (HIGHWAY'S PLAN 193)
LOYALIST PARKWAY
LOYALIST PARKWAY
TREE PROTECTION
PROP CBMH 7 PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP. SILT FENCE
PROP STM MH 6
PROP CB 1 PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP CB 5 PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP CB 2 PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP. BLDG PAD
EX SAN MH A RIM EL 99.08 E INV 96.00 S INV 95.75
EX CB PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP CBMH 2 PROVIDE SEDIMENT TRAP AS PER DETAIL
EX CBMH 1 PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP CBMH 4 PROVIDE SEDIMENT TRAP AS PER DETAIL
EX CB 2
EX CB 3 PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP CONSTRUCTION ACCESS (10m x 6.0m MUD MAT) AS PER DETAIL
LOT 21
CONCESSION 3
MILITARY TRACT
PROP CB 3 PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP STM MH 8
PROP SAN MH 4A
PROP SAN MH 3A
PROP STM MH 3
PROP STM MH 2
PROP STM MH 1
PROP HV 1
PROP POND 'B' SAND FILTER BOTTOM AREA = 1218m² VOLUME = 350m³
PROP. SILT FENCE
PROP. BLDG PAD
EX. BLDG PAD
PROP CONSTRUCTION ACCESS (10m x 6.0m MUD MAT) AS PER DETAIL
EX CB PROVIDE SEDIMENT TRAP AS PER DETAIL
PROP SAN MH 2A
PROP SAN MH 1A
EX CONCRETE HEADWALL AS PER O.P.S.D. 804.030 INVERT EL 96.70
EX. 150mm SUBDRAIN LEADER 4m PAST CULVERT
INV 96.15
INV 96.07
SAN MH 98O RIM EL. 97.13 N INV 95.09 S INV 95.09 E INV (TO BE D
SAN MH 98K RIM EL. 97.13 E INV. 94.98 W INV. 94.98
SAN MH 98L RIM EL. 96.97 E INV. 95.23 W INV. 95.26
PROP. WATER METER IN CHAMBER WITH SILT FENCE
PROP. PANDUIT CL. METER & VALVING
KRONNE METER W/ REMOTE READER
RIM EL. 97.00m
PROVIDE WATER TIGHT LID
REFER TO NOTES & DETAILS SHEET FOR DETAIL(S)
GRASS COVER (SOD)
100mm TOPSOIL
Subject to Easement as In Inst. No. HW17928
Subject to Easement as In Inst. No. EC71614
Subject to Right-of-Above In Inst. No.
Asphalt
Concrete
Lawn
Bush
Hedge
Rock
Rail
Top of Slope
Bottom of Slope
Ditch
Culvert
Guy
Hydro
Bell
Mailbox
Sign
Light
Fire Hydrant
Water Valve
Water Chamber
Sanitary MH
Storm MH
Catch Basin
Gas Valve
Gas Chamber
Hydro Pole
Guy Wire
Utility Pole
Utility Box
Utility Pedestal
Utility Chamber
Telephone Pedestal
Telephone Chamber
Cable TV Chamber
Cable TV Pedestal
Flow not visible
Flow Direction
Overland Flow Route
Subject to Easement as In Inst. No. HW17780
Subject to Easement as In Inst. No. EC71614
Subject to Easement as In Inst. No. EC71614
Subject to Easement as In Inst. No. EC71614