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**FUNCTIONAL SERVICING &
STORMWATER MANAGEMENT REPORT
FOR
PROPOSED MIXED-USE DEVELOPMENT
1697 DURHAM REGIONAL HIGHWAY 2
MUNICIPALITY OF CLARINGTON**



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December 9, 2022

Rev January 26, 2024

Richard H. Gay Holdings Limited
55 King Street East
Bowmanville, ON, L1C 1N4

Attention: Ms. Jenna Shaw

**Re: Functional Servicing and Stormwater Management Report
Proposed Site Plan Application
1697 Durham Regional Highway 2, Courtice
Municipality of Clarington
Our File: 122065**

Dear Ms. Shaw:

In support of the Application for Site Plan for the above referenced property at 1697 Durham Regional Highway 2 in Courtice, we herewith submit the following Functional Servicing & Stormwater Management Report.

This report has been prepared to identify the methods in which the proposed development will be serviced and meet the Municipality of Clarington, Region of Durham and Central Lake Conservation Authority's servicing criteria. This report identifies the infrastructure that exists and is required to provide adequate servicing for the proposed development.

Please contact our office at your convenience, should you have any questions or require additional information on the enclosed report.

Yours truly,

D.G. BIDDLE & ASSOCIATES LIMITED

M.J. Holmes, EIT
Municipal Designer
MBC/MH/mh



M. B. Carswell, P. Eng.
Senior Consulting Engineer, President

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1.0 INTRODUCTION

D.G. Biddle and Associates Limited has been retained to prepare the following Functional Servicing and Stormwater Management Report in support of the proposed site plan development of 1697 Highway 2, Courtice in the Municipality of Clarington, Regional Municipality of Durham.

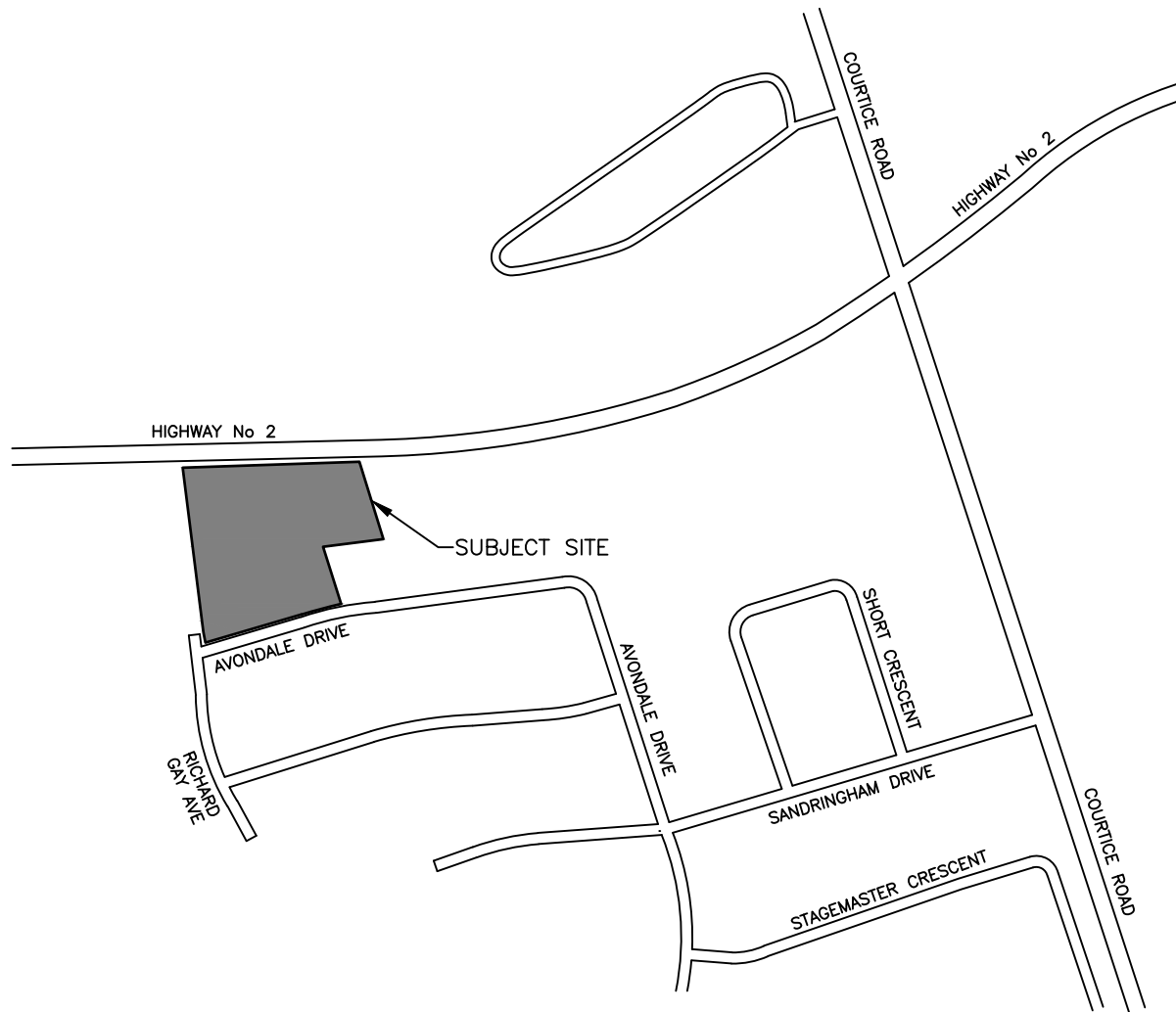
1.1 Study Area

The subject property is located on the South side of Durham Regional Highway 2, approximately 400m east of Trulls Road, in the Municipality of Clarington, Regional Municipality of Durham. The proposed development will consist of 4-storey and 5-storey senior affordable apartment buildings as well as a 6-storey mixed-use building (apartment/commercial space) with associated asphalt parking and loading areas.

The site encompasses an area of approximately 0.93ha. The site is currently vacant and is made up of two primary drainage areas. The majority of the subject site is made up of a drainage area of 0.79ha which primarily drains north towards Highway 2. Under the Plan of Subdivision 18T-88060, there is a drainage area of 0.14ha along the frontage of Avondale Drive which was never developed that drains out to Avondale Drive. The site is bounded on the north by Durham Regional Highway 2, on the east and south by existing residential properties and on the west by Future Richard Gay Avenue. A Site Location Plan illustrating the subject site is attached as Figure 1.

1.2 Purpose of Functional Servicing Report

This Functional Servicing and Stormwater Management Report has been prepared in support of the Site Plan Application for the above-mentioned development. The purpose of the FSR is to confirm the technical requirements associated with providing the necessary services to support this development, including sanitary servicing, water supply, stormwater management and grading.



MUNICIPALITY OF
CLARINGTON

1697 HIGHWAY NO. 2, COURTICE, ON

SITE LOCATION PLAN



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DRAWN M.H.
DESIGN M.H.
CHECKED M.B.C.
DATE OCT 2023

PROJECT
122065

DWG

FIG 1

2.0 SANITARY SERVICING

2.1 Existing System

Currently, the subject property is serviced with a 150mm service connection to a municipal sanitary sewer on Avondale Drive.

As part of the Richard Gay Avenue Extension (Plan of Subdivision 18T-88060), a 300mm sanitary sewer is proposed to be extended north of *Ex SAN MH 41-160* to MH S-1 with a 200mm sanitary sewer to be extended north of proposed MH S-1 along the Richard Gay Avenue extension to the north side of Highway 2.

2.2 Proposed System

The existing 150mm sanitary stub is not of adequate depth to service the entirety of the site, therefore, a 200mm connection is provided from the 300mm sanitary sewer proposed to be extended with the construction of Richard Gay Avenue to Highway 2. The details for the mainline sewer and road construction of Richard Gay Avenue are provided on drawing 122065-C-1 appended at the end of this report. The sewer and roadworks will be completed under a separate development agreement from that of the site plan.

A 200mm sanitary will be extended through the subject property from proposed MH S-1 on Richard Gay Avenue to provide 150mm sanitary service connections to each of the proposed buildings within the development. The proposed sanitary sewer has been designed in accordance with the Region of Durham design standards, maintaining a minimum grade of 0.50%.

Refer to the Site Servicing Plan (122065 Drawing SS-1) for the proposed sanitary sewer system layout. The Sanitary Sewer Design Sheet is appended at the end of this report.

2.3 Sanitary Sewer Design Criteria

The internal sanitary sewer system will be designed in accordance with the Region of Durham Servicing Criteria, including:

- Sanitary Generation Rate: 364 L/person/day for residential
- Population Density:
 - Residential
 - Apartment(s)
 - 1 Bedroom 1.5 people/unit
 - 2 Bedroom 2.5 people/unit
- Peaking Factor: Harmon
- Infiltration Rate: 22.5 m³/gross ha/day when foundation drains are not connected to sanitary sewers
- Minimum Full Flow Velocity: 0.60 m/s

Building 1 is a proposed residential commercial/apartment building designed to be 6-storays with 54 dwelling units and 485m² of commercial area. The apartment units are comprised of both 1-bedroom and 2-bedroom units. Building 1 consists of 39 one-bedroom units and 15 two-bedroom units. Using the above noted Region of Durham sanitary criteria, the calculated total population of the residence is 96 people and total projected sewage flow of 1.53L/s for the proposed building.

Building 2 is a proposed senior affordable housing apartment building designed to be 4-storays with 39 dwelling units. The building is comprised of both 1-bedroom and 2-bedroom units. Building 2 consists of 29 one-bedroom units, 1 one-bedroom and den unit and 10 two-bedroom units. Using the above noted Region of Durham sanitary criteria, the calculated total population of the residence is 69 people and total projected sewage flow of 1.10L/s for the proposed building.

Building 3 is a proposed senior affordable housing apartment building designed to be 5-storays with 45 dwelling units. The building is comprised of both 1-bedroom and 2-bedroom units. Building 3 consists of 30 one-bedroom units, 1 one-bedroom and den unit and 15 two-bedroom units. Using the above noted Region of Durham sanitary criteria, the calculated total population of the residence is 83 people and total projected sewage flow of 1.32L/s for the proposed building.

Refer to the Sanitary Sewer Design Sheet provided in Schedule 1.

2.4 Phasing of Sanitary Sewer Servicing

As mentioned above, the site plan development will consist of 3 buildings on-site. The sanitary servicing for this development is proposed to be split up into 3 phases.

The first phase will consist of the servicing required for Building 3 and the southwest corner of the parking lot. This phase will include the construction of both entrances off Avondale Drive and Richard Gay Avenue. The sanitary sewer installed with Phase 1 will consist of the following legs:

- Connect from MH S-1 on Richard Gay Avenue to MH SA-2
- Install from MH SA-2 to MH SA-3.
- Install MH SA-3 to Building 3 Plug
- Extend Building 1 Plug outside limits of Phase 1 parking lot.
- Install MH SA-3 to MH SA-4

The second phase will consist of Building 1 in the northwest corner of the site and the parking lot associated with it. The sanitary sewer installed with Phase 2 will be extending the Building 1 plug to the building face.

The third phase of the development will consist of Building 2 in the northeast corner of the site and all remaining parking spaces associated with Building 2. The sanitary sewer installed with Phase 3 will be extending the sanitary connection (Building 2 plug) from MH SA-4 to Building 2.

Refer to the Site Servicing Plan (122065 Drawing SS-1) for the proposed sanitary sewer system layout. Refer to Barry Bryan Associates drawing, A103, for the proposed phasing of the development.

3.0 WATER SUPPLY AND DISTRIBUTION

3.1 Existing System

A 200mm PVC watermain is present along Avondale Drive with a 100mm domestic water service and a 150mm fireline connection already stubbed to the property in the southwest area of the subject site.

3.2 Proposed System

As mentioned in the Pre-Consultation meeting minutes dated June 7, 2022, the applicant is required to extend the existing 200mm PVC watermain from the intersection of Richard Gay Avenue and Avondale Drive north to Highway No. 2 to provide a loop to the existing watermain system.

In order to provide the required water supply to the proposed development, a 150mm domestic and a 200mm fireline connection are proposed to be extended from the proposed 200mm PVC watermain extension along the Richard Gay Avenue.

While there are existing water service stubs (100mm domestic and 150mm fireline) located off the watermain on Avondale Drive south of proposed Building 3, it is not feasible to use these to service the site. Due to site and building requirements (sprinkler system), a 150mm domestic and 200mm fireline will be required on-site rather than the 100mm and 150mm previously stubbed inside the site. Due to the orientation of Building 3, it increases efficiency and reduces cost to connect directly from the proposed 200mm watermain proposed on Richard Gay Avenue, into the meter room illustrated on Building 3 rather than bring the 150mm watermain around or through Building 3. The existing water service stubs are to be abandoned as illustrated on the Site Servicing Plan, drawing 122065-SS-1.

One private on-site hydrant is proposed to provide adequate fire protection and water supply for firefighting purposes. All proposed water services and appurtenances will be designed in accordance with the Region of Durham design standards.

Refer to the Site Servicing Plan, Drawing 122065-SS-1 for the proposed water distribution system layout.

3.3 Phasing of Watermain

As mentioned above, the site plan development will consist of 3 buildings on-site. The watermain servicing for this development is proposed to be split up into 3 phases.

The first phase will consist of Building 3 and the southwest corner of the parking lot. The watermain installed with Phase 1 will be as follows:

- Install 200x200x150mm tee complete with restrained gate valve off 200mm watermain on Richard Gay Avenue & extend 150mm domestic waterline into meter room proposed in Building 3.
- Install 200x200x200mm tee complete with restrained gate valve off 200mm watermain on Richard Gay Avenue & extend 200mm fireline into meter room proposed in Building 3.
- Since only Building 3 is being constructed as part of Phase 1, the 150mm domestic & 200mm fireline are to be extended past the limits of the Phase 1 parking lot and stubbed with a 50mm blow off as per Region of Durham standard S-210.060.
- Install hydrant and 200 to 150mm reducer once the fireline is past the fire hydrant connection.

The second phase will consist of Building 1 in the northwest corner of the site and the parking lot associated with it. The watermain installed with Phase 2 will be as follows:

- Similar to the first phase, since Building 2 is being constructed as part of Phase 3, the 150mm domestic & 200mm fireline are to be extended to the final plug location illustrated on drawing 122065 SS-1 and stubbed with a 50mm blow-off as per Region of Durham standard S-210.060.

The third phase of the development will consist of Building 2 in the northeast corner of the site and all remaining parking spaces associated with Building 2. No additional watermain will be installed as part of Phase 3 as all watermain on-site will have been installed by this point.

Refer to the Site Servicing Plan (122065 Drawing SS-1) for the proposed watermain system layout. Refer to Barry Bryan Associates drawing, A103, for the proposed phasing of the development.

4.0 STORMWATER MANAGEMENT

4.1 Existing System

Currently, the subject property is not serviced with a connection to a municipal storm sewer. The existing site straddles a drainage divide with stormwater being conveyed to the existing storm sewer along Avondale Drive and Durham Regional Highway 2 as illustrated on the Pre-Development Storm Drainage Plan, drawing 122065-SD-1. It is noted that with the development of the parent plan of subdivision (18T-88060) south of the subject property, capacity was provided to accommodate this development.

4.2 Proposed System

While the existing 525mm storm sewer is proposed to be extended from Avondale Drive to Highway No. 2 as part of the Richard Gay Avenue extension, the on-site storm sewer is directed to the existing 1350mm storm sewer traversing the eastern limit of the property. All sewers in the neighbourhood drain to this sewer which conveys stormwater north across Highway 2, discharging into Black Creek.

Refer to the Site Servicing Plan, drawing 122065-SS-1, for the proposed storm sewer layout and the Post-Development Drainage Plan, drawing 122065-SD-2, for the drainage scheme. The storm sewer design sheet has been appended at the end of this report.

4.3 Phasing of Storm Sewer Servicing

As mentioned above, the site plan development will consist of 3 buildings on-site. The servicing of this development is proposed to be split up into 3 phases.

The first phase will consist of Building 3 and southwest corner of the parking lot. The storm sewer installed with Phase 1 will consist of the following legs:

- Break into existing 1350mm concrete sewer and install 2400mm doghouse manhole.
- Install MH ST-1 to MH ST-2 (EF-4 stormceptor)
- Install MH ST-2 to CBMH ST-3
- Install CBMH ST-3 to MH ST-4
- Install MH ST-4 to CBMH ST-6
- Install CBMH ST-6 to CBMH ST-7
- Install CBMH ST-7 to MH ST-8
- Install MH ST-8 to CBMH-11 (including Stormtech SC-740 units)
- Extend run between CBMH ST-11 and CBMH ST-12 north outside of Phase 1 parking lot limits.
- Install MH ST-8 to CBMH ST-9
- Install Building 3 plug from CBMH ST-9
- Extend run between CBMH ST-9 and CB ST-10 East outside of Phase 1 parking lot limits.

The second phase will consist of Building 1 in the northwest corner of the site and the parking lot associated with it. The storm sewer installed with Phase 2 will be as follows:

- Complete sewer run between CBMH ST-11 and CBMH ST-12 and install CBMH ST-12.
- Install Building 1 plug from CBMH ST-12.

The third phase of the development will consist of Building 2 in the northeast corner of the site and the parking lot associated with it. The storm sewer installed with Phase 3 will be as follows:

- Complete sewer run between CBMH ST-9 & CB ST-10 and install CB ST-10.
- Install MH ST-4 to CBMH ST-5
- Install Building 2 plug from CBMH ST-5

Refer to Site Servicing Plan (122065 Drawing SS-1) for the proposed storm sewer system layout. Refer to Barry Bryan Associates drawing, A103, for the proposed phasing of the development.

4.4 Stormwater Quantity

As part of the Avondale Drive Extension (Plan of Subdivision 18T-88060), the subject site has been previously accommodated in the storm drainage system for Avondale Drive. The pre-development flows allowable for the subject site are based on a total drainage area of 1.03ha. As illustrated on drawing 122065-SD-1, the 1.03 ha is broken into three smaller drainage areas with three separate runoff coefficients. The majority of the subject site is made up of a drainage area of 0.79 ha with a runoff coefficient of 0.65. Under the Plan of Subdivision 18T-88060, there is a drainage area of 0.14ha with a runoff coefficient of 0.50 along the frontage of Avondale Drive which was never developed, but was accounted for in the storm drainage scheme illustrated on drawing 95075-2A-D-3. In addition to these two drainage areas, the three lots to the southeast are split draining, so their drainage area must be added to the pre-development drainage area. This additional drainage area is 0.09ha with a runoff coefficient of 0.45.

With the proposed development, there will be an increase in impervious surfaces resulting in an increase in stormwater runoff relative to what was previously provided through the Avondale subdivision. To mitigate any adverse impacts on neighbouring properties, post-development flows must be attenuated to levels previously accommodated in the storm drainage system.

Therefore, the stormwater management proposal for this development is to attenuate increases in post-development peak flows for all storm events up to and including the 100-year return frequency event.

As previously mentioned, the Avondale Drive storm sewer has been sized to accommodate a drainage area of 1.02ha which was used to calculate the pre-development peak flows tabulated below using Visual Otthymo 6.0. Supporting calculations are appended in Schedule 2.

TABLE 1: PRE-DEVELOPMENT PEAK FLOWS

RETURN FREQUENCY (YEARS)	PRE-DEVELOPMENT PEAK FLOWS (L/s)
2	129
5	161
10	188
25	209
50	264
100	395

As mentioned above, all flows up to and including the 100-year storm event will be detained on-site to discharge at the previously established flow rate.

The post-development drainage area tributary to the proposed storm sewer system for attenuation is 1.02ha. The STANDHYD Sub-Routine in the computer model VISUAL OTTHYMO 6.0 was used to simulate the impervious surfaces of the site and calculate the post-development peak flow for the site. Peak flows were computed using a 4-hour Chicago distribution rainfall for the 2 year and 100-year return frequency events. The results are attached at the end of this report. The ROUTE RESERVOIR Sub-Routine was used to simulate the performance of the underground storage system, surface storage and the orifice control plate, providing attenuation for the site. The Post-Development Drainage Scheme is illustrated on 122065-SD-2.

The storage volume calculations and stage-storage-discharge relationship are attached at the end of this report. Tabulated below is a comparison of the attenuated post-development peak flow to allowable peak flows discharging to the existing storm sewer system.

TABLE 2: POST-DEVELOPMENT PEAK FLOWS

RETURN FREQUENCY (YEARS)	ALLOWABLE DISCHARGE FROM SITE (L/s)	POST-DEVELOPMENT ATTENUATED PEAK FLOW (L/s)	TOTAL POST-DEVELOPMENT PEAK FLOW (L/s)	STORAGE REQUIRED (cu.m)
2	129	112	125	17
5	161	124	141	32
10	188	137	155	43
25	209	159	178	50
50	264	161	190	72
100	395	164	213	137

As is reported above, post-development peak flows are less than or equal to the allowable site discharge. Therefore, no adverse impact on the existing drainage network or neighbouring properties is anticipated. The detailed VISUAL OTTHYMO 6.0 output files are appended in Schedule 2.

4.5 Stormwater Quality

The area of the site proposed to be paved is approximately 0.39ha. This area is above the threshold of 0.25ha where storm water quality controls would typically be required by the Conservation Authority. As such, two permanent water quality treatment systems have been proposed with this development. A Stormtech SC-740 system complete with isolator row and an oil/grit separator, Stormceptor EF-4, are proposed. The sizing report and isolator row details have been appended in Schedule 1.

The water balance analysis in the Hydrogeological Report specifies that there is a water balance deficiency of approximately 70% within the proposed development. This was calculated based on a pre-development infiltration rate of 1497 m³/year and a post-development infiltration rate of 451 m³/year. To achieve pre-development infiltration targets, approximately 12.62m³ of rainfall across the site needs to be infiltrated. This was calculated based on a 13% equivalent deficit and an equivalent

TABLE 2: POST-DEVELOPMENT PEAK FLOWS

RETURN FREQUENCY (YEARS)	ALLOWABLE DISCHARGE FROM SITE (L/s)	POST-DEVELOPMENT ATTENUATED PEAK FLOW (L/s)	TOTAL POST-DEVELOPMENT PEAK FLOW (L/s)	STORAGE REQUIRED (cu.m)
2	129	82	88	85
5	161	115	124	104
10	188	141	153	115
25	209	161	185	127
50	264	163	192	149
100	395	166	215	207

As is reported above, post-development peak flows are less than or equal to the allowable site discharge. Therefore, no adverse impact on the existing drainage network or neighbouring properties is anticipated. The detailed VISUAL OTTHYMO 6.0 output files are appended in Schedule 2.

4.5 Stormwater Quality

The area of the site proposed to be paved is approximately 0.39ha. This area is above the threshold of 0.25ha where storm water quality controls would typically be required by the Conservation Authority. As such, two permanent water quality treatment systems have been proposed with this development. A Stormtech SC-740 system complete with isolator row and an oil/grit separator, Stormceptor EF-4, are proposed. The sizing report and isolator row details have been appended in Schedule 1.

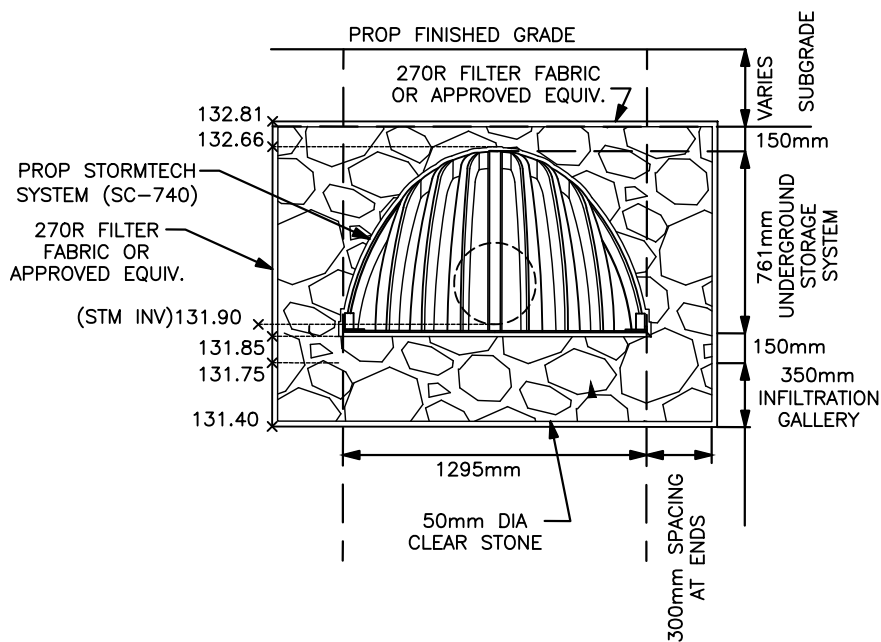
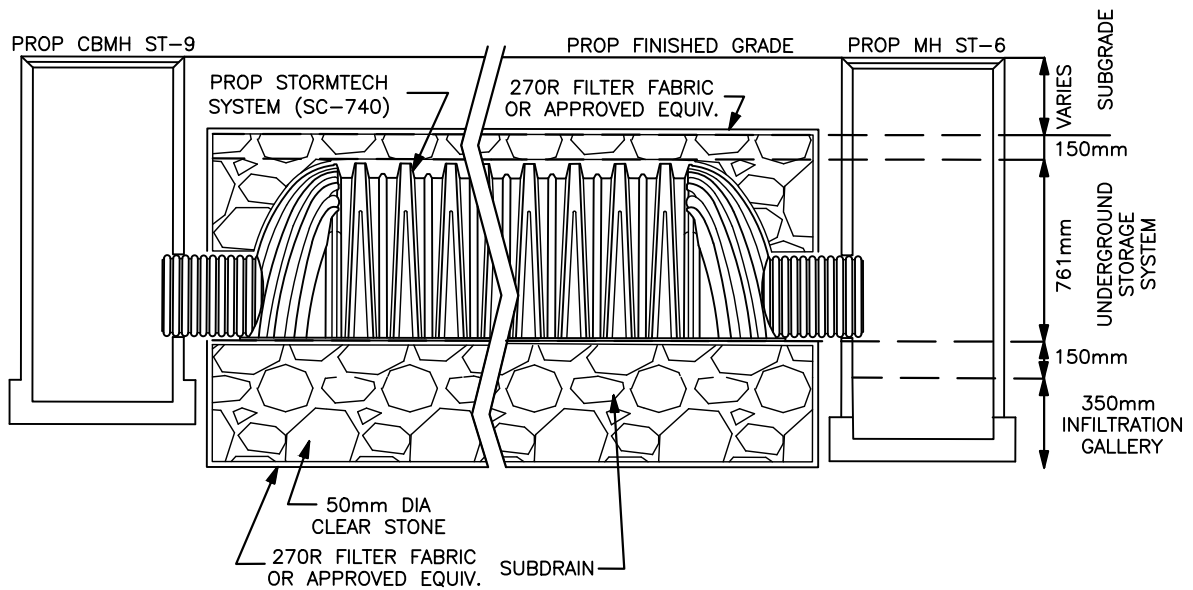
The water balance analysis in the Hydrogeological Report specifies that there is a water balance deficiency of approximately 70% within the proposed development. This was calculated based on a pre-development infiltration rate of 1497 m³/year and a post-development infiltration rate of 451 m³/year. To achieve pre-development infiltration targets, approximately 12.62m³ of rainfall across the site needs to be infiltrated. This was calculated based on a 13% equivalent deficit and an equivalent

annual rainfall to capture for the site of 1.35mm from Figure C.1 of the CLOCA “Technical Guidelines for Stormwater Management Submissions”. In addition to the water balance requirements, CLOCA’s erosion control criteria require a minimum of 5mm of runoff to be captured and detained on-site. Based on a site area of approximately 0.94 ha, 116.87 m³ was required to be detained on-site. Since the volume requirement to capture 5mm of runoff is larger, by doing so, it will also meet the requirements of the water balance. To meet this requirement, two infiltration galleries and approximately 204 m² of permeable pavers have been proposed on site. The first infiltration gallery was sized below the Stormtech chamber by way of 350mm of additional stone depth with dimensions of 8.68m x 4.19m x 0.35m as illustrated in Figure 2. The second infiltration gallery is proposed in the northeast corner of the site with dimensions of 19.50m x 1.40m x 1.25m. In an effort to infiltrate clean roof water and to separate it from untreated parking lot surface runoff, it is proposed to connect the roof drain from Building 2 to the second infiltration gallery. A detail has been provided on the Site Servicing Plan (drawing 122065 SS-1). The post-development infiltration target, 5mm runoff capture volume, infiltration gallery sizing and permeable pavers sizing calculations are appended in Schedule 1.

4.6 LID Infiltration Discussion

The volume control target for the development site is to capture and infiltrate 25mm of runoff across the site. Due to high groundwater concerns and property density constraints, a volume reduction is required. As such, a groundwater monitoring program has been implemented on site to be completed by Cambium. This groundwater monitoring will be completed spanning winter, spring, and early summer to confirm the peak water level. As outlined in CLOCA’s “Technical Guidelines for Stormwater Management Submissions, October 2020”, since high groundwater is a factor that allows for a volume reduction, the minimum 5mm is to be captured on-site based on a best-efforts approach.

A water balance check was completed for the proposed development site. Based on the equivalent annual rainfall to capture volume value of 1.35mm, the volume required to be captured across the site is 12.62m³. To capture 5mm of runoff across the site,



1697 HIGHWAY 2, COURTYARD

UNDERGROUND STORAGE & INFILTRATION GALLERY DETAIL



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PROJECT 122065

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FIG 2

116.87m³ of storage is required on-site. This is an additional 104.25m³ of storage over what was required based on the water balance. Based on the above information, the water balance calculations, and site constraints, 5mm of runoff is to be infiltrated across the site based on a best-efforts approach.

It is a requirement of the site to retain the runoff from a 25mm event and release over the course of a 24-hour period (extended detention). As outlined in the MOE criteria, the minimum allowable orifice size to be used on-site is 50mm. The computer modelling software VISUAL OTTHYMO 6.0 was used to simulate the impervious surfaces of the site and calculate the storage volume required to retain the 25mm event on-site, which was found to be 73.00m³. The drawdown time was calculated as 5.41 hours based on a flow rate of 0.0038m³/s. Due to the inability to use a smaller orifice, the 24-hour drawdown time was completed on a best-efforts approach. To retain the 73.00m³ on-site, a Duramaxx SRPE underground storage system is proposed with a storage volume of 68.04m³. The remaining 4.96m³ of storage required is provided through the oversizing of the following pipe runs:

- MH ST-4 to Duramaxx Storage Tank
- Duramaxx Storage Tank to CBMH ST-6
- CBMH ST-6 to CBMH ST-7
- MH ST-4 to CB ST-5

Supporting calculations are appended in Schedule 1. The Visual Otthymo output data is appended in Schedule 2.

5.0 SITE GRADING

In general, the site will be graded in a manner which will satisfy the following goals:

- Satisfy the Municipality of Clarington lot and road grading criteria including:
 - Minimum Road Grade: 0.5%
 - Maximum Road Grade: 6.0%
 - Minimum Lot Grade: 2%
 - Maximum Lot Grade: 5%
- Provide continuous road grades for overland flow conveyance;
- Minimize the need for retaining walls;
- Minimize the volume of earth to be moved and minimize cut/fill differential;
- Achieve the stormwater management objectives required for the site.

The above techniques are illustrated on the Site Grading Plan, drawing 122065-SG-1.

6.0 TEMPORARY SEDIMENT AND EROSION CONTROLS

During the construction period, the removal of natural vegetation causes the transport of large amounts of sediment during rainfall events. To minimize the sediment laden storm water leaving the site during construction, it is recommended the following sediment control techniques be implemented.

1. Construction Vehicle Access Route (Mud Mat)
2. Perimeter Enviro Fence
3. Catchbasin Filtration
4. Sediment Trap
5. Good Housekeeping Practices

The above techniques are illustrated on the Erosion and Sediment Control Plan, Drawing 122065 ES-1.

7.0 CONCLUSIONS

The preceding report identifies the Functional Servicing and Stormwater management requirements for the development proposal. The investigations into these requirements have resulted in the following conclusions for the development proposal:

- A new 150mm domestic water & 200mm fire line service will be extended from the proposed 200mm watermain loop on Richard Gay Avenue. To service all 3 buildings. The existing connections on Avondale Drive will be disconnected at the main in accordance with Region of Durham guidelines.
- A 200mm sanitary sewer will be extended into the proposed development from proposed MH S-1 on Richard Gay Avenue. It is to extend throughout the site to service each proposed building. The existing 150mm sanitary service on Avondale Drive will be plugged at the back edge of the curb and abandoned.
- A new internal storm sewer system will be installed on site and will connect to the existing 1350mm storm sewer traversing the eastern property limit.
- On-site storm sewers have been sized to accommodate a 5-year return frequency post-development event as per Municipality of Clarington Design Criteria;
- The post-development peak flows are to be attenuated to the pre-established levels provided as part of the Avondale Drive Extension (Plan of Subdivision 18T-88060);
- Underground storage systems and surface ponding, in conjunction with an orifice plate, are proposed to attenuate all flows to the pre-established levels;
- Permanent stormwater quality controls are proposed through the implementation of an oil/grit separator, Stormceptor EF-4, and Stormtech SC-740 Isolator Rows;
- Runoff generated from a 25mm storm event is proposed to be retained for extended detention;
- Low Impact Development Techniques have been identified in the report. Measures such as the Stormtech SC-740 isolator row and an infiltration gallery are proposed to ensure a reasonable volume of water infiltration is achieved for the site.

- No adverse impact to the receiving drainage network or neighbouring properties is anticipated.
- Temporary sediment controls during construction can be managed using perimeter enviro fence, catchbasin filtration, construction vehicle access route and good housekeeping practices.

SCHEDULE 1

PERCENT IMPERVIOUS CALCULATIONS

SNOW STORAGE CALCULATION

SANITARY SEWER DESIGN SHEET

STORM SEWER DESIGN SHEET

STAGE-STORAGE-DISCHARGE

STORMCEPTOR SIZING REPORT

STORMTECH SC-740 ISOLATOR ROW

DETAIL

POST-DEVELOPMENT INFILTRATION

TARGET

INFILTRATION GALLERY SIZING

STORM GRATE CAPACITY CALCULATION

OVERLAND FLOW WEIR CALCULATION

Percent Impervious Calculation

Uncontrolled Drainage Area to North to Hwy 2			
	Area		0.127 ha
	Area	RC	Axl
Landscape	0.0959496	0.2	0.019189928
Sidewalk	0.0312925	0.9	0.028163286
Total	0.1272422		0.0474
Weighted RC			0.372
% Impervious			24.53%

Landscape Area Fronting Building 3 Draining to ST-9			
	Area		0.006 ha
	Area	RC	Axl
Landscape	0.0029517	0.2	0.000590344
Sidewalk	0.0032272	0.9	0.002904435
Total	0.0061789		0.0035
Weighted RC			0.566
% Impervious			52.52%

Landscape Area Fronting Building 3 Draining to ST-11			
	Area		0.029 ha
	Area	RC	Axl
Landscape	0.0148609	0.2	0.002972186
Sidewalk	0.0136587	0.9	0.012292821
Total	0.0285196		0.0153
Weighted RC			0.535
% Impervious			47.97%

Percent Impervious Calculation

Landscape Area Draining to Richard Gay/Avondale			
	Area		0.027 ha
	Area	RC	Axl
Landscape	0.0253053	0.2	0.00506106
Sidewalk	0.0017755	0.9	0.001597941
Total	0.0270808		0.0067
Weighted RC			0.246
% Impervious*			6.61%

*Since % IMP < 20%, model as a NashYD

Landscape Area Draining to CB ST-10			
	Area		0.017 ha
	Area	RC	Axl
Landscape	0.0137867	0.2	0.002757336
Sidewalk	0.0028364	0.9	0.002552769
Total	0.0166231		0.0053
Weighted RC			0.319
% Impervious			17.02%

Landscape Area Draining to CBMH-6			
	Area		0.017 ha
	Area	RC	Axl
Landscape	0.0130072	0.2	0.002601446
Sidewalk	0.0040902	0.9	0.003681162
Total	0.0170974		0.0063
Weighted RC			0.367
% Impervious			23.86%

Percent Impervious Calculation

Landscape Area Draining to CBMH-5			
	Area		0.005 ha
	Area	RC	Axl
Landscape	0.0023664	0.2	0.000473282
Sidewalk	0.0024307	0.9	0.002187657
Total	0.0047971		0.0027
Weighted RC			0.555
% Impervious			50.97%

Landscape Area Draining to CBMH 3			
	Area		0.015 ha
	Area	RC	Axl
Landscape	0.0121949	0.2	0.00243898
Sidewalk	0.0029644	0.9	0.002667942
Total	0.0151593		0.0051
Weighted RC			0.337
% Impervious			19.50%

Landscape Area Draining to EX CBMH			
	Area		0.032 ha
	Area	RC	Axl
Landscape	0.0240872	0.2	0.004817434
Sidewalk	0.0074952	0.9	0.006745707
Total	0.0315824		0.0116
Weighted RC			0.366
% Impervious			23.67%

Percent Impervious Calculation

Parking Area Draining to CBMH 11			
	Area		0.086 ha
	Area	RC	Axl
Landscape	0.0085138	0.2	0.00170275
Asphalt	0.0774152	0.9	0.069673716
Total	0.085929		0.0714
Weighted RC			0.831
% Impervious			90.38%

Snow Storage Calculation (2% of Hard-scape)

ID	Hardscape Area
Paved Area	4132.9145 m ²
Sidewalk	1061.309 m ²

Total 5194.2235 m²

Snow Storage = Hardscape Area x 2%
 = 103.88 m²

Snow Storage Area 1

Length 17.80 m
Width 4.75 m
Area 84.55 m²

Snow Storage Area 2

Length 10.00 m
Width 2.00 m
Area 20.00 m²

Total Snow Storage = Area 1 + Area 2
 = **104.55 m²** > 103.88 m²

Therefore, to provide this development with the necessary snow storage capacity of 2% of paved parking areas and sidewalks, two snow storage areas as outlined above will be required.

SANITARY SEWER DESIGN SHEET

1697 Highway 2, Courtice

D.G.BIDDLE & ASSOCIATES LTD.

consulting engineers

MUNICIPALITY Municipality of Clarington
PROJECT 1697 Highway 2
PROJECT # 122065

DESIGN BY M.J.H
CHK'D BY M.B.C.
DATE NOV 2022 **REV** JAN 2024

CRITERIA
n 0.013 ONE BED APARTMENT 1.50 persons/unit
 TWO BED APARTMENT 2.50 persons/unit

		RESIDENTIAL						COMMERCIAL			INDUS TRIAL	INSTITUT N	FLOW (l/s)						PIPE DATA				
FROM MH	TO MH	GROSS AREA (ha)	DEN- SITY	POPU- LATION	PFF	TOTAL POPU- LATION	TOTAL AREA (ha)	LOT AREA (ha)	FLOOR SPACE INDEX	FLOOR AREA (ha)	LOT AREA (ha)	LOT AREA (ha)	RES INFIL 0.26	SEWAGE 0.0042	COMM 2.08	INDUS 2.08	INST 1.30	TOTAL FLOW l/s	SIZE mm	GRADE %	CAPACITY l/s	VELOCITY m/s	
									0.50														
BLDG 2 STUB	SA-4	0.33		69	3.80	69	0.33						0.08	1.10	0.00	0.00	0.00	1.19	150	2.00	22.47	1.23	
	SA-4	0.00		0	3.80	69	0.33						0.08	1.10	0.00	0.00	0.00	1.19	200	0.50	24.19	0.75	
BLDG 1 STUB	SA-3	0.48		96	3.80	96	0.48	0.05		0.05			0.12	1.53	0.10	0.00	0.00	1.76	150	3.50	29.72	1.63	
BLDG 3 STUB	SA-3	0.34		83	3.80	83	0.34						0.09	1.32	0.00	0.00	0.00	1.41	150	1.00	15.89	0.87	
	SA-3	0.00		0	3.80	248	1.15	0.05		0.05			0.30	3.96	0.10	0.00	0.00	4.36	200	0.50	24.19	0.75	
	SA-2	0.00		0	3.80	248	1.15	0.05		0.05			0.30	3.96	0.10	0.00	0.00	4.36	200	2.00	48.39	1.49	

STORM SEWER DESIGN SHEET

D.G. BIDDLE AND ASSOCIATES

Consulting Engineers and Planners

Municipality of Clarington
1697 Highway 2, Courtice
122065

Design M.H.
Checked M.B.C.
Date NOV 2022 **Rev** JAN 2024

n = 0.013
Storm = 5 Year
A = 2464
B = 16
C = 1
R = 51.95 / (Tc + 3.8)^0.7755 cm/hr

Run Off Coefficients
Commercial I = 0.20
Residential I = 0.50-0.65
School I = 0.65
Townhouses I = 0.65
Apartments I = 0.65
Commercial I = 0.90

Location		Drainage Design				Rational Design			Pipe Data							
From Mh	To Mh	Area ha	I	Axl	Accum Axl	T.C min	R cm/hr	Flow l/s	Size mm	Grade %	Capacity l/s	Velocity m/s	Length m	Time min	Total Time	% Load
BUILDING 3 STUB	CBMH-9	0.07	0.90	0.06	0.06	10.00	9.48	17.08	200	1.00	34.21	1.06	10.52	0.17	10.17	49.9%
LANDSCAPE AREA	CB-10	0.02	0.32	0.005	0.005											
CB-10	CBMH-9	0.03	0.90	0.03	0.03	10.00	9.48	8.41	250	1.00	62.03	1.22	17.80	0.24	10.24	13.6%
CBMH-9	ST-8	0.03	0.90	0.03	0.13	10.24	9.39	33.90	250	0.50	43.86	0.87	18.02	0.35	10.59	77.3%
BUILDING 1 STUB	CBMH-12	0.08	0.90	0.07	0.07	10.00	9.48	19.73	200	1.00	34.21	1.06	9.95	0.16	10.16	57.7%
CBMH-12	CBMH-11	0.09	0.90	0.08	0.16	10.16	9.42	41.31	300	0.50	71.33	0.98	17.91	0.31	10.46	57.9%
LANDSCAPE AREA	CBMH-11	0.03	0.54	0.02	0.02											
CBMH-11	STORMTECH SC-740	0.09	0.83	0.07	0.24	10.46	9.31	63.24	300	1.00	100.87	1.38	2.80	0.03	10.50	62.7%
STORMTECH SC-740	ST-8	0.00	0.90	0.00	0.24	10.50	9.30	63.16	300	0.65	81.33	1.11	17.76	0.27	10.76	77.7%
ST-8	CBMH-7	0.00	0.90	0.00	0.37	10.76	9.21	95.77	300	2.50	159.49	2.19	17.92	0.14	10.90	60.0%
CBMH-7	CBMH-6	0.09	0.90	0.08	0.45	10.90	9.16	115.48	450	1.00	297.41	1.81	18.22	0.17	11.07	38.8%
LANDSCAPE AREA	CBMH-6	0.02	0.37	0.006	0.006											
EX LOT DRAINAGE	CBMH-6	0.04	0.45	0.02	0.02											
CBMH-6	DURAMAXX TANK	0.06	0.90	0.06	0.44	11.07	9.10	110.41	450	0.50	210.30	1.28	1.61	0.02	11.09	52.5%
DURAMAXX TANK	ST-4	0.00	0.90	0.00	0.44	11.09	9.10	110.32	450	0.50	210.30	1.28	5.19	0.07	11.15	52.5%
LANDSCAPE AREA	CB-5	0.005	0.55	0.00	0.00											
CB-5	ST-4	0.06	0.90	0.05	0.05	10.00	9.48	13.93	300	4.00	201.75	2.76	10.04	0.06	10.06	6.9%
ST-4	CBMH-3	0.00	0.90	0.00	0.49	11.15	9.07	123.39	450	1.50	364.25	2.22	4.84	0.04	11.19	33.9%
BUILDING 2 STUB	ST-13	0.06	0.90	0.05	0.05	10.00	9.48	13.24	200	2.00	48.38	1.49	10.04	0.11	10.11	27.4%
ST-13	CBMH-3	0.00	0.90	0.00	0.05	10.11	9.44	13.18	250	1.00	62.03	1.22	10.04	0.14	10.25	21.2%
CBMH-3	ST-2	0.02	0.34	0.005	0.55	11.19	9.06	137.17	450	1.00	297.41	1.81	4.47	0.04	11.23	46.1%
ST-2	ST-1 (EX SEWER)	0.00	0.90	0.00	0.55	11.23	9.05	136.96	450	1.00	297.41	1.81	5.20	0.05	11.28	46.0%

Project: 1697 Highway 2

Project #: 122065

Date: December 2022

Revised: January 2024

Surface Storage

Structure: CBMH ST-5
Rim: 133.550

	Elevation (m)	End Area (m2)	Avg Area (m2)	Depth (m)	Volume (m3)	Total Volume (m3)
Rim	133.550	0.000				
			9.756	0.050	0.488	0.488
	133.600	19.513				
			50.139	0.050	2.507	2.507
	133.650	80.765				
			126.438	0.050	6.322	6.322
	133.700	172.111				
			225.110	0.050	11.255	11.255
	133.750	278.108				
			340.587	0.050	17.029	17.029
	133.800	403.067				

Structure: CBMH ST-6
Rim: 133.600

	Elevation (m)	End Area (m2)	Avg Area (m2)	Depth (m)	Volume (m3)	Total Volume (m3)
Rim	133.600	0.000				
			15.978	0.050	0.799	0.799
	133.650	31.955				
			78.351	0.050	3.918	3.918
	133.700	124.747				
			185.551	0.050	9.278	9.278
	133.750	246.355				
			312.678	0.050	15.634	15.634
	133.800	379.002				

Structure: CBMH ST-7
Rim: 133.600

	Elevation (m)	End Area (m2)	Avg Area (m2)	Depth (m)	Volume (m3)	Total Volume (m3)
Rim	133.600	0.000				
			13.430	0.050	0.671	0.671
	133.650	26.859				
			67.148	0.050	3.357	3.357
	133.700	107.436				
			150.558	0.050	7.528	7.528
	133.750	193.680				
			253.960	0.050	12.698	12.698
	133.800	314.240				

Project: 1697 Highway 2

Project #: 122065

Date: December 2022

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Surface Storage

Structure: CBMH ST-9
Rim: 133.800

Elevation (m)	End Area (m2)	Avg Area (m2)	Depth (m)	Volume (m3)	Total Volume (m3)
133.800	0.000				

Structure: CB ST-10
Rim: 133.800

Elevation (m)	End Area (m2)	Avg Area (m2)	Depth (m)	Volume (m3)	Total Volume (m3)
Rim 133.800	0.000				

Structure: CBMH ST-11
Rim: 133.550

Elevation (m)	End Area (m2)	Avg Area (m2)	Depth (m)	Volume (m3)	Total Volume (m3)
Rim 133.550	0.000				
133.600	33.974	16.987	0.050	0.849	0.849
133.650	135.897	84.935	0.050	4.247	4.247
133.700	305.768	220.832	0.050	11.042	11.042
133.750	526.722	416.245	0.050	20.812	20.812
133.800	654.585	590.653	0.050	29.533	29.533

Structure: CBMH ST-12
Rim: 133.600

Elevation (m)	End Area (m2)	Avg Area (m2)	Depth (m)	Volume (m3)	Total Volume (m3)
Rim 133.600	0.000				
133.650	44.690	22.345	0.050	1.117	1.117
133.700	178.759	111.724	0.050	5.586	5.586
133.750	402.207	290.483	0.050	14.524	14.524
133.800	625.043	513.625	0.050	25.681	25.681

Project: 1697 Highway 2

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Project #: 122065

Date: December 2022

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Total Stage Storage

Elevation (m)	Surface Volume							Total Volume (m3)
	CBMH ST-5 (m3)	CBMH ST-6 (m3)	CBMH ST-7 (m3)	CBMH ST-9 (m3)	CB ST-10 (m3)	CBMH ST-11 (m3)	CBMH ST-12 (m3)	
133.550	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
133.600	0.488	0.000	0.000	0.000	0.000	0.849	0.000	1.337
133.650	2.507	0.799	0.671	0.000	0.000	4.247	1.117	9.341
133.700	6.322	3.918	3.357	0.000	0.000	11.042	5.586	30.225
133.750	11.255	9.278	7.528	0.000	0.000	20.812	14.524	63.397
133.8	17.029	15.634	12.698	0.000	0.000	29.533	25.681	100.575

Project: 1697 Highway 2
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 Date: December 2022
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Based on MOE criteria, a minimum orifice size of 50mm is to be used. As such the detention calculation was performed based on this minimum orifice size.

Check Drawdown time on 50mm Orifice

D= Orifice Diameter 0.05 m
 A_o= Orifice Area 0.0019635 m²
 g=Gravity= 9.81 m/s²
 C= Discharge Coefficient= 0.61
 h = average head = 0.50 m

*Assume an average head of 0.50m

$$Q = CA(2gh)^{0.5}$$

$$Q = 0.003751407 \text{ m}^3/\text{s}$$

Volume Required to retain the 25mm event on-site (50mm orifice) = 71.00 m³ (From Node 13 - VO Output Route Reservoir)

$$\text{Drawdown time (t)} = \frac{\text{Volume retained on-site}}{\text{Orifice Flow}} = \frac{71.00}{0.003751407} = 18926.23 \text{ s}$$

$$t = 18926.230 \text{ s} = 5.26 \text{ hours}$$

Based on the minimum allowable orifice size, the 25mm rainfall event is to be stored on-site for 5.41 hours.

On-site storage will be provided through a Duromaxx SRPE underground storage system complete with 750mm pipes

$$\text{Area of pipe (750mm)} = 0.44 \text{ m}^2$$

$$\text{Pipe length required (m)} = \frac{\text{Volume}}{\text{Area of Pipe}} = 160.7111 \text{ m}$$

Due to site constraints, only 154m of pipe is proposed to be installed (68.04 m³ of storage), the remaining 2.96m³ of required storage will be made up through pipe storage storing up to 131.31 as outlined below:

Pipe Storage

FROM MH	TO MH	Diameter (m)	Area (m2)	Length (m)	Volume (m3)
MH ST-4	DURAMAXX STORAGE	0.45	0.159	5.19	0.83
DURAMAXX STORAGE	CBMH ST-6	0.45	0.159	1.61	0.26
CBMH ST-6	CBMH ST-7	0.45	0.159	18.22	2.90
MH ST-4	CB ST-5	0.30	0.071	18.22	1.29

TOTAL 5.27

$$\text{Total Extended Detention Storage} = \text{Duramaxx Storage} + \text{Pipe Storage} = 73.31 \text{ m}^3 > 71.00 \text{ m}^3$$

Through the implementation of underground and pipe storage, extended detention of the 25mm rainfall event has been retained on-site

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Orifice Discharge

		Elevation (m)	Head (m)	Discharge (m3/s)	Discharge (L/s)
Orifice 1 Diameter:	50 mm				
Orifice Type:	PLATE				
Orifice Coeff	0.61	130.72	0.20	0.00238	2.38
Centreline:	130.52 m	130.84	0.32	0.00301	3.01
X-Sectional Area:	0.001963 m2	131.80	1.28	0.00601	6.01
Gravity Constant	9.81 m/s2	132.05	1.53	0.00657	6.57
		132.31	1.79	0.00710	7.10
		132.56	2.04	0.00758	7.58
		132.81	2.29	0.00803	8.03
		132.87	2.35	0.00814	8.14
		133.45	2.93	0.00908	9.08
		133.50	2.98	0.00916	9.16
		133.55	3.03	0.00924	9.24
		133.60	3.08	0.00931	9.31
		133.65	3.13	0.00939	9.39
		133.70	3.18	0.00946	9.46
		133.75	3.23	0.00954	9.54
		133.80	3.28	0.00961	9.61

		Elevation (m)	Head (m)	Discharge (m3/s)	Discharge (L/s)
Orifice 2 Diameter:	225 mm				
Orifice Type:	PLATE				
Orifice Coeff	0.61				
Centreline:	131.65 m	131.80	0.15	0.04126	41.26
X-Sectional Area:	0.039761 m2	132.05	0.40	0.06773	67.73
Gravity Constant	9.81 m/s2	132.31	0.66	0.08711	87.11
		132.56	0.91	0.10234	102.34
		132.81	1.16	0.11558	115.58
		132.87	1.22	0.11854	118.54
		133.45	1.80	0.14404	144.04
		133.50	1.85	0.14602	146.02
		133.55	1.90	0.14799	147.99
		133.60	1.95	0.14992	149.92
		133.65	2.00	0.15184	151.84
		133.70	2.05	0.15373	153.73
		133.75	2.10	0.15559	155.59
		133.80	2.15	0.15743	157.43

Orifice Discharge Equation

$$Q = 0.005305 \sqrt{H}$$

G = Gravitational Constant

H = Head (m)

A = X-Sectional Area (m2)

C = Orifice Coefficient

Note: Orifice Coefficient for PLATE orifice = 0.61

Orifice Coefficient for TUBE orifice = 0.80

Orifice Equation based on:

$$Q = CAV\sqrt{2GH}$$

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Manhole Storage Calculations

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure:	CBMH ST-3	Elevation	Depth	Volume
Diameter:	1200 mm	(m)	(m)	(m3)
X-Sectional Area:	1.1310 m2	130.96	0.00	0.006
Rim:	133.67 m	131.80	0.84	0.956
Obvert	130.96 m	132.05	1.10	1.238
		132.31	1.35	1.532
		132.56	1.60	1.815
		132.81	1.85	2.098
		132.87	1.91	2.166
		133.45	2.49	2.822
		133.50	2.54	2.878
		133.55	2.60	2.935
		133.60	2.64	2.991
		133.65	2.69	3.048
		133.67	2.71	3.071

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure:	CBMH ST-5	Elevation	Depth	Volume
Diameter:	1200 mm	(m)	(m)	(m3)
X-Sectional Area:	1.1310 m2	130.96	0.00	0.006
Rim:	133.55 m	131.80	0.62	0.702
Obvert	131.18 m	132.05	0.87	0.985
		132.31	1.13	1.279
		132.56	1.38	1.562
		132.81	1.63	1.845
		132.87	1.69	1.912
		133.45	2.27	2.568
		133.50	2.32	2.625
		133.55	2.37	2.682

Project: 1697 Highway 2

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Revised: January 2024

Manhole Storage Calculations

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure: CBMH ST-6		Elevation	Depth	Volume
Diameter: 1200 mm		(m)	(m)	(m3)
X-Sectional Area: 1.1310 m2		131.80	0.61	0.684
Rim: 133.60 m		132.05	0.86	0.967
Obvert: 131.20 m		132.31	1.12	1.261
		132.56	1.37	1.544
		132.81	1.62	1.827
		132.87	1.68	1.894
		133.45	2.26	2.550
		133.50	2.31	2.607
		133.55	2.36	2.663
		133.60	2.41	2.720

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure: CBMH ST-7		Elevation	Depth	Volume
Diameter: 1200 mm		(m)	(m)	(m3)
X-Sectional Area: 1.1310 m2		131.8	0.42	0.478
Rim: 133.60 m		132.05	0.67	0.761
Obvert: 131.38 m		132.31	0.93	1.055
		132.56	1.18	1.338
		132.81	1.43	1.621
		132.87	1.49	1.689
		133.45	2.07	2.345
		133.50	2.12	2.401
		133.55	2.17	2.458
		133.60	2.22	2.514

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Revised: January 2024

Manhole Storage Calculations

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure: CBMH ST-9		Elevation	Depth	Volume
Diameter: 1200 mm		(m)	(m)	(m3)
X-Sectional Area: 1.1310 m2		132.31	0.16	0.181
Rim: 133.80 m		132.56	0.41	0.464
Obvert: 132.15 m		132.81	0.66	0.746
		132.87	0.72	0.814
		133.45	1.30	1.470
		133.50	1.35	1.527
		133.55	1.40	1.583
		133.60	1.45	1.640
		133.65	1.50	1.696
		133.70	1.55	1.753
		133.75	1.60	1.810
		133.80	1.65	1.866

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure: CB ST-10		Elevation	Depth	Volume
Diameter: 1200 mm		(m)	(m)	(m3)
X-Sectional Area: 1.1310 m2		132.56	0.23	0.262
Rim: 133.8 m		132.81	0.48	0.545
Obvert 132.33 m		132.87	0.54	0.613
		133.45	1.12	1.269
		133.50	1.17	1.326
		133.55	1.22	1.382
		133.60	1.27	1.439
		133.65	1.32	1.495
		133.70	1.37	1.552
		133.75	1.42	1.608
		133.80	1.47	1.665

Project: 1697 Highway 2

Project #: 122065

Date: December 2022

Revised: January 2024

Manhole Storage Calculations

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure: CBMH ST-11		Elevation	Depth	Volume
Diameter: 1200 mm		(m)	(m)	(m3)
X-Sectional Area: 1.1310 m2		132.56	0.27	0.308
Rim: 133.55 m		132.81	0.52	0.590
Obvert 132.29 m		132.87	0.58	0.658
		133.45	1.16	1.314
		133.50	1.21	1.371
		133.55	1.26	1.427

<u>Manhole Data</u>		<u>Incremental Storage</u>		
Structure: CBMH ST-12		Elevation	Depth	Volume
Diameter: 1200 mm		(m)	(m)	(m3)
X-Sectional Area: 1.1310 m2		132.56	0.18	0.206
Rim: 133.6 m		132.81	0.43	0.489
Obvert 132.38 m		132.87	0.49	0.556
		133.45	1.07	1.212
		133.50	1.12	1.269
		133.55	1.17	1.326
		133.60	1.22	1.382

Project: 1697 Highway 2

Project #: 122065

Date: December 2022

Revised: January 2024

Total Manhole Storage Calculation

<u>Elevation (m)</u>	<u>Volume (m3)</u>
130.96	0.011
131.80	2.821
132.05	3.952
132.31	5.309
132.56	7.498
132.81	9.760
132.87	10.303
133.45	15.551
133.50	16.060
133.55	16.456
133.60	16.795
133.65	16.965
133.70	17.100
133.75	17.213
133.80	17.327

Project: 1697 Highway 2

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Project #: 122065

Date: December 2022

Revised: January 2024

750mm Duromaxx SRPE Underground Storage System

Invert:	130.558 m		
Diameter:	750 m		
X-Sectional Area:	0.4418 m ²	Elevation	Volume
Obvert (Full)	130.96 m	(m)	(m ³)
Middle (50% Full)	130.93 m	<hr/>	<hr/>
Total Pipe Length:	154.00 m	130.50	0.00
Storage Volume:	68.04 m ³	130.72	16.70
		130.84	68.04

Project: 1697 Highway 2

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Project #: 122065

Date: December 2022

Revised: January 2024

Stormtech SC-740 Underground Storage System

Underground Storage through Stormtech System
(Product Info attached)

System Info

Max Storage per unit (m3) m3 (6" Stone Foundation)
Chamber Inv: 131.850 m
Stone Inv: 131.698 m
Top Elev 131.810 m
Units: 12.0

Incremental Storage

Elevation (m)	Depth (m)	Chamber Storage (m3)	Stone Storage (m3)	Total Volume (m3)
131.70	0.00	0.000	0.000	0.000
131.95	0.25	2.964	2.652	5.616
132.21	0.51	9.696	3.780	13.476
132.46	0.76	14.628	5.640	20.268
132.71	1.02	15.600	9.084	24.684
132.77	1.07	15.600	9.852	25.452

Project: 1697 Highway 2

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Project #: 122065

Date: December 2022

Revised: January 2024

Stage - Storage - Discharge

C/L Orifice 1: 130.52 m

C/L Orifice 2: 131.65 m

Orifice Diameter: 50 mm Plate

Orifice Diameter: 225 mm Plate

Elevation (m)	Head (m)	Surface Storage (m3)	Structure Storage (m3)	Duromaxx Storage (m3)	Stormtech Storage (m3)	Total Storage (m3)	Discharge (m3/s)	Storage (ha.m)
130.50	0.00	0.000	0.000	0.000	0.000	0.000	0.0000	0.000000
130.72	0.20	0.000	0.000	16.700	0.000	16.700	0.0024	0.000000
130.84	0.32	0.000	0.011	68.035	0.000	68.046	0.0030	0.006805
131.80	1.28	0.000	2.821	68.035	0.000	70.856	0.0473	0.007086
132.05	1.53	0.000	3.952	68.035	5.616	77.603	0.0743	0.007760
132.31	1.79	0.000	5.309	68.035	13.476	86.820	0.0942	0.008682
132.56	2.04	0.000	7.498	68.035	20.268	95.801	0.1099	0.009580
132.81	2.29	0.000	9.760	68.035	24.684	102.479	0.1236	0.010248
132.87	2.35	0.000	10.303	68.035	25.452	103.790	0.1267	0.010379
133.45	2.93	0.000	15.551	68.035	25.452	109.038	0.1531	0.010904
133.50	2.98	0.000	16.060	68.035	25.452	109.547	0.1552	0.010955
133.55	3.03	0.000	16.456	68.035	25.452	109.943	0.1572	0.010994
133.60	3.08	1.337	16.795	68.035	25.452	111.619	0.1592	0.011162
133.65	3.13	9.341	16.965	68.035	25.452	119.793	0.1612	0.011979
133.70	3.18	30.225	17.100	68.035	25.452	140.812	0.1632	0.014081
133.75	3.23	63.397	17.213	68.035	25.452	174.098	0.1651	0.017410
133.80	3.28	100.575	17.327	68.035	25.452	211.389	0.1670	0.021139

Stormceptor® EF Sizing Report

STORMCEPTOR®

ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

11/30/2022

Province:	Ontario
City:	Courtice
Nearest Rainfall Station:	TORONTO CITY
Climate Station Id:	6158355
Years of Rainfall Data:	20

Project Name:	1697 Highway 2
Project Number:	122065
Designer Name:	MATT HOLMES
Designer Company:	DG BIDDLE & ASSOCIATES ITD
Designer Email:	MATTHEW.HOLMES@DGBIDDLE.COM
Designer Phone:	905-441-6836
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Site Name:	
------------	--

Drainage Area (ha):	0.94
Runoff Coefficient 'c':	0.74

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	22.47
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	190.00
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Net Annual Sediment (TSS) Load Reduction Sizing Summary	
Stormceptor Model	TSS Removal Provided (%)
EF4	81
EF6	89
EF8	94
EF10	96
EF12	98

Recommended Stormceptor EF Model: EF4
Estimated Net Annual Sediment (TSS) Load Reduction (%): 81
Water Quality Runoff Volume Capture (%): > 90

Stormceptor® EF Sizing Report

THIRD-PARTY TESTING AND VERIFICATION

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

PERFORMANCE

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

PARTICLE SIZE DISTRIBUTION (PSD)

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

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

Stormceptor®EF Sizing Report

Upstream Flow Controlled Results

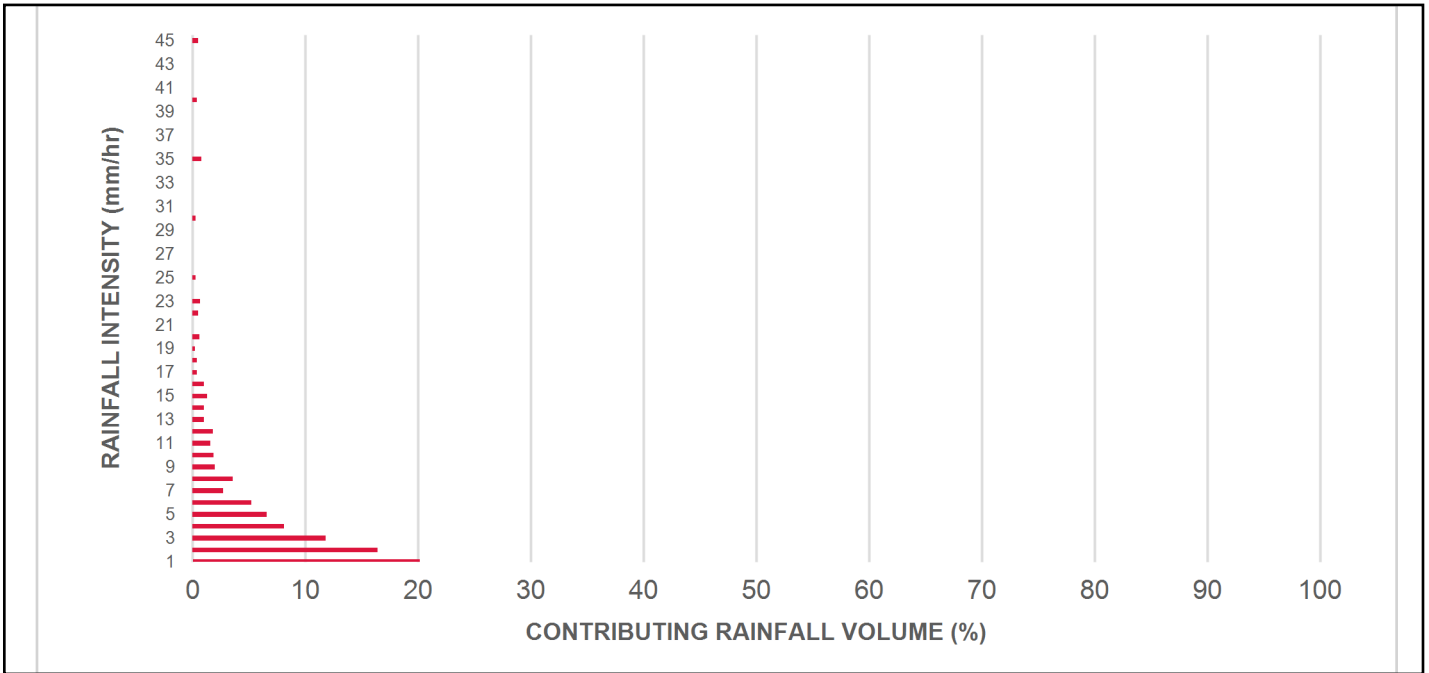
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m ²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.5	8.7	8.7	0.97	58.0	48.0	100	8.7	8.7
1	20.2	28.9	1.93	116.0	97.0	97	19.7	28.3
2	16.4	45.3	3.87	232.0	193.0	84	13.9	42.2
3	11.8	57.1	5.80	348.0	290.0	79	9.3	51.5
4	8.1	65.2	7.74	464.0	387.0	75	6.1	57.6
5	6.6	71.9	9.67	580.0	483.0	73	4.8	62.4
6	5.2	77.1	11.60	696.0	580.0	71	3.7	66.1
7	2.7	79.8	13.54	812.0	677.0	70	1.9	68.0
8	3.6	83.4	15.47	928.0	774.0	69	2.5	70.5
9	2.0	85.4	17.40	1044.0	870.0	69	1.4	71.8
10	1.9	87.3	19.34	1160.0	967.0	68	1.3	73.1
11	1.6	88.9	21.27	1276.0	1064.0	69	1.1	74.3
12	1.8	90.7	23.21	1392.0	1160.0	71	1.3	75.5
13	1.0	91.6	25.14	1508.0	1257.0	73	0.7	76.2
14	1.0	92.7	27.07	1624.0	1354.0	74	0.8	77.0
15	1.3	93.9	29.01	1740.0	1450.0	73	0.9	77.9
16	1.0	95.0	30.94	1856.0	1547.0	69	0.7	78.6
17	0.4	95.3	32.87	1972.0	1644.0	64	0.2	78.8
18	0.4	95.7	34.81	2088.0	1740.0	61	0.2	79.1
19	0.2	95.9	36.74	2204.0	1837.0	58	0.1	79.2
20	0.6	96.5	38.68	2321.0	1934.0	55	0.3	79.5
21	0.0	96.5	40.61	2437.0	2030.0	52	0.0	79.5
22	0.5	97.0	42.54	2553.0	2127.0	50	0.2	79.8
23	0.7	97.7	44.48	2669.0	2224.0	48	0.3	80.1
24	0.0	97.7	46.41	2785.0	2321.0	45	0.0	80.1
25	0.3	98.0	48.34	2901.0	2417.0	44	0.1	80.2
30	0.3	98.3	58.01	3481.0	2901.0	36	0.1	80.3
35	0.8	99.1	67.68	4061.0	3384.0	32	0.2	80.6
40	0.4	99.5	77.35	4641.0	3868.0	28	0.1	80.7
45	0.5	100.0	87.02	5221.0	4351.0	25	0.1	80.8
Estimated Net Annual Sediment (TSS) Load Reduction =								81 %

Climate Station ID: 6158355 Years of Rainfall Data: 20

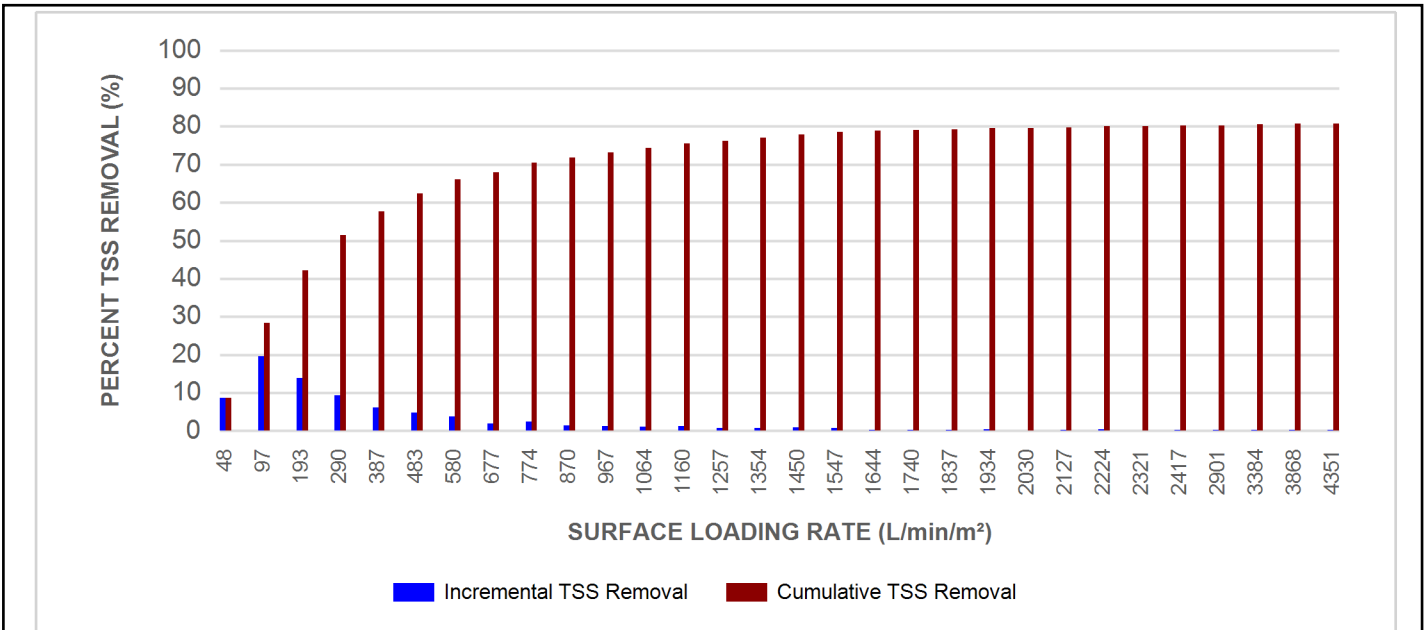


Stormceptor® EF Sizing Report

RAINFALL DATA FROM TORONTO CITY RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Stormceptor® **EF** Sizing Report

Maximum Pipe Diameter / Peak Conveyance

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

SCOUR PREVENTION AND ONLINE CONFIGURATION

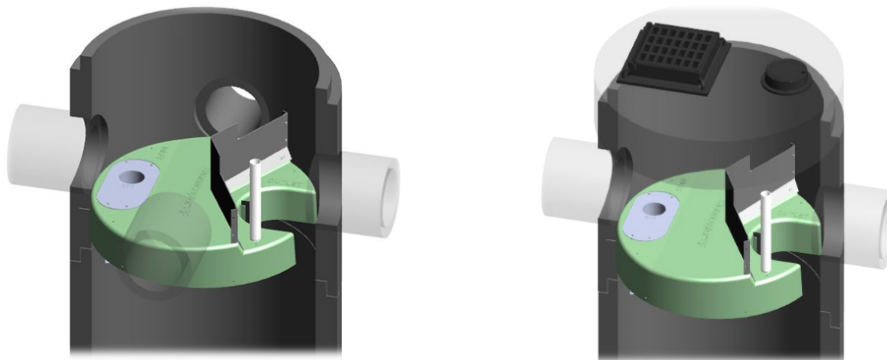
► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance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

DESIGN FLEXIBILITY

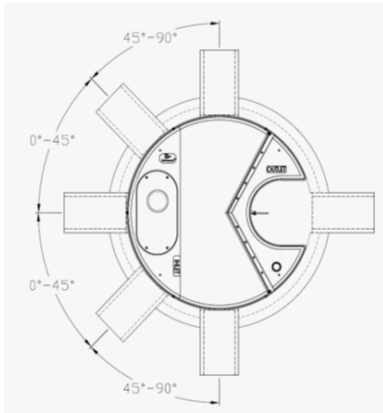
► Stormceptor® EF and EFO offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle,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

OIL CAPTURE AND RETENTION

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



Stormceptor® EF Sizing Report



INLET-TO-OUTLET DROP

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

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

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

HEAD LOSS

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

For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

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

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

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

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

STANDARD STORMCEPTOR EF/EFO DRAWINGS

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

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

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

Stormceptor® **EF** Sizing Report

**STANDARD PERFORMANCE SPECIFICATION FOR
“OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE**

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

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

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL



Stormceptor®EF Sizing Report

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

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m² to 1400 L/min/m², and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m² and 1400 L/min/m² shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

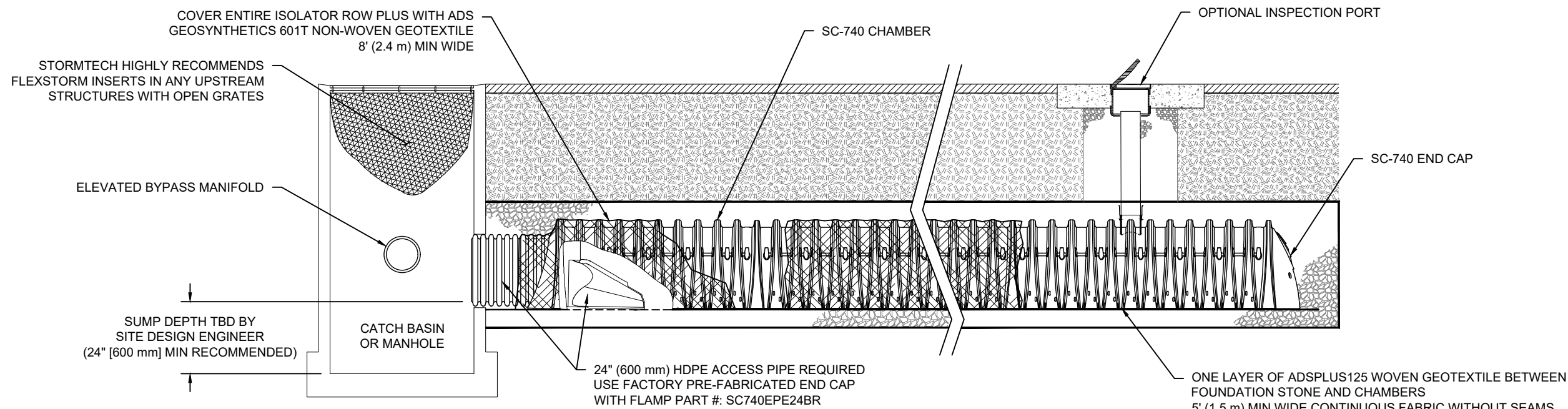
3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m² shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m², and shall be calculated using a simple proportioning formula, with 1400 L/min/m² in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m².

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m².



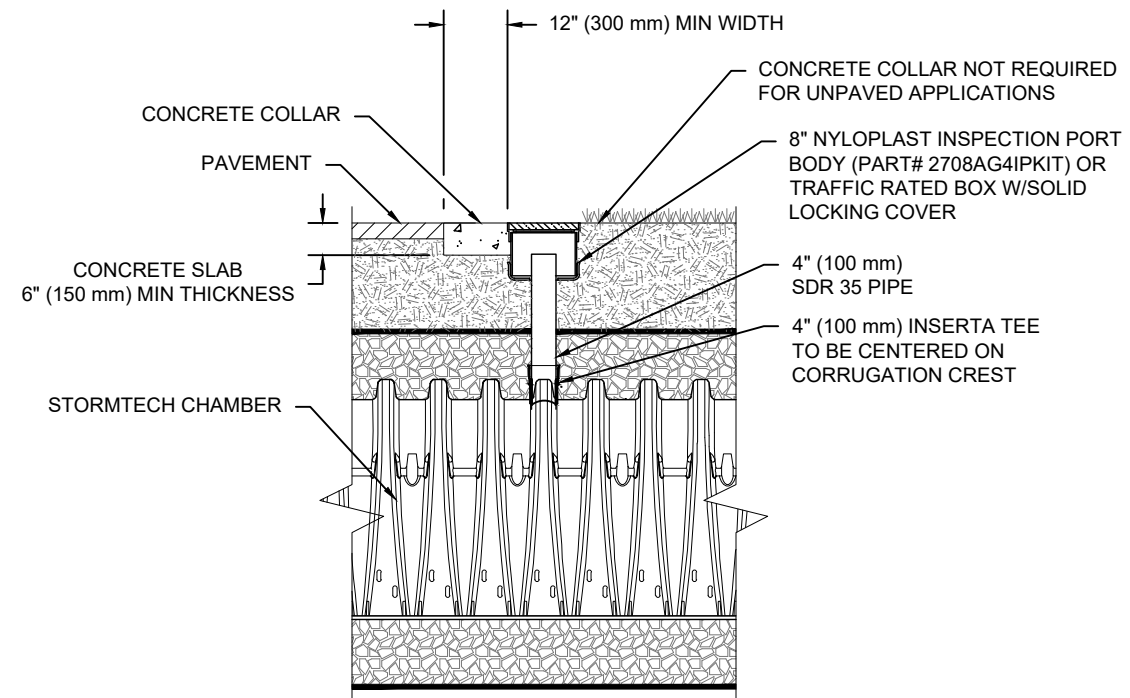
SC-740 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
 - A. INSPECTION PORTS (IF PRESENT)
 - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
 - B. ALL ISOLATOR PLUS ROWS
 - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
 - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
 - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
 - A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
 - B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

- 1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- 2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4\"/>

SC-740	
ISOLATOR ROW PLUS DETAILS	
DATE: 9/12/22	DRAWN: KLJ
PROJECT #:	CHECKED: KLJ

DATE	DRWN	CHKD	DESCRIPTION

StormTech®
Chamber System
888-892-2694 | WWW.STORMTECH.COM

4640 TRUJEMAN BLVD
HILLIARD, OH 43026



THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

Project: 1697 Highway 2

1/1

Project #: 122065

Date: December 2022

Revised: January 2024

Post-Development Infiltration Target

Area of Recharge Available	9,350	m ²			
Total Estimated Infiltration	1,497	m ³ /yr			
Pre-Development Infiltration	160	mm/yr			
Post-Development Infiltration Deficit (-)	70%				
	70%	of	160	mm/yr	
	112	mm/yr			
Total Annual Precipitation	872.0	mm/yr			
Equivalent Deficit Percentage	112	mm/yr	/	872.0	mm/yr
	13%				
*Equivalent Annual Rainfall to Capture	1.4	mm			
Volume of rainfall to capture across site	12.62	m ³			

Based on the equivalent annual rainfall to capture value from Figure C.1, the volume required to be captured across the site is 12.62m³.

* Figure C.1: Total Rainfall Capture vs Percentage of Total Avg Annual Rainfall Depth From CLOCA "Technical Guidelines for Stormwater Management Submissions".

Project: 1697 Highway 2
Project #: 122065
Date: December 2022
Revised: January 2024

Infiltration System Sizing

The infiltration gallery is sized to capture 12.62m³ of runoff from the impervious areas of the site in order to achieve the pre-development infiltration targets based on the water balance analysis.

$d_{r\ max}$ - maximum stone depth (mm)

i - infiltration rate (mm/hr)

V_r - void ratio

t_s - drainage time (hr)

** The native soils in the area generally consist of silty sand.
A conservative infiltration rate of 12 mm/hr is assumed.

i	12	mm/hr	
V_r	0.4		*typical value for clear stone
t_s	48	hr	*recommended maximum drainage time

$$d_{r\ max} = \frac{i \cdot t_s}{V_r}$$

$$d_{r\ max} \quad 1440 \quad \text{mm}$$

The proposed stone depths of 0.35m and 1.30m are less than the maximum 1.44m. Therefore, the drainage time of the infiltration gallery will be less than 48 hrs.

Project: 1697 Highway 2
Project #: 122065
Date: December 2022
Revised: January 2024

Infiltration System Sizing

The infiltration gallery is sized to capture 12.62m³ of runoff from the impervious areas of the site in order to achieve the pre-development infiltration targets based on the water balance analysis.

Volume Captured

$$\begin{aligned}
 WQV &= A_f * d \\
 &= 12.62 \text{ m}^3 \quad \text{(See Post-Development Infiltration Target Calculation)}
 \end{aligned}$$

Volume Of Stone Required - Water Balance Requirements

$$\begin{aligned}
 WQV &= 12.62 \text{ m}^3 && * \text{ volume of water to be captured} \\
 V_r &= 0.4 && * \text{ typical void ratio of clear stone}
 \end{aligned}$$

$$\begin{aligned}
 V &= \frac{WQV}{V_r} && * \text{ volume of stone required} \\
 &= 31.55 \text{ m}^3
 \end{aligned}$$

Volume Of Stone Required - 25mm Runoff

$$\begin{aligned}
 \text{Site Area} &= 0.935 \text{ ha} \\
 \text{Weighted RC} &= 0.733 \\
 \% \text{ Imperviousness} &= 76.21\%
 \end{aligned}
 = 9349.68 \text{ m}^2$$

VO ID	RV (mm)	RV (m)
48	18.73	0.018729

Volume Required to store 25mm runoff = 175.1102 m³

Due to design constraints, it is not feasible to retain 175m³ on-site. Therefore, size gallery to retain 5mm of runoff.

$$\begin{aligned}
 \text{Volume required to store 5mm runoff} &= 46.75 \text{ m}^3 \\
 \text{Volume of stone required to store 5mm runoff} &= 116.87 \text{ m}^3
 \end{aligned}$$

Infiltration Trench 1 Dimensions*

*Under Stormtech System

$$\begin{aligned}
 V &= 12.7 \text{ m}^3 \\
 L &= 8.68 \text{ *proposed length (m)} \\
 W &= 4.19 \text{ *proposed width (m)} \\
 D &= 0.35 \text{ *proposed depth (m)}
 \end{aligned}$$

Total Volume = 46.85 m³

Infiltration Trench 2 Dimensions

$$\begin{aligned}
 V &= 34.1 \text{ m}^3 \\
 L &= 19.50 \text{ *proposed length (m)} \\
 W &= 1.40 \text{ *proposed width (m)} \\
 D &= 1.25 \text{ *proposed depth (m)}
 \end{aligned}$$

Project: 1697 Highway 2
Project #: 122065
Date: December 2022
Revised: January 2024

Infiltration System Sizing

Since only 46.85m³ of 116.87 m³ can be stored in the proposed infiltration galleries. Size an area of permeable pavers to store the remaining 70.02m³.

* Assume a 0.35m deep stone reservoir below the permeable pavers as per detail on 122065-SS-1.

Permeable Pavers Infiltration Volume

Area (m ²)	Depth (m)	Volume (m ³)
203.73	0.35	71.31

$$\begin{aligned} \text{Total on-site Infiltration} &= \text{Infiltration Gallery storage} + \text{Permeable Paver storage} \\ &= 118.16 \text{ m}^3 \end{aligned}$$

Since the storage of the 5mm runoff is greater than the water balance requirements, by storing 118.16m³, both the water balance and the minimum requirement of 5mm of runoff to be retained have been addressed.

SEWER GRATE CAPACITY DESIGN SHEET

D.G.BIDDLE & ASSOCIATES LTD.

consulting engineers

MUNICIPALITY Clarington **DESIGN BY** M.J.H.
PROJECT 1697 Hwy 2, Courtice **CHK'D BY** M.B.C.
PROJECT # 122065 **DATE** OCTOBER 26,2023
REV Jan 2024

CRITERIA
n 0.013
STORM 100 YEAR
A 1770
B 4
C 0.82

CATCHMENT	DRAINAGE DATA				RATIONAL DESIGN			INLET CAPACITY		
	AREA (ha)	I	AxI	ACCUM AxI	T.C min	R mm/hr	REQ'D INLET FLOW** L/sec	FLOOD DEPTH mm	FLOW CAPACITY* L/sec	PONDING EL m
LANDSCAPE TO CBMH 5	0.005	0.55	0.003	0.003	-	-	-	-	-	-
CBMH 5	0.058	0.90	0.052	0.055	10.00	203.31	62.17	105	65.00	133.65
EX RESIDENTIAL TO CBMH 6	0.043	0.45	0.019	0.019						
LANDSCAPE TO CBMH 6	0.017	0.38	0.007	0.026	-	-	-	-	-	-
CBMH 6	0.063	0.90	0.057	0.083	10.00	203.31	93.82	130	100.00	133.73
CBMH 7	0.086	0.90	0.078	0.078	10.00	203.31	88.17	120	90.00	133.72
LANDSCAPE TO CBMH 9	0.006	0.55	0.003	0.003						
CBMH 9	0.034	0.90	0.031	0.034	10.00	203.31	38.43	85	40.00	133.89
LANDSCAPE TO CB 10	0.017	0.32	0.005	0.005						
CB 10	0.030	0.90	0.027	0.032	10.00	203.31	36.17	85	40.00	133.89
LANDSCAPE TO CBMH 11	0.036	0.46	0.017	0.017						
CBMH 11	0.078	0.90	0.070	0.087	10.00	203.31	98.34	130	100.00	133.68
CBMH 12	0.092	0.90	0.083	0.083	10.00	203.31	93.78	130	100.00	133.73
CBMH 3***	0.015	0.34	0.005	0.005	10.00	203.31	5.77	5	10.00	133.68
EX SUBDIVISION TO EX CBMH	0.045	0.45	0.020	0.020						
LANDSCAPE TO EX CBMH	0.032	0.37	0.012	0.032	10.00	203.31	36.17	85	40.00	133.70

*Inlet capacity as per MTO Drainage Management Manual. Single/Double Catchbasin as per Design Chart 4.19

**Required inlet flow doubled to account for 50% blockage condition.

***Since only ponding 5mm, this is not illustrated on the Site Grading Plan SG-1.

PROJECT 1697 Highway 2, Courtice
PROJECT # 122065
DATE October 27, 2023
REV January 23, 2024

Overland Flow Weir at Northeast Site Corner

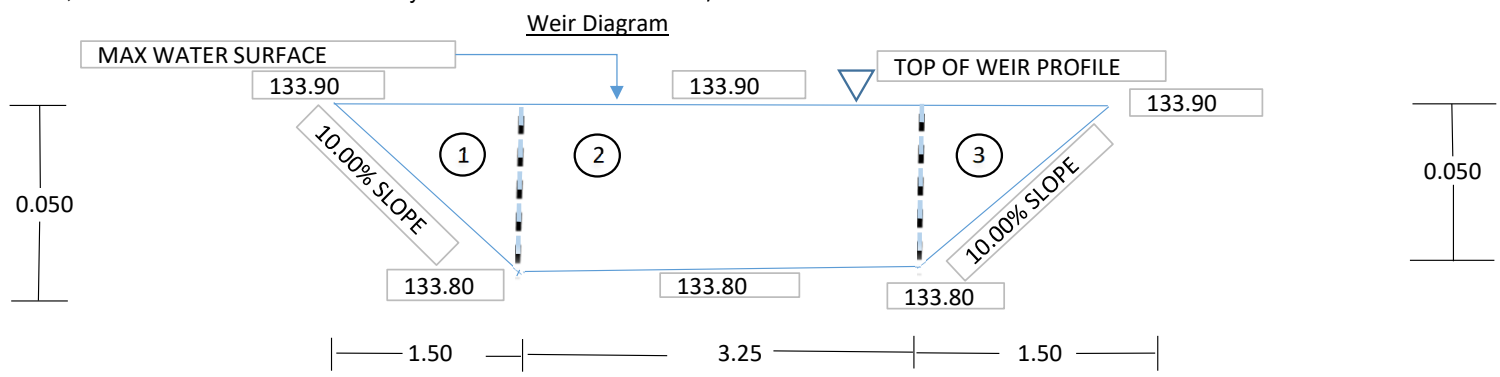
OVERLAND FLOW

The overland flow weir is located in the northeast corner of the site and has been sized to convey the major flows from the subject property. The Visual Otthymo program (node 30 - Post-Dev Model) simulated the following flows:

$Q_{100\text{ yr}} = 0.39 \text{ m}^3/\text{sec}$
 $Q_{5\text{ yr}} = 0.14 \text{ m}^3/\text{sec}$

$Q_{\text{Major}} = 0.25 \text{ m}^3/\text{sec}$

Therefore, the weir should be able to convey $0.25 \text{ m}^3/\text{sec}$



Section 1	Section 2	Section 3
$Q = \frac{2}{3} C_w B \sqrt{2g} (\frac{2}{3} h)^{3/2}$	$Q = \frac{2}{3} C_w B \sqrt{2g} (h)^{3/2}$	$Q = \frac{2}{3} C_w B \sqrt{2g} (\frac{2}{3} h)^{3/2}$
$C_w = 0.577$	$C_w = 0.577$	$C_w = 0.577$
$B \text{ (width)} = 1.50 \text{ m}$	$B \text{ (width)} = 3.25 \text{ m}$	$B \text{ (width)} = 1.50 \text{ m}$
$h = 0.100 \text{ m}$	$h = 0.100 \text{ m}$	$h = 0.100 \text{ m}$
$Q_1 = 0.04 \text{ m}^3/\text{sec}$	$Q_2 = 0.18 \text{ m}^3/\text{sec}$	$Q_3 = 0.04 \text{ m}^3/\text{sec}$

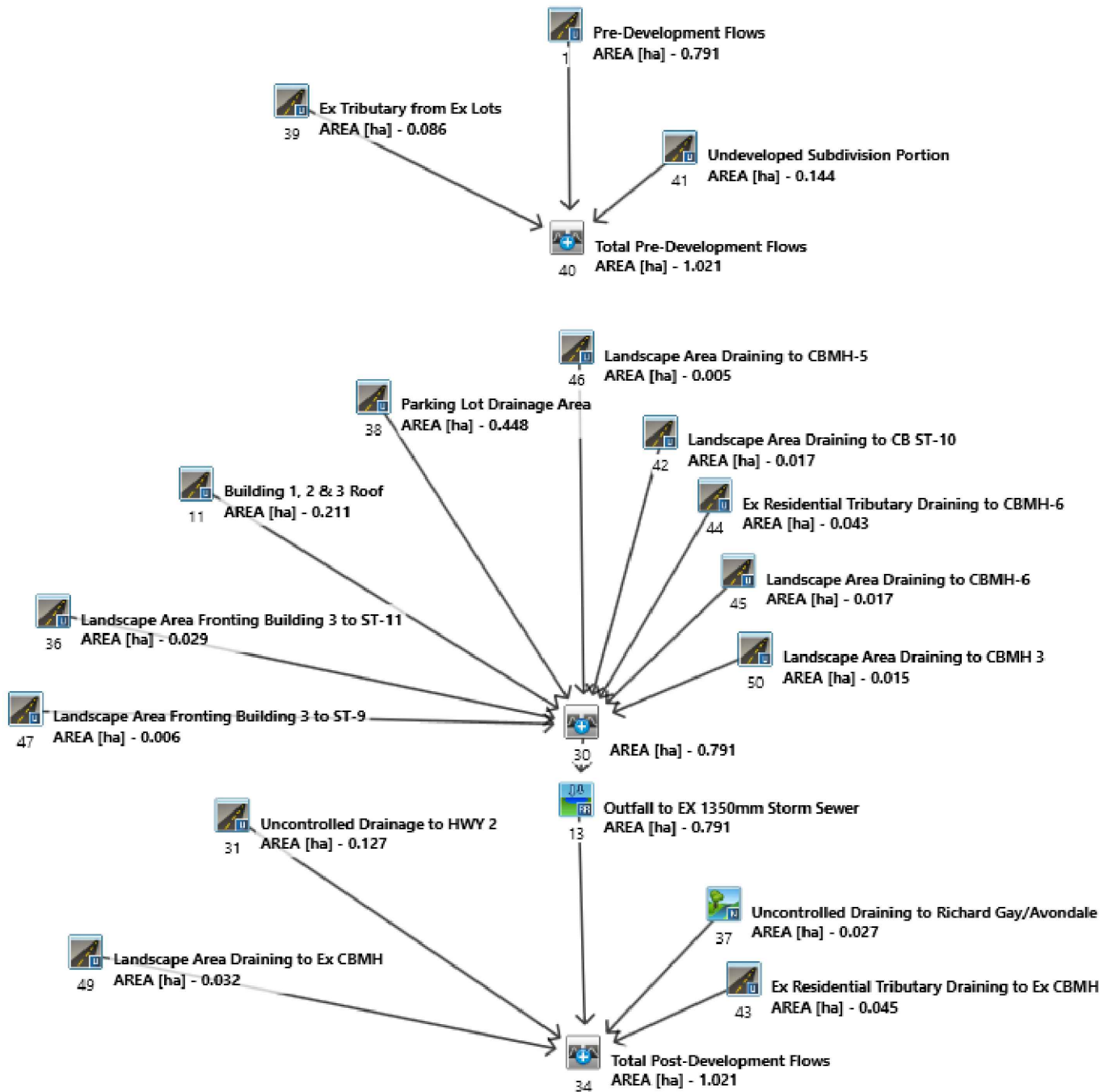
$Q_{\text{Total}} = 0.26 \text{ m}^3/\text{sec} > 0.25 \text{ m}^3/\text{sec}$

Therefore, a weir that is 6.25 m long should have sufficient capacity to convey major flows.

SCHEDULE 2

VISUAL OTTHYMO SCHEMATIC

VISUAL OTTHYMO OUTPUT



1697 HIGHWAY NO. 2, COURTICE, ON
 VISUAL OTTHYMO SCHEMATIC



D.G. Biddle & Associates Limited

consulting engineers and planners

96 KING STREET EAST • OSHAWA, ON • L1H 1B6
 PHONE (905)576-8500 • FAX (905)576-9730
 info@dgbiddle.com

SCALE N.T.S.
 DRAWN M.H.
 DESIGN M.H.
 CHECKED M.B.C.
 DATE JAN 2024

PROJECT
 122065

DWG

FIG 3

```

V V I SSSS U U A L (v 6.2.2015)
V V I SS U U A A L
V V I SS U U A A A A L
V V I SS U U A A L
W W I SSSS UUUU A A LLLLL

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000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y M M O O
O O T T H H Y Y M M O O
000 T T H H Y Y M M 000

```

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***** DETAILED OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
 Output filename: C:\Users\matthew.holmes\AppData\Local\Civica\H5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\9437
 Summary filename: C:\Users\matthew.holmes\AppData\Local\Civica\H5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\9437

DATE: 01-26-2024 TIME: 03:09:05

USER:

COMMENTS: _____

 ** SIMULATION : 1) 2 Year **

CHICAGO STORM
 Ptotal= 28.11 mm

IDF curve parameters: A=1778.000
 B= 13.000
 C= 1.000

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	0.49	1.00	18.95	2.00	2.84	3.00	0.71
0.17	0.66	1.17	77.30	2.17	2.09	3.17	0.61
0.33	0.93	1.33	26.45	2.33	1.60	3.33	0.52
0.50	1.43	1.50	11.48	2.50	1.26	3.50	0.46
0.67	2.46	1.67	6.42	2.67	1.02	3.67	0.40
0.83	5.25	1.83	4.10	2.83	0.85	3.83	0.35

CALIB
 NASHYD (0037)
 ID= 1 DT= 5.0 min

Area (ha)= 0.03 Curve Number (CN)= 71.0
 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	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Unit Hyd Qpeak (cms)= 0.005

PEAK FLOW (cms)= 0.000 (i)
 TIME TO PEAK (hrs)= 1.583
 RUNOFF VOLUME (mm)= 4.165
 TOTAL RAINFALL (mm)= 28.106
 RUNOFF COEFFICIENT = 0.148

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

CALIB
 STANDHYD (0011)
 ID= 1 DT= 5.0 min

Area (ha)= 0.21
 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.19 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 37.53 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max. Eff. Inten. (mm/hr)= 77.30 12.75
 over (min)= 5.00 5.00
 Storage Coeff. (min)= 1.57 (ii) 4.82 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. Qpeak (cms)= 0.33 0.22

TOTALS
 PEAK FLOW (cms)= 0.04 0.00 0.042 (iii)
 TIME TO PEAK (hrs)= 1.33 1.33 1.33
 RUNOFF VOLUME (mm)= 27.11 5.43 24.94
 TOTAL RAINFALL (mm)= 28.11 28.11 28.11
 RUNOFF COEFFICIENT = 0.96 0.19 0.89

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0036)
 ID= 1 DT= 5.0 min

Area (ha)= 0.03
 Total Imp(%)= 47.97 Dir. Conn.(%)= 47.97

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.01 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 13.79 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71

0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
over (min) 5.00 20.00
Storage Coeff. (min)= 0.86 (ii) 18.53 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.34 0.06

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.003 (iii)
TIME TO PEAK (hrs)= 1.33 1.58 1.33
RUNOFF VOLUME (mm)= 27.11 5.43 15.00
TOTAL RAINFALL (mm)= 28.11 28.11 28.11
RUNOFF COEFFICIENT = 0.96 0.19 0.53

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0038)
ID= 1 DT= 5.0 min

Area (ha)= 0.45
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

Surface Area	(ha)=	0.40	0.04
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	54.68	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 12.75
over (min) 5.00 10.00
Storage Coeff. (min)= 1.97 (ii) 5.22 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.31 0.16

TOTALS
PEAK FLOW (cms)= 0.09 0.00 0.087 (iii)
TIME TO PEAK (hrs)= 1.33 1.42 1.33
RUNOFF VOLUME (mm)= 27.11 5.43 24.93
TOTAL RAINFALL (mm)= 28.11 28.11 28.11
RUNOFF COEFFICIENT = 0.96 0.19 0.89

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0042)
ID= 1 DT= 5.0 min

Area (ha)= 0.02
Total Imp(%)= 17.02 Dir. Conn.(%)= 17.02

Surface Area	(ha)=	0.00	0.01
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	10.53	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
over (min) 5.00 20.00
Storage Coeff. (min)= 0.73 (ii) 18.40 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.34 0.06

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
TIME TO PEAK (hrs)= 1.33 1.58 1.33
RUNOFF VOLUME (mm)= 27.11 5.43 7.81
TOTAL RAINFALL (mm)= 28.11 28.11 28.11
RUNOFF COEFFICIENT = 0.96 0.19 0.28

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0044)
ID= 1 DT= 5.0 min

Area (ha)= 0.04
Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

Surface Area	(ha)=	0.02	0.03
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	16.85	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
 over (min)= 5.00 20.00
 Storage Coeff. (min)= 0.97 (ii) 18.64 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.34 0.06

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.003 (iii)
 TIME TO PEAK (hrs)= 1.33 1.58 1.33
 RUNOFF VOLUME (mm)= 27.11 5.43 12.63
 TOTAL RAINFALL (mm)= 28.11 28.11 28.11
 RUNOFF COEFFICIENT = 0.96 0.19 0.45

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0045)
 ID= 1 DT= 5.0 min

Area (ha)= 0.02
 Total Imp(%)= 23.86 Dir. Conn.(%)= 23.86

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 10.68 40.00
 Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.083	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
 over (min)= 5.00 20.00
 Storage Coeff. (min)= 0.74 (ii) 18.40 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.34 0.06

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
 TIME TO PEAK (hrs)= 1.33 1.58 1.33
 RUNOFF VOLUME (mm)= 27.11 5.43 9.28
 TOTAL RAINFALL (mm)= 28.11 28.11 28.11
 RUNOFF COEFFICIENT = 0.96 0.19 0.33

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0046)
 ID= 1 DT= 5.0 min

Area (ha)= 0.00
 Total Imp(%)= 50.97 Dir. Conn.(%)= 50.97

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.00
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 5.66 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	0.49	1.083	18.95	2.083	2.84	3.083	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
 over (min)= 5.00 20.00
 Storage Coeff. (min)= 0.51 (ii) 18.17 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.34 0.06

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
 TIME TO PEAK (hrs)= 1.33 1.58 1.33
 RUNOFF VOLUME (mm)= 27.11 5.43 12.77
 TOTAL RAINFALL (mm)= 28.11 28.11 28.11
 RUNOFF COEFFICIENT = 0.96 0.19 0.45

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0047)
 ID= 1 DT= 5.0 min

Area (ha)= 0.01
 Total Imp(%)= 52.52 Dir. Conn.(%)= 52.52

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.00
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 6.42 40.00
 Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.083	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
 over (min)= 5.00 20.00
 Storage Coeff. (min)= 0.55 (ii) 18.21 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.34 0.06

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
 TIME TO PEAK (hrs)= 1.33 1.58 1.33
 RUNOFF VOLUME (mm)= 27.11 5.43 13.61
 TOTAL RAINFALL (mm)= 28.11 28.11 28.11
 RUNOFF COEFFICIENT = 0.96 0.19 0.48

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 ( 0050) | Area (ha)= 0.02
ID= 1 DT= 5.0 min | Total Imp(%)= 19.50 Dir. Conn.(%)= 19.50
  
```

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.05	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max. Eff. Inten. (mm/hr)=	77.30	10.09
over (min)	5.00	20.00
Storage Coeff. (min)=	0.71 (ii)	18.38 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.34	0.06
PEAK FLOW (cms)=	0.00	0.00
TIME TO PEAK (hrs)=	1.33	1.58
RUNOFF VOLUME (mm)=	27.11	5.43
TOTAL RAINFALL (mm)=	28.11	28.11
RUNOFF COEFFICIENT =	0.96	0.19

TOTALS
0.001 (iii)

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 ( 0030) |
1 + 2 = 3 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 1 ( 0011): 0.21 0.042 1.33 24.94
+ ID2= 2 ( 0036): 0.03 0.003 1.33 15.00
=====
ID = 3 ( 0030): 0.24 0.045 1.33 23.75
  
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

ADD HYD ( 0030) |
3 + 2 = 1 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 3 ( 0030): 0.24 0.045 1.33 23.75
+ ID2= 2 ( 0038): 0.45 0.087 1.33 24.93
=====
  
```

ID = 1 (0030): 0.69 0.132 1.33 24.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

ADD HYD ( 0030) |
1 + 2 = 3 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 1 ( 0030): 0.69 0.132 1.33 24.52
+ ID2= 2 ( 0042): 0.02 0.001 1.33 7.81
=====
ID = 3 ( 0030): 0.70 0.133 1.33 24.13
  
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

ADD HYD ( 0030) |
3 + 2 = 1 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 3 ( 0030): 0.70 0.133 1.33 24.13
+ ID2= 2 ( 0044): 0.04 0.003 1.33 12.63
=====
ID = 1 ( 0030): 0.75 0.136 1.33 23.47
  
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

ADD HYD ( 0030) |
1 + 2 = 3 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 1 ( 0030): 0.75 0.136 1.33 23.47
+ ID2= 2 ( 0045): 0.02 0.001 1.33 9.28
=====
ID = 3 ( 0030): 0.76 0.137 1.33 23.16
  
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

ADD HYD ( 0030) |
3 + 2 = 1 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 3 ( 0030): 0.76 0.137 1.33 23.16
+ ID2= 2 ( 0046): 0.00 0.001 1.33 12.77
=====
ID = 1 ( 0030): 0.77 0.137 1.33 23.09
  
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

ADD HYD ( 0030) |
1 + 2 = 3 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 1 ( 0030): 0.77 0.137 1.33 23.09
+ ID2= 2 ( 0047): 0.01 0.001 1.33 13.61
=====
ID = 3 ( 0030): 0.78 0.138 1.33 23.02
  
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

ADD HYD ( 0030) |
3 + 2 = 1 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 3 ( 0030): 0.78 0.138 1.33 23.02
+ ID2= 2 ( 0050): 0.02 0.001 1.33 8.15
=====
ID = 1 ( 0030): 0.79 0.139 1.33 22.73
  
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

RESERVOIR ( 0013) | OVERFLOW IS OFF
IN= 2--> OUT= 1 |
DT= 5.0 min |
OUTFLOW STORAGE |
(cms) (ha.m.) | (cms) (ha.m.)
0.0000 0.0000 | 0.1531 0.0109
0.0024 0.0000 | 0.1552 0.0110
0.0030 0.0068 | 0.1572 0.0110
  
```

0.0473	0.0071	0.1592	0.0112
0.0743	0.0078	0.1612	0.0120
0.0942	0.0087	0.1632	0.0141
0.1099	0.0096	0.1651	0.0174
0.1236	0.0102	0.1670	0.0211
0.1267	0.0104	0.0000	0.0000

INFLOW : ID= 2 (0030)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
OUTFLOW: ID= 1 (0013)	0.791	0.139	1.33	22.73
	0.791	0.082	1.42	22.75

PEAK FLOW REDUCTION [Qout/Qin](%)= 59.41
 TIME SHIFT OF PEAK FLOW (min)= 5.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0085

CALIB STANDHYD (0031) ID= 1 DT= 5.0 min	Area (ha)= 0.13	Dir. Conn.(%)= 24.53
	Total Imp(%)= 24.53	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.10
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	29.13	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)=	77.30	10.09
over (min)	5.00	20.00
Storage Coeff. (min)=	1.35 (ii)	19.01 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.33	0.06

PEAK FLOW (cms)=	0.01	0.00	0.007 (iii)
TIME TO PEAK (hrs)=	1.33	1.58	1.33
RUNOFF VOLUME (mm)=	27.11	5.43	10.63
TOTAL RAINFALL (mm)=	28.11	28.11	28.11
RUNOFF COEFFICIENT =	0.96	0.19	0.38

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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 (0043) ID= 1 DT= 5.0 min	Area (ha)= 0.04	Dir. Conn.(%)= 35.80
	Total Imp(%)= 35.80	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.03
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	17.28	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)=	77.30	10.09
over (min)	5.00	20.00
Storage Coeff. (min)=	0.99 (ii)	18.65 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.34	0.06

PEAK FLOW (cms)=	0.00	0.00	0.004 (iii)
TIME TO PEAK (hrs)=	1.33	1.58	1.33
RUNOFF VOLUME (mm)=	27.11	5.43	12.63
TOTAL RAINFALL (mm)=	28.11	28.11	28.11
RUNOFF COEFFICIENT =	0.96	0.19	0.45

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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 (0049) ID= 1 DT= 5.0 min	Area (ha)= 0.03	Dir. Conn.(%)= 23.67
	Total Imp(%)= 23.67	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.01	0.02
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	14.51	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)=	77.30	10.09
over (min)	5.00	20.00
Storage Coeff. (min)=	0.89 (ii)	18.55 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.34	0.06

PEAK FLOW (cms)=	0.00	0.00	0.002 (iii)
TIME TO PEAK (hrs)=	1.33	1.58	1.33
RUNOFF VOLUME (mm)=	27.11	5.43	9.77
TOTAL RAINFALL (mm)=	28.11	28.11	28.11
RUNOFF COEFFICIENT =	0.96	0.19	0.35

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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 (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0013):	0.79	0.082	1.42	22.75
+ ID2= 2 (0031):	0.13	0.007	1.33	10.63
ID = 3 (0034):	0.92	0.086	1.42	21.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0034):	0.92	0.086	1.42	21.07
+ ID2= 2 (0037):	0.03	0.000	1.58	4.17
ID = 1 (0034):	0.95	0.086	1.42	20.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0034):	0.95	0.086	1.42	20.59
+ ID2= 2 (0043):	0.04	0.004	1.33	12.63
ID = 3 (0034):	0.99	0.087	1.42	20.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0034):	0.99	0.087	1.42	20.23
+ ID2= 2 (0049):	0.03	0.002	1.33	9.77
ID = 1 (0034):	1.02	0.088	1.42	19.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	Total Imp(%)= 64.30	64.30

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.51	0.28
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	72.63	40.00
Mannings n =	0.013	0.250

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max. Eff. Inten. (mm/hr)=	77.30	10.09
over (min)	5.00	25.00
Storage Coeff. (min)=	2.34 (ii)	20.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	25.00
Unit Hyd. peak (cms)=	0.30	0.05

PEAK FLOW (cms)=	0.11	0.00	*TOTALS*
TIME TO PEAK (hrs)=	1.33	1.67	0.109 (iii)
RUNOFF VOLUME (mm)=	27.11	5.43	1.33
TOTAL RAINFALL (mm)=	28.11	28.11	19.35
RUNOFF COEFFICIENT =	0.96	0.19	28.11
			0.69

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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 (0039)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	Total Imp(%)= 35.80	35.80

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.06
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	23.90	40.00
Mannings n =	0.013	0.250

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max. Eff. Inten. (mm/hr)=	77.30	10.09
over (min)	5.00	20.00
Storage Coeff. (min)=	1.20 (ii)	18.86 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.33	0.06

PEAK FLOW (cms)=	0.01	0.00	*TOTALS*
TIME TO PEAK (hrs)=	1.33	1.58	0.007 (iii)
RUNOFF VOLUME (mm)=	27.11	5.43	1.33
TOTAL RAINFALL (mm)=	28.11	28.11	12.93
RUNOFF COEFFICIENT =	0.96	0.19	28.11
			0.46

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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 (0041)	Area (ha)	Dir. Conn. (%)
ID= 1 DT= 5.0 min	Total Imp(%)= 42.40	42.40

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.06	0.08
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	30.94	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71
0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
 over (min) = 5.00 20.00
 Storage Coeff. (min)= 1.40 (ii) 19.06 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.33 0.06

PEAK FLOW (cms)= 0.01 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.58 0.013 (iii)
 RUNOFF VOLUME (mm)= 27.11 5.43 14.58
 TOTAL RAINFALL (mm)= 28.11 28.11 28.11
 RUNOFF COEFFICIENT = 0.96 0.19 0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0040)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	0.79	0.109	1.33	19.35
+ ID2= 2 (0039):	0.09	0.007	1.33	12.93
ID = 3 (0040):	0.88	0.116	1.33	18.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0040)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0040):	0.88	0.116	1.33	18.72
+ ID2= 2 (0041):	0.14	0.013	1.33	14.58
ID = 1 (0040):	1.02	0.129	1.33	18.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0048)
 ID= 1 DT= 5.0 min
 Area (ha)= 0.93
 Total Imp(%)= 73.29 Dir. Conn.(%)= 73.29

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	0.69	0.25
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	78.95	40.00
Mannings n	0.013	0.250

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71

0.167	0.49	1.167	18.95	2.167	2.84	3.17	0.71
0.250	0.66	1.250	77.30	2.250	2.09	3.25	0.61
0.333	0.66	1.333	77.30	2.333	2.09	3.33	0.61
0.417	0.93	1.417	26.45	2.417	1.60	3.42	0.52
0.500	0.93	1.500	26.45	2.500	1.60	3.50	0.52
0.583	1.43	1.583	11.48	2.583	1.26	3.58	0.46
0.667	1.43	1.667	11.48	2.667	1.26	3.67	0.46
0.750	2.46	1.750	6.42	2.750	1.02	3.75	0.40
0.833	2.46	1.833	6.42	2.833	1.02	3.83	0.40
0.917	5.25	1.917	4.10	2.917	0.85	3.92	0.35
1.000	5.25	2.000	4.10	3.000	0.85	4.00	0.35

Max.Eff.Inten.(mm/hr)= 77.30 10.09
 over (min) = 5.00 25.00
 Storage Coeff. (min)= 2.46 (ii) 20.12 (ii)
 Unit Hyd. Tpeak (min)= 5.00 25.00
 Unit Hyd. peak (cms)= 0.30 0.05

PEAK FLOW (cms)= 0.15 0.00 0.146 (iii)
 TIME TO PEAK (hrs)= 1.33 1.67 1.33
 RUNOFF VOLUME (mm)= 27.11 5.43 21.30
 TOTAL RAINFALL (mm)= 28.11 28.11 28.11
 RUNOFF COEFFICIENT = 0.96 0.19 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

=====
 V V I SSSS U U A L (v 6.2.2015)
 V V I SS U U A A L
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 000 TTTT TTTT H H Y Y M M 000 TM
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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\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\ec33
 Summary filename: C:\Users\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\ec33

DATE: 01-26-2024 TIME: 03:09:04

USER:

COMMENTS: _____

 ** SIMULATION : 2) 5 Year **

CHICAGO STORM | IDF curve parameters: A=2464.000
 | Ptotal= 38.49 mm | B= 16.000
 C= 1.000
 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
0.083	0.49	1.083	18.95	2.083	2.84	3.08	0.71

0.00	0.81	1.00	27.06	2.00	4.54	3.00	1.17
0.17	1.09	1.17	94.77	2.17	3.37	3.17	1.00
0.33	1.53	1.33	36.99	2.33	2.60	3.33	0.87
0.50	2.32	1.50	17.18	2.50	2.06	3.50	0.76
0.67	3.95	1.67	9.92	2.67	1.68	3.67	0.67
0.83	8.18	1.83	6.46	2.83	1.39	3.83	0.59

CALIB
 NASHYD (0037) | Area (ha)= 0.03 Curve Number (CN)= 71.0
 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	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Unit Hyd Qpeak (cms)= 0.005

PEAK FLOW (cms)= 0.001 (i)
 TIME TO PEAK (hrs)= 1.583
 RUNOFF VOLUME (mm)= 8.119
 TOTAL RAINFALL (mm)= 38.492
 RUNOFF COEFFICIENT = 0.211

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

CALIB
 STANDHYD (0011) | Area (ha)= 0.21
 ID= 1 DT= 5.0 min | Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.19 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 37.53 40.00
 Mannings n = 0.013 0.250

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

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 20.72
 over (min) 5.00 5.00
 Storage Coeff. (min)= 1.45 (ii) 4.44 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.33 0.23

PEAK FLOW (cms)= 0.05 0.00 *TOTALS* 0.051 (iii)
 TIME TO PEAK (hrs)= 1.33 1.33 1.33

RUNOFF VOLUME (mm)= 37.49 9.72 34.71
 TOTAL RAINFALL (mm)= 38.49 38.49 38.49
 RUNOFF COEFFICIENT = 0.97 0.25 0.90

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0036) | Area (ha)= 0.03
 ID= 1 DT= 5.0 min | Total Imp(%)= 47.97 Dir. Conn.(%)= 47.97

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.01 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 13.79 40.00
 Mannings n = 0.013 0.250

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

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
 over (min) 5.00 15.00
 Storage Coeff. (min)= 0.80 (ii) 14.83 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.00 0.00 *TOTALS* 0.004 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 37.49 9.72 22.11
 TOTAL RAINFALL (mm)= 38.49 38.49 38.49
 RUNOFF COEFFICIENT = 0.97 0.25 0.57

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0038) | Area (ha)= 0.45
 ID= 1 DT= 5.0 min | Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.40 0.04
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 54.68 40.00
 Mannings n = 0.013 0.250

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

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17

0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 20.72
over (min) = 5.00 5.00
Storage Coeff. (min)= 1.82 (ii) 4.81 (ii)
Unit Hyd. Tpeak (min)= 5.00 5.00
Unit Hyd. peak (cms)= 0.32 0.22

TOTALS

PEAK FLOW (cms)= 0.11 0.00 0.108 (iii)
TIME TO PEAK (hrs)= 1.33 1.33
RUNOFF VOLUME (mm)= 37.49 9.72 34.71
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.90

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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	Area (ha)= 0.02
STANDHYD (0042)	Total Imp(%)= 17.02
ID= 1 DT= 5.0 min	Dir. Conn.(%)= 17.02

Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.53	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min) = 5.00 15.00
Storage Coeff. (min)= 0.68 (ii) 14.71 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 37.49 9.72 13.07
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.34

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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	Area (ha)= 0.04
STANDHYD (0044)	Total Imp(%)= 35.80
ID= 1 DT= 5.0 min	Dir. Conn.(%)= 35.80

Surface Area (ha)=	0.02	0.03
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	16.85	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min) = 5.00 15.00
Storage Coeff. (min)= 0.90 (ii) 14.93 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.004 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 37.49 9.72 19.11
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.50

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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	Area (ha)= 0.02
STANDHYD (0045)	Total Imp(%)= 23.86
ID= 1 DT= 5.0 min	Dir. Conn.(%)= 23.86

Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.68	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59

1.000 8.18 | 2.000 6.46 | 3.000 1.39 | 4.00 0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min) 5.00 15.00
Storage Coeff. (min)= 0.68 (ii) 14.72 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
TIME TO PEAK (hrs)= 1.33 1.50 0.001 (iii)
RUNOFF VOLUME (mm)= 37.49 9.72 14.95
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.39

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0046)
ID= 1 DT= 5.0 min

Area (ha)= 0.00
Total Imp(%)= 50.97 Dir. Conn.(%)= 50.97

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.00 0.00
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 5.66 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	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min) 5.00 15.00
Storage Coeff. (min)= 0.47 (ii) 14.50 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
TIME TO PEAK (hrs)= 1.33 1.50 0.001 (iii)
RUNOFF VOLUME (mm)= 37.49 9.72 19.60
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.51

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0047)
ID= 1 DT= 5.0 min

Area (ha)= 0.01
Total Imp(%)= 52.52 Dir. Conn.(%)= 52.52

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.00 0.00
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00

Length (m)= 6.42 40.00
Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min) 5.00 15.00
Storage Coeff. (min)= 0.50 (ii) 14.54 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
TIME TO PEAK (hrs)= 1.33 1.50 0.001 (iii)
RUNOFF VOLUME (mm)= 37.49 9.72 21.10
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.55

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0050)
ID= 1 DT= 5.0 min

Area (ha)= 0.02
Total Imp(%)= 19.50 Dir. Conn.(%)= 19.50

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.00 0.01
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 10.05 40.00
Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min) 5.00 15.00
Storage Coeff. (min)= 0.66 (ii) 14.70 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
TIME TO PEAK (hrs)= 1.33 1.50 0.001 (iii)
RUNOFF VOLUME (mm)= 37.49 9.72 13.57
TOTAL RAINFALL (mm)= 38.49 38.49 38.49

RUNOFF COEFFICIENT = 0.97 0.25 0.35

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
 ***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
 YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	0.21	0.051	1.33	34.71
+ ID2= 2 (0036):	0.03	0.004	1.33	22.11
ID = 3 (0030):	0.24	0.055	1.33	33.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.24	0.055	1.33	33.21
+ ID2= 2 (0038):	0.45	0.108	1.33	34.71
ID = 1 (0030):	0.69	0.164	1.33	34.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.69	0.164	1.33	34.19
+ ID2= 2 (0042):	0.02	0.001	1.33	13.07
ID = 3 (0030):	0.70	0.164	1.33	33.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.70	0.164	1.33	33.69
+ ID2= 2 (0044):	0.04	0.004	1.33	19.11
ID = 1 (0030):	0.75	0.169	1.33	32.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.75	0.169	1.33	32.86
+ ID2= 2 (0045):	0.02	0.001	1.33	14.95
ID = 3 (0030):	0.76	0.170	1.33	32.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.76	0.170	1.33	32.46
+ ID2= 2 (0046):	0.00	0.001	1.33	19.60
ID = 1 (0030):	0.77	0.171	1.33	32.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.77	0.171	1.33	32.38
+ ID2= 2 (0047):	0.01	0.001	1.33	21.10
ID = 3 (0030):	0.78	0.172	1.33	32.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.78	0.172	1.33	32.29
+ ID2= 2 (0050):	0.02	0.001	1.33	13.57
ID = 1 (0030):	0.79	0.173	1.33	31.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)	OVERFLOW IS OFF			
IN= 2--> OUT= 1	OUTFLOW	STORAGE	OUTFLOW	STORAGE
DT= 5.0 min	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.1531	0.0109
	0.0024	0.0000	0.1552	0.0110
	0.0030	0.0068	0.1572	0.0110
	0.0473	0.0071	0.1592	0.0112
	0.0743	0.0078	0.1612	0.0120
	0.0942	0.0087	0.1632	0.0141
	0.1099	0.0096	0.1651	0.0174
	0.1236	0.0102	0.1670	0.0211
	0.1267	0.0104	0.0000	0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0030)	0.791	0.173	1.33	31.93
OUTFLOW: ID= 1 (0013)	0.791	0.115	1.42	31.94

PEAK FLOW REDUCTION [Qout/Qin](%)= 66.71
 TIME SHIFT OF PEAK FLOW (min)= 5.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0104

CALIB	Area	(ha)=	0.13
STANDHYD (0031)	Total Imp(%)=	24.53	Dir. Conn.(%)= 24.53

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.10
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	29.13	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max. Eff. Inten. (mm/hr)= 94.77 17.92
 over (min) 5.00 20.00
 Storage Coeff. (min)= 1.25 (ii) 15.28 (ii)

Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.33 0.07

TOTALS
 PEAK FLOW (cms)= 0.01 0.00 0.009 (iii)
 TIME TO PEAK (hrs)= 1.33 1.58 1.33
 RUNOFF VOLUME (mm)= 37.49 9.72 16.45
 TOTAL RAINFALL (mm)= 38.49 38.49 38.49
 RUNOFF COEFFICIENT = 0.97 0.25 0.43

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 STANDBYD (0043)
 ID= 1 DT= 5.0 min

Area (ha)= 0.04
 Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.02 0.03
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 17.28 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
 over (min) 5.00 15.00
 Storage Coeff. (min)= 0.91 (ii) 14.95 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.00 0.00 0.005 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 37.49 9.72 19.18
 TOTAL RAINFALL (mm)= 38.49 38.49 38.49
 RUNOFF COEFFICIENT = 0.97 0.25 0.50

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 STANDBYD (0049)
 ID= 1 DT= 5.0 min

Area (ha)= 0.03
 Total Imp(%)= 23.67 Dir. Conn.(%)= 23.67

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.01 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 14.51 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
 over (min) 5.00 15.00
 Storage Coeff. (min)= 0.82 (ii) 14.86 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.00 0.00 0.002 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 37.49 9.72 15.52
 TOTAL RAINFALL (mm)= 38.49 38.49 38.49
 RUNOFF COEFFICIENT = 0.97 0.25 0.40

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0034)
 1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	0.79	0.115	1.42	31.94
+ ID2= 2 (0031):	0.13	0.009	1.33	16.45
ID = 3 (0034):	0.92	0.120	1.42	29.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
 3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0034):	0.92	0.120	1.42	29.79
+ ID2= 2 (0037):	0.03	0.001	1.58	8.12
ID = 1 (0034):	0.95	0.121	1.42	29.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
 1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0034):	0.95	0.121	1.42	29.17
+ ID2= 2 (0043):	0.04	0.005	1.33	19.18
ID = 3 (0034):	0.99	0.123	1.42	28.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
 3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0034):	0.99	0.123	1.42	28.72
+ ID2= 2 (0049):	0.03	0.002	1.33	15.52
ID = 1 (0034):	1.02	0.124	1.42	28.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0001)
ID= 1 DT= 5.0 min

Area (ha)= 0.79
Total Imp(%)= 64.30 Dir. Conn.(%)= 64.30

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.51 0.28
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 72.63 40.00
Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min)= 5.00 20.00
Storage Coeff. (min)= 2.15 (ii) 16.19 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.31 0.06

TOTALS
PEAK FLOW (cms)= 0.13 0.01 0.136 (iii)
TIME TO PEAK (hrs)= 1.33 1.58 1.33
RUNOFF VOLUME (mm)= 37.49 9.72 27.56
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0039)
ID= 1 DT= 5.0 min

Area (ha)= 0.09
Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.03 0.06
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 23.90 40.00
Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min)= 5.00 20.00
Storage Coeff. (min)= 1.11 (ii) 15.14 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.34 0.07

TOTALS
PEAK FLOW (cms)= 0.01 0.00 0.009 (iii)
TIME TO PEAK (hrs)= 1.33 1.58 1.33
RUNOFF VOLUME (mm)= 37.49 9.72 19.59
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.51

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0041)
ID= 1 DT= 5.0 min

Area (ha)= 0.14
Total Imp(%)= 42.40 Dir. Conn.(%)= 42.40

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.06 0.08
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 30.94 40.00
Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)= 94.77 17.92
over (min)= 5.00 20.00
Storage Coeff. (min)= 1.29 (ii) 15.33 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.33 0.07

TOTALS
PEAK FLOW (cms)= 0.02 0.00 0.017 (iii)
TIME TO PEAK (hrs)= 1.33 1.58 1.33
RUNOFF VOLUME (mm)= 37.49 9.72 21.43
TOTAL RAINFALL (mm)= 38.49 38.49 38.49
RUNOFF COEFFICIENT = 0.97 0.25 0.56

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0040)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	0.79	0.136	1.33	27.56
+ ID2= 2 (0039):	0.09	0.009	1.33	19.59
ID = 3 (0040):	0.88	0.144	1.33	26.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0040)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 2 (0040):	0.88	0.144	1.33	26.79
+ ID2= 2 (0041):	0.14	0.017	1.33	21.43
=====				
ID = 1 (0040):	1.02	0.161	1.33	26.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0048) ID= 1 DT= 5.0 min	Area (ha)=	0.93	Dir. Conn.(%)=	73.29
	Total Imp(%)=	73.29		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.69	0.25
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	78.95	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.81	1.083	27.06	2.083	4.54	3.08	1.17
0.167	0.81	1.167	27.06	2.167	4.54	3.17	1.17
0.250	1.09	1.250	94.77	2.250	3.37	3.25	1.00
0.333	1.09	1.333	94.77	2.333	3.37	3.33	1.00
0.417	1.53	1.417	36.99	2.417	2.60	3.42	0.87
0.500	1.53	1.500	36.99	2.500	2.60	3.50	0.87
0.583	2.32	1.583	17.18	2.583	2.06	3.58	0.76
0.667	2.32	1.667	17.18	2.667	2.06	3.67	0.76
0.750	3.95	1.750	9.92	2.750	1.68	3.75	0.67
0.833	3.95	1.833	9.92	2.833	1.68	3.83	0.67
0.917	8.18	1.917	6.46	2.917	1.39	3.92	0.59
1.000	8.18	2.000	6.46	3.000	1.39	4.00	0.59

Max.Eff.Inten.(mm/hr)=	94.77	20.72
over (min)	5.00	10.00
Storage Coeff. (min)=	2.27 (ii)	7.08 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.30	0.14

TOTALS
0.187 (iii)
1.33
30.07
38.49
0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

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 AAAA L
V V I SS U U A A L
VV I SSSSS UUUU A A LLLLL

000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
000 T T H H Y M M 000

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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\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\589a
Summary filename: C:\Users\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\589a

DATE: 01-26-2024 TIME: 03:09:05

USER:

COMMENTS:

** SIMULATION : 3) 10 Year **

CHICAGO STORM	IDF curve parameters: A=2819.000
Ptotal= 44.04 mm	B= 16.000
	C= 1.000

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	0.93	1.00	30.96	2.00	5.20	3.00	1.34
0.17	1.24	1.17	108.42	2.17	3.85	3.17	1.15
0.33	1.75	1.33	42.32	2.33	2.97	3.33	0.99
0.50	2.66	1.50	19.65	2.50	2.36	3.50	0.87
0.67	4.51	1.67	11.35	2.67	1.92	3.67	0.76
0.83	9.35	1.83	7.39	2.83	1.59	3.83	0.68

CALIB NASHYD (0037) ID= 1 DT= 5.0 min	Area (ha)=	0.03	Curve Number (CN)=	71.0
	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	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Unit Hyd Qpeak (cms)= 0.005

PEAK FLOW (cms)=	0.001 (i)
TIME TO PEAK (hrs)=	1.583
RUNOFF VOLUME (mm)=	10.625
TOTAL RAINFALL (mm)=	44.038
RUNOFF COEFFICIENT =	0.241

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

CALIB STANDHYD (0011) ID= 1 DT= 5.0 min	Area (ha)=	0.21	Dir. Conn.(%)=	90.00
	Total Imp(%)=	90.00		

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.19 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 37.53 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 26.71
 over (min)= 5.00 5.00
 Storage Coeff. (min)= 1.37 (ii) 4.21 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.33 0.24

TOTALS
 0.059 (iii)

PEAK FLOW (cms)= 0.06 0.00
 TIME TO PEAK (hrs)= 1.33 1.33
 RUNOFF VOLUME (mm)= 43.04 12.37
 TOTAL RAINFALL (mm)= 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.91

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0036)
 ID= 1 DT= 5.0 min | Area (ha)= 0.03
 Total Imp(%)= 47.97 Dir. Conn.(%)= 47.97

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.01 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 13.79 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
 over (min)= 5.00 15.00
 Storage Coeff. (min)= 0.75 (ii) 13.45 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08

TOTALS
 0.004 (iii)

PEAK FLOW (cms)= 0.00 0.00

TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 43.04 12.37 26.23
 TOTAL RAINFALL (mm)= 44.04 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.60

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0038)
 ID= 1 DT= 5.0 min | Area (ha)= 0.45
 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.40 0.04
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 54.68 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 26.71
 over (min)= 5.00 5.00
 Storage Coeff. (min)= 1.72 (ii) 4.56 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.32 0.23

TOTALS
 0.125 (iii)

PEAK FLOW (cms)= 0.12 0.00
 TIME TO PEAK (hrs)= 1.33 1.33
 RUNOFF VOLUME (mm)= 43.04 12.37
 TOTAL RAINFALL (mm)= 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.91

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0042)
 ID= 1 DT= 5.0 min | Area (ha)= 0.02
 Total Imp(%)= 17.02 Dir. Conn.(%)= 17.02

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 10.53 40.00
 Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr

0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
over (min) 5.00 15.00
Storage Coeff. (min)= 0.64 (ii) 13.34 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 43.04 12.37 16.16
TOTAL RAINFALL (mm)= 44.04 44.04 44.04
RUNOFF COEFFICIENT = 0.98 0.28 0.37

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0044) Area (ha)= 0.04 Dir. Conn.(%)= 35.80
ID= 1 DT= 5.0 min Total Imp(%)= 35.80

Surface Area (ha)= IMPERVIOUS 0.02 PERVIOUS (i) 0.03
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 16.85 40.00
Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
over (min) 5.00 15.00
Storage Coeff. (min)= 0.85 (ii) 13.55 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.005 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 43.04 12.37 22.85
TOTAL RAINFALL (mm)= 44.04 44.04 44.04
RUNOFF COEFFICIENT = 0.98 0.28 0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0045) Area (ha)= 0.02 Dir. Conn.(%)= 23.86
ID= 1 DT= 5.0 min Total Imp(%)= 23.86

Surface Area (ha)= IMPERVIOUS 0.00 PERVIOUS (i) 0.01
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 10.68 40.00
Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
over (min) 5.00 15.00
Storage Coeff. (min)= 0.65 (ii) 13.35 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 43.04 12.37 18.23
TOTAL RAINFALL (mm)= 44.04 44.04 44.04
RUNOFF COEFFICIENT = 0.98 0.28 0.41

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0046) Area (ha)= 0.00 Dir. Conn.(%)= 50.97
ID= 1 DT= 5.0 min Total Imp(%)= 50.97

Surface Area (ha)= IMPERVIOUS 0.00 PERVIOUS (i) 0.00
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 5.66 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	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76

0.917 9.35 | 1.917 7.39 | 2.917 1.59 | 3.92 0.68
 1.000 9.35 | 2.000 7.39 | 3.000 1.59 | 4.00 0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
 over (min)= 5.00 15.00
 Storage Coeff. (min)= 0.44 (ii) 13.14 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08
 PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.50 0.001 (iii)
 RUNOFF VOLUME (mm)= 43.04 12.37 1.33
 TOTAL RAINFALL (mm)= 44.04 44.04 23.67
 RUNOFF COEFFICIENT = 0.98 0.28 0.54

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 STANHYD (0047)
 ID= 1 DT= 5.0 min
 Area (ha)= 0.01
 Total Imp(%)= 52.52 Dir. Conn.(%)= 52.52

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.00
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 6.42 40.00
 Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
 over (min)= 5.00 15.00
 Storage Coeff. (min)= 0.48 (ii) 13.18 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08
 PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.50 0.001 (iii)
 RUNOFF VOLUME (mm)= 43.04 12.37 24.74
 TOTAL RAINFALL (mm)= 44.04 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.56

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 STANHYD (0050)
 ID= 1 DT= 5.0 min
 Area (ha)= 0.02
 Total Imp(%)= 19.50 Dir. Conn.(%)= 19.50

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.01
 Dep. Storage (mm)= 1.00 1.50

Average Slope (%)= 1.00 2.00
 Length (m)= 10.05 40.00
 Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
 over (min)= 5.00 15.00
 Storage Coeff. (min)= 0.62 (ii) 13.32 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08
 PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.50 0.001 (iii)
 RUNOFF VOLUME (mm)= 43.04 12.37 16.73
 TOTAL RAINFALL (mm)= 44.04 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.38

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
 ***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
 YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0030)
 1 + 2 = 3

ID	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	0.21	0.059	1.33	39.97
+ ID2= 2 (0036):	0.03	0.004	1.33	26.23
=====	=====	=====	=====	=====
ID = 3 (0030):	0.24	0.063	1.33	38.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)
 3 + 2 = 1

ID	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.24	0.063	1.33	38.33
+ ID2= 2 (0038):	0.45	0.125	1.33	39.97
=====	=====	=====	=====	=====
ID = 1 (0030):	0.69	0.188	1.33	39.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)
 1 + 2 = 3

ID	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.69	0.188	1.33	39.40
+ ID2= 2 (0042):	0.02	0.001	1.33	16.16
=====	=====	=====	=====	=====
ID = 3 (0030):	0.70	0.189	1.33	38.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.70	0.189	1.33	38.85
+ ID2= 2 (0044):	0.04	0.005	1.33	22.85

ID = 1 (0030):	0.75	0.194	1.33	37.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.75	0.194	1.33	37.94
+ ID2= 2 (0045):	0.02	0.001	1.33	18.23

ID = 3 (0030):	0.76	0.196	1.33	37.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.76	0.196	1.33	37.50
+ ID2= 2 (0046):	0.00	0.001	1.33	23.67

ID = 1 (0030):	0.77	0.196	1.33	37.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.77	0.196	1.33	37.41
+ ID2= 2 (0047):	0.01	0.001	1.33	24.74

ID = 3 (0030):	0.78	0.197	1.33	37.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.78	0.197	1.33	37.31
+ ID2= 2 (0050):	0.02	0.001	1.33	16.73

ID = 1 (0030):	0.79	0.199	1.33	36.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)				
IN= 2--> OUT= 1				
DT= 5.0 min				
OVERFLOW IS OFF				
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1531	0.0109
	0.0024	0.0000	0.1552	0.0110
	0.0030	0.0068	0.1572	0.0110
	0.0473	0.0071	0.1592	0.0112
	0.0743	0.0078	0.1612	0.0120
	0.0942	0.0087	0.1632	0.0141
	0.1099	0.0096	0.1651	0.0174
	0.1236	0.0102	0.1670	0.0211
	0.1267	0.0104	0.0000	0.0000
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0030)	0.791	0.199	1.33	36.92
OUTFLOW: ID= 1 (0013)	0.791	0.141	1.42	36.94

PEAK FLOW REDUCTION [Qout/Qin](%)= 71.05
 TIME SHIFT OF PEAK FLOW (min)= 5.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0115

CALIB			
STANDHYD (0031)			
ID= 1 DT= 5.0 min			
	Area (ha)	Imp(%)	Dir. Conn.(%)
	0.13	24.53	24.53

	IMPERVIOUS (ha)	PERVIOUS (i) (mm)
Surface Area	0.03	0.10
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	29.13	40.00
Mannings n	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)=	108.42	23.02
over (min)	5.00	15.00
Storage Coeff. (min)=	1.18 (ii)	13.88 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.33	0.08

	(cms)	(hrs)	(mm)	(mm)
PEAK FLOW	0.01	0.00	0.011 (iii)	
TIME TO PEAK	1.33	1.50	1.33	
RUNOFF VOLUME	43.04	12.37	19.81	
TOTAL RAINFALL	44.04	44.04	44.04	
RUNOFF COEFFICIENT	0.98	0.28	0.45	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0043)			
ID= 1 DT= 5.0 min			
	Area (ha)	Imp(%)	Dir. Conn.(%)
	0.04	35.80	35.80

	IMPERVIOUS (ha)	PERVIOUS (i) (mm)
Surface Area	0.02	0.03
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	17.28	40.00
Mannings n	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)=	108.42	23.02
over (min)	5.00	15.00

Storage Coeff. (min)= 0.86 (ii) 13.56 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.005 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 43.04 12.37 22.85
 TOTAL RAINFALL (mm)= 44.04 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0049)
 ID= 1 DT= 5.0 min
 Area (ha)= 0.03
 Total Imp(%)= 23.67 Dir. Conn.(%)= 23.67

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.01 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 14.51 40.00
 Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
 over (min) 5.00 15.00
 Storage Coeff. (min)= 0.78 (ii) 13.48 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.08

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.003 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 43.04 12.37 18.82
 TOTAL RAINFALL (mm)= 44.04 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.43

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0034)
 1 + 2 = 3
 ID1= 1 (0013): 0.79 0.141 1.42 36.94
 + ID2= 2 (0031): 0.13 0.011 1.33 19.81
 ID = 3 (0034): 0.92 0.148 1.42 34.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
 3 + 2 = 1
 ID1= 3 (0034): 0.92 0.148 1.42 34.57
 + ID2= 2 (0037): 0.03 0.001 1.58 10.62
 ID = 1 (0034): 0.95 0.149 1.42 33.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
 1 + 2 = 3
 ID1= 1 (0034): 0.95 0.149 1.42 33.88
 + ID2= 2 (0043): 0.04 0.005 1.33 22.85
 ID = 3 (0034): 0.99 0.152 1.42 33.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
 3 + 2 = 1
 ID1= 3 (0034): 0.99 0.152 1.42 33.38
 + ID2= 2 (0049): 0.03 0.003 1.33 18.82
 ID = 1 (0034): 1.02 0.153 1.42 32.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)
 ID= 1 DT= 5.0 min
 Area (ha)= 0.79
 Total Imp(%)= 64.30 Dir. Conn.(%)= 64.30

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.51 0.28
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 72.63 40.00
 Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max.Eff.Inten.(mm/hr)= 108.42 23.02
 over (min) 5.00 15.00
 Storage Coeff. (min)= 2.04 (ii) 14.74 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.31 0.08

TOTALS
 PEAK FLOW (cms)= 0.15 0.01 0.158 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 43.04 12.37 32.08
 TOTAL RAINFALL (mm)= 44.04 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0039)
ID= 1 DT= 5.0 min

Area (ha)= 0.09
Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 0.03 0.06
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 23.90 40.00
Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max. Eff. Inten. (mm/hr)= 108.42 23.02
over (min) 5.00 15.00
Storage Coeff. (min)= 1.05 (ii) 13.75 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.08

PEAK FLOW (cms)= 0.01 0.00 *TOTALS* 0.010 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 43.04 12.37 23.28
TOTAL RAINFALL (mm)= 44.04 44.04 44.04
RUNOFF COEFFICIENT = 0.98 0.28 0.53

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0041)
ID= 1 DT= 5.0 min

Area (ha)= 0.14
Total Imp(%)= 42.40 Dir. Conn.(%)= 42.40

IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 0.06 0.08
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 30.94 40.00
Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

1.000 9.35 | 2.000 7.39 | 3.000 1.59 | 4.00 0.68

Max. Eff. Inten. (mm/hr)= 108.42 23.02
over (min) 5.00 15.00
Storage Coeff. (min)= 1.22 (ii) 13.92 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.33 0.08

PEAK FLOW (cms)= 0.02 0.00 *TOTALS* 0.020 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 43.04 12.37 25.31
TOTAL RAINFALL (mm)= 44.04 44.04 44.04
RUNOFF COEFFICIENT = 0.98 0.28 0.57

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0040)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	0.79	0.158	1.33	32.08
+ ID2= 2 (0039):	0.09	0.010	1.33	23.28
ID = 3 (0040):	0.88	0.168	1.33	31.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0040)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0040):	0.88	0.168	1.33	31.22
+ ID2= 2 (0041):	0.14	0.020	1.33	25.31
ID = 1 (0040):	1.02	0.188	1.33	30.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0048)
ID= 1 DT= 5.0 min

Area (ha)= 0.93
Total Imp(%)= 73.29 Dir. Conn.(%)= 73.29

IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 0.69 0.25
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 78.95 40.00
Mannings n = 0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.93	1.083	30.96	2.083	5.20	3.08	1.34
0.167	0.93	1.167	30.96	2.167	5.20	3.17	1.34
0.250	1.24	1.250	108.42	2.250	3.85	3.25	1.15
0.333	1.24	1.333	108.42	2.333	3.85	3.33	1.15
0.417	1.75	1.417	42.32	2.417	2.97	3.42	0.99
0.500	1.75	1.500	42.32	2.500	2.97	3.50	0.99
0.583	2.66	1.583	19.65	2.583	2.36	3.58	0.87
0.667	2.66	1.667	19.65	2.667	2.36	3.67	0.87
0.750	4.51	1.750	11.35	2.750	1.92	3.75	0.76
0.833	4.51	1.833	11.35	2.833	1.92	3.83	0.76
0.917	9.35	1.917	7.39	2.917	1.59	3.92	0.68
1.000	9.35	2.000	7.39	3.000	1.59	4.00	0.68

Max. Eff. Inten. (mm/hr)= 108.42 26.71
over (min) 5.00 10.00
Storage Coeff. (min)= 2.15 (ii) 6.71 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.31 0.14

TOTALS

PEAK FLOW (cms)= 0.20 0.01 0.216 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 43.04 12.37 34.84
 TOTAL RAINFALL (mm)= 44.04 44.04 44.04
 RUNOFF COEFFICIENT = 0.98 0.28 0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

V V I SSSS U U A L (v 6.2.2015)
 V V I SS U U A A L
 V V I SS U U A A A A L
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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\voim.dat
 Output filename: C:\Users\matthew.holmes\AppData\Local\Civica\H5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\6940
 Summary filename: C:\Users\matthew.holmes\AppData\Local\Civica\H5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\6940

DATE: 01-26-2024 TIME: 03:09:06

USER:

COMMENTS: _____

 ** SIMULATION : 4) 25 Year **

CHICAGO STORM IDF curve parameters: A=4318.000
 Ptotal= 64.67 mm B= 27.000
 C= 1.000
 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	2.17	1.00	47.01	2.00	10.74	3.00	3.09
0.17	2.87	1.17	116.70	2.17	8.20	3.17	2.66
0.33	3.96	1.33	60.60	2.33	6.47	3.33	2.32
0.50	5.84	1.50	33.48	2.50	5.23	3.50	2.04
0.67	9.45	1.67	21.23	2.67	4.32	3.67	1.80
0.83	17.92	1.83	14.67	2.83	3.63	3.83	1.61

CALIB
 NASHYD (0037) Area (ha)= 0.03 Curve Number (CN)= 71.0
 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Unit Hyd Qpeak (cms)= 0.005

PEAK FLOW (cms)= 0.002 (i)
 TIME TO PEAK (hrs)= 1.583
 RUNOFF VOLUME (mm)= 21.709
 TOTAL RAINFALL (mm)= 64.668
 RUNOFF COEFFICIENT = 0.336

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

CALIB
 STANDHYD (0011) Area (ha)= 0.21
 ID= 1 DT= 5.0 min Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.19 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 37.53 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 38.17
 over (min) 5.00 5.00
 Storage Coeff. (min)= 1.33 (ii) 4.09 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.33 0.24

PEAK FLOW (cms)= 0.06 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.33 0.064 (iii)
 RUNOFF VOLUME (mm)= 63.67 23.91 59.69
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.92

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0036) Area (ha)= 0.03
 ID= 1 DT= 5.0 min Total Imp(%)= 47.97 Dir. Conn.(%)= 47.97

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.01 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 13.79 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
 over (min) = 5.00 15.00
 Storage Coeff. (min)= 0.73 (ii) 11.55 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.005 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 63.67 23.91 42.84
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.66

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0038)
 ID= 1 DT= 5.0 min | Area (ha)= 0.45
 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.40 0.04
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 54.68 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 38.17
 over (min) = 5.00 5.00
 Storage Coeff. (min)= 1.67 (ii) 4.43 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.32 0.23

TOTALS

PEAK FLOW (cms)= 0.13 0.00 0.135 (ii)
 TIME TO PEAK (hrs)= 1.33 1.33 1.33
 RUNOFF VOLUME (mm)= 63.67 23.91 59.69
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.92

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0042)
 ID= 1 DT= 5.0 min | Area (ha)= 0.02
 Total Imp(%)= 17.02 Dir. Conn.(%)= 17.02

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 10.53 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
 over (min) = 5.00 15.00
 Storage Coeff. (min)= 0.62 (ii) 11.44 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.50
 RUNOFF VOLUME (mm)= 63.67 23.91 29.24
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.45

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

***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
 YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0044)
 ID= 1 DT= 5.0 min | Area (ha)= 0.04
 Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.02 0.03
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 16.85 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
over (min) 5.00 15.00
Storage Coeff. (min)= 0.83 (ii) 11.64 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.09

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.006 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 63.67 23.91 37.96
TOTAL RAINFALL (mm)= 64.67 64.67 64.67
RUNOFF COEFFICIENT = 0.98 0.37 0.59

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0045) ID= 1 DT= 5.0 min	Area (ha)= Total Imp(%)=	(ha)= 0.02 23.86	Dir. Conn.(%)=	23.86
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.68	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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
over (min) 5.00 15.00
Storage Coeff. (min)= 0.63 (ii) 11.44 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.09

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.002 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 63.67 23.91 32.13
TOTAL RAINFALL (mm)= 64.67 64.67 64.67
RUNOFF COEFFICIENT = 0.98 0.37 0.50

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0046) ID= 1 DT= 5.0 min	Area (ha)= Total Imp(%)=	(ha)= 0.00 50.97	Dir. Conn.(%)=	50.97
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	5.66	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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
over (min) 5.00 15.00
Storage Coeff. (min)= 0.43 (ii) 11.24 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.09

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 63.67 23.91 38.99
TOTAL RAINFALL (mm)= 64.67 64.67 64.67
RUNOFF COEFFICIENT = 0.98 0.37 0.60

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0047) ID= 1 DT= 5.0 min	Area (ha)= Total Imp(%)=	(ha)= 0.01 52.52	Dir. Conn.(%)=	52.52
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	6.42	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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80

0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
over (min) 5.00 15.00
Storage Coeff. (min)= 0.46 (ii) 11.28 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.09

PEAK FLOW (cms)= 0.00 0.00 *TOTALS* 0.001 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 63.67 23.91 40.62
TOTAL RAINFALL (mm)= 64.67 64.67 64.67
RUNOFF COEFFICIENT = 0.98 0.37 0.63

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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	Area (ha)=	0.02
STANDHYD (0050)	Total Imp(%)=	19.50
ID= 1 DT= 5.0 min	Dir. Conn.(%)=	19.50

Surface Area	(ha)=	0.00	PERVIOUS (i)	0.01
Dep. Storage	(mm)=	1.00		1.50
Average Slope	(%)=	1.00		2.00
Length	(m)=	10.05		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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
over (min) 5.00 15.00
Storage Coeff. (min)= 0.61 (ii) 11.42 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.09

PEAK FLOW (cms)= 0.00 0.00 *TOTALS* 0.001 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 63.67 23.91 30.04
TOTAL RAINFALL (mm)= 64.67 64.67 64.67
RUNOFF COEFFICIENT = 0.98 0.37 0.46

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)

ID1= 1 (0011):	0.21	0.064	1.33	59.69
+ ID2= 2 (0036):	0.03	0.005	1.33	42.84
ID = 3 (0030):	0.24	0.069	1.33	57.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.24	0.069	1.33	57.68
+ ID2= 2 (0038):	0.45	0.135	1.33	59.69
ID = 1 (0030):	0.69	0.204	1.33	58.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.69	0.204	1.33	58.99
+ ID2= 2 (0042):	0.02	0.001	1.50	29.24
ID = 3 (0030):	0.70	0.206	1.33	58.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.70	0.206	1.33	58.29
+ ID2= 2 (0044):	0.04	0.006	1.33	37.96
ID = 1 (0030):	0.75	0.212	1.33	57.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.75	0.212	1.33	57.13
+ ID2= 2 (0045):	0.02	0.002	1.33	32.13
ID = 3 (0030):	0.76	0.213	1.33	56.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.76	0.213	1.33	56.57
+ ID2= 2 (0046):	0.00	0.001	1.33	38.99
ID = 1 (0030):	0.77	0.214	1.33	56.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.77	0.214	1.33	56.46
+ ID2= 2 (0047):	0.01	0.001	1.33	40.62
ID = 3 (0030):	0.78	0.215	1.33	56.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)

ID1= 3 (0030): 0.78 0.215 1.33 56.34
 + ID2= 2 (0050): 0.02 0.001 1.33 30.04

 ID = 1 (0030): 0.79 0.217 1.33 55.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0013) OVERFLOW IS OFF
 IN= 2--> OUT= 1
 DT= 5.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1531	0.0109
0.0024	0.0000	0.1552	0.0110
0.0030	0.0068	0.1572	0.0110
0.0473	0.0071	0.1592	0.0112
0.0743	0.0078	0.1612	0.0120
0.0942	0.0087	0.1632	0.0141
0.1099	0.0096	0.1651	0.0174
0.1236	0.0102	0.1670	0.0211
0.1267	0.0104	0.0000	0.0000

INFLOW : ID= 2 (0030) AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
 0.791 0.217 1.33 55.83
 OUTFLOW: ID= 1 (0013) 0.791 0.161 1.42 55.87

PEAK FLOW REDUCTION [Qout/Qin](%)= 74.40
 TIME SHIFT OF PEAK FLOW (min)= 5.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0127

CALIB STANDHYD (0031) Area (ha)= 0.13 Dir. Conn.(%)= 24.53
 ID= 1 DT= 5.0 min Total Imp(%)= 24.53

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.10
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	29.13	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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
 over (min) 5.00 15.00
 Storage Coeff. (min)= 1.15 (ii) 11.96 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
 PEAK FLOW (cms)= 0.01 0.01 0.014 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 63.67 23.91 33.59
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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 (0043) Area (ha)= 0.04 Dir. Conn.(%)= 35.80
 ID= 1 DT= 5.0 min Total Imp(%)= 35.80

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.03
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	17.28	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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
 over (min) 5.00 15.00
 Storage Coeff. (min)= 0.84 (ii) 11.65 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
 PEAK FLOW (cms)= 0.01 0.00 0.006 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 63.67 23.91 37.96
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.59

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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 (0049) Area (ha)= 0.03 Dir. Conn.(%)= 23.67
 ID= 1 DT= 5.0 min Total Imp(%)= 23.67

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.01	0.02
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	14.51	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40

over (min) 5.00 15.00
 Storage Coeff. (min)= 0.75 (ii) 11.57 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.003 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 63.67 23.91 33.11
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.51

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0013):	0.79	0.161	1.42	55.87
+ ID2= 2 (0031):	0.13	0.014	1.33	33.59
ID = 3 (0034):	0.92	0.174	1.33	52.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0034):	0.92	0.174	1.33	52.78
+ ID2= 2 (0037):	0.03	0.002	1.58	21.71
ID = 1 (0034):	0.95	0.175	1.33	51.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0034):	0.95	0.175	1.33	51.89
+ ID2= 2 (0043):	0.04	0.006	1.33	37.96
ID = 3 (0034):	0.99	0.182	1.33	51.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 2 (0034):	0.99	0.182	1.33	51.26
+ ID2= 2 (0049):	0.03	0.003	1.33	33.11
ID = 1 (0034):	1.02	0.185	1.33	50.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB STANDHYD (0001)	Area (ha)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	0.79	64.30

IMPERVIOUS 0.51 PERVIOUS (i) 0.28
 Surface Area (ha)= 0.51 0.28
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 72.63 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
 over (min) 5.00 15.00
 Storage Coeff. (min)= 1.98 (ii) 12.80 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.31 0.08

TOTALS
 PEAK FLOW (cms)= 0.16 0.02 0.174 (iii)
 TIME TO PEAK (hrs)= 1.33 1.58 1.33
 RUNOFF VOLUME (mm)= 63.67 23.91 49.46
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0039)	Area (ha)	Dir. Conn.(%)
ID= 1 DT= 5.0 min	0.09	35.80

IMPERVIOUS 0.03 PERVIOUS (i) 0.06
 Surface Area (ha)= 0.03 0.06
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 23.90 40.00
 Mannings n = 0.013 0.250

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)= 116.70 34.40
 over (min) 5.00 15.00
 Storage Coeff. (min)= 1.02 (ii) 11.83 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
 PEAK FLOW (cms)= 0.01 0.00 0.012 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 63.67 23.91 38.06
 TOTAL RAINFALL (mm)= 64.67 64.67 64.67
 RUNOFF COEFFICIENT = 0.98 0.37 0.59

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0041)
 ID= 1 DT= 5.0 min

Area (ha)=	0.14
Total Imp(%)=	42.40
Dir. Conn.(%)=	42.40

Surface Area (ha)=	0.06	PERVIOUS (i)	0.08
Dep. Storage (mm)=	1.00		1.50
Average Slope (%)=	1.00		2.00
Length (m)=	30.94		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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)=	116.70	34.40
over (min)	5.00	15.00
Storage Coeff. (min)=	1.19 (ii)	12.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.33	0.09

TOTALS

PEAK FLOW (cms)=	0.02	0.01	0.023 (iii)
TIME TO PEAK (hrs)=	1.33	1.58	1.33
RUNOFF VOLUME (mm)=	63.67	23.91	40.72
TOTAL RAINFALL (mm)=	64.67	64.67	64.67
RUNOFF COEFFICIENT =	0.98	0.37	0.63

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0040)
 1 + 2 = 3

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	0.79	0.174	1.33
+ ID2= 2 (0039):	0.09	0.012	1.33
=====			
ID = 3 (0040):	0.88	0.186	1.33
			48.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0040)
 3 + 2 = 1

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0040):	0.88	0.186	1.33
+ ID2= 2 (0041):	0.14	0.023	1.33
=====			
ID = 1 (0040):	1.02	0.209	1.33
			47.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
 STANDHYD (0048)
 ID= 1 DT= 5.0 min

Area (ha)=	0.93
Total Imp(%)=	73.29
Dir. Conn.(%)=	73.29

 IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.69 0.25
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 78.95 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	2.17	1.083	47.01	2.083	10.74	3.08	3.09
0.167	2.17	1.167	47.01	2.167	10.74	3.17	3.09
0.250	2.87	1.250	116.70	2.250	8.20	3.25	2.66
0.333	2.87	1.333	116.70	2.333	8.20	3.33	2.66
0.417	3.96	1.417	60.60	2.417	6.47	3.42	2.32
0.500	3.96	1.500	60.60	2.500	6.47	3.50	2.32
0.583	5.84	1.583	33.48	2.583	5.23	3.58	2.04
0.667	5.84	1.667	33.48	2.667	5.23	3.67	2.04
0.750	9.45	1.750	21.23	2.750	4.32	3.75	1.80
0.833	9.45	1.833	21.23	2.833	4.32	3.83	1.80
0.917	17.92	1.917	14.67	2.917	3.63	3.92	1.61
1.000	17.92	2.000	14.67	3.000	3.63	4.00	1.61

Max.Eff.Inten.(mm/hr)=	116.70	38.17
over (min)	5.00	10.00
Storage Coeff. (min)=	2.08 (ii)	6.51 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.14

TOTALS

PEAK FLOW (cms)=	0.22	0.02	0.239 (iii)
TIME TO PEAK (hrs)=	1.33	1.42	1.33
RUNOFF VOLUME (mm)=	63.67	23.91	53.04
TOTAL RAINFALL (mm)=	64.67	64.67	64.67
RUNOFF COEFFICIENT =	0.98	0.37	0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

V V I SSSS U U A L (v 6.2.2015)
 V V I SS U U A A L
 V V I SS U U A A A A L
 V V I SS U U A A L
 VV I SSSS UUUU A A LLLLL

OOO TTTT TTTT H H Y Y M M OOO TM
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 OOO 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\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\5b4
 Summary filename: C:\Users\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\5b4

DATE: 01-26-2024 TIME: 03:09:06

USER:

COMMENTS: _____

** SIMULATION : 5) 50 Year **

CHICAGO STORM
 Ptotal= 71.95 mm

IDF curve parameters: A=4750.000
 B= 24.000
 C= 1.000

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	2.18	1.00	52.37	2.00	11.13	3.00	3.12
0.17	2.89	1.17	139.71	2.17	8.44	3.17	2.68
0.33	4.02	1.33	68.44	2.33	6.62	3.33	2.33
0.50	5.96	1.50	36.37	2.50	5.33	3.50	2.04
0.67	9.77	1.67	22.56	2.67	4.38	3.67	1.81
0.83	18.93	1.83	15.36	2.83	3.67	3.83	1.61

CALIB
 NASHYD (0037)
 ID= 1 DT= 5.0 min

Area (ha)= 0.03 Curve Number (CN)= 71.0
 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Unit Hyd Qpeak (cms)= 0.005

PEAK FLOW (cms)= 0.002 (i)
 TIME TO PEAK (hrs)= 1.583
 RUNOFF VOLUME (mm)= 26.178
 TOTAL RAINFALL (mm)= 71.949
 RUNOFF COEFFICIENT = 0.364

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

CALIB
 STANDHYD (0011)
 ID= 1 DT= 5.0 min

Area (ha)= 0.21
 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.19 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 37.53 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33

0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max. Eff. Inten. (mm/hr)= 139.71 49.88
 over (min)= 5.00 15.00
 Storage Coeff. (min)= 1.24 (ii) 3.81 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.33 0.25

PEAK FLOW (cms)= 0.07 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.33 0.077 (iii)
 RUNOFF VOLUME (mm)= 70.95 28.49 1.33
 TOTAL RAINFALL (mm)= 71.95 71.95 66.70
 RUNOFF COEFFICIENT = 0.99 0.40 71.95
 0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0036)
 ID= 1 DT= 5.0 min

Area (ha)= 0.03
 Total Imp(%)= 47.97 Dir. Conn.(%)= 47.97

IMPERVIOUS PERVIOUS (i)

Surface Area (ha)= 0.01 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 13.79 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max. Eff. Inten. (mm/hr)= 139.71 49.88
 over (min)= 5.00 15.00
 Storage Coeff. (min)= 0.68 (ii) 10.00 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.34 0.10

PEAK FLOW (cms)= 0.01 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.50 0.006 (iii)
 RUNOFF VOLUME (mm)= 70.95 28.49 1.33
 TOTAL RAINFALL (mm)= 71.95 71.95 48.73
 RUNOFF COEFFICIENT = 0.99 0.40 71.95
 0.68

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0038)
 ID= 1 DT= 5.0 min

Area (ha)= 0.45
 Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

 IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.40 0.04
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 54.68 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) = 5.00 5.00
 Storage Coeff. (min)= 1.56 (ii) 4.12 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.33 0.24

TOTALS
 PEAK FLOW (cms)= 0.16 0.01 0.163 (iii)
 TIME TO PEAK (hrs)= 1.33 1.33 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 66.70
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.93

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0042) | Area (ha)= 0.02
 ID= 1 DT= 5.0 min | Total Imp(%)= 17.02 Dir. Conn.(%)= 17.02

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 10.53 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) = 5.00 10.00
 Storage Coeff. (min)= 0.58 (ii) 9.90 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.11

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.002 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 34.36
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.48

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
 ***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
 YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0044) | Area (ha)= 0.04
 ID= 1 DT= 5.0 min | Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.02 0.03
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 16.85 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) = 5.00 15.00
 Storage Coeff. (min)= 0.77 (ii) 10.09 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.10

TOTALS
 PEAK FLOW (cms)= 0.01 0.00 0.007 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 43.53
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.60

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0045) | Area (ha)= 0.02
 ID= 1 DT= 5.0 min | Total Imp(%)= 23.86 Dir. Conn.(%)= 23.86

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.00 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 10.68 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) 5.00 10.00
 Storage Coeff. (min)= 0.58 (ii) 9.91 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.11

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.003 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 37.43
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.52

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0046) ID= 1 DT= 5.0 min	Area (ha)= Total Imp(%)=	(ha)= 50.00	Dir. Conn.(%)=	50.97
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	5.66	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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) 5.00 10.00
 Storage Coeff. (min)= 0.40 (ii) 9.72 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.11

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 45.01
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.63

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

- CN* = 71.0 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 (0047) ID= 1 DT= 5.0 min	Area (ha)= Total Imp(%)=	(ha)= 0.01	Dir. Conn.(%)=	52.52
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	6.42	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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) 5.00 10.00
 Storage Coeff. (min)= 0.43 (ii) 9.75 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.11

TOTALS

PEAK FLOW (cms)= 0.00 0.00 0.001 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 46.68
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.65

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0050) ID= 1 DT= 5.0 min	Area (ha)= Total Imp(%)=	(ha)= 0.02	Dir. Conn.(%)=	19.50
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.05	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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04

0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) 5.00 10.00
 Storage Coeff. (min)= 0.56 (ii) 9.88 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.11

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.002 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 35.22
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.49

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
 ***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
 YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0030)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	0.21	0.077	1.33	66.70
+ ID2= 2 (0036):	0.03	0.006	1.33	48.73
=====				
ID = 3 (0030):	0.24	0.083	1.33	64.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.24	0.083	1.33	64.56
+ ID2= 2 (0038):	0.45	0.163	1.33	66.70
=====				
ID = 1 (0030):	0.69	0.246	1.33	65.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.69	0.246	1.33	65.96
+ ID2= 2 (0042):	0.02	0.002	1.33	34.36
=====				
ID = 3 (0030):	0.70	0.248	1.33	65.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.70	0.248	1.33	65.21
+ ID2= 2 (0044):	0.04	0.007	1.33	43.53
=====				
ID = 1 (0030):	0.75	0.255	1.33	63.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.75	0.255	1.33	63.97
+ ID2= 2 (0045):	0.02	0.003	1.33	37.43
=====				

ID = 3 (0030): 0.76 0.258 1.33 63.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.76	0.258	1.33	63.38
+ ID2= 2 (0046):	0.00	0.001	1.33	45.01
=====				
ID = 1 (0030):	0.77	0.259	1.33	63.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):	0.77	0.259	1.33	63.27
+ ID2= 2 (0047):	0.01	0.001	1.33	46.68
=====				
ID = 3 (0030):	0.78	0.260	1.33	63.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.78	0.260	1.33	63.13
+ ID2= 2 (0050):	0.02	0.002	1.33	35.22
=====				
ID = 1 (0030):	0.79	0.262	1.33	62.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)				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	0.1531	0.0109	
	0.0024	0.0000	0.1552	0.0110	
	0.0030	0.0068	0.1572	0.0110	
	0.0473	0.0071	0.1592	0.0112	
	0.0743	0.0078	0.1612	0.0120	
	0.0942	0.0087	0.1632	0.0141	
	0.1099	0.0096	0.1651	0.0174	
	0.1236	0.0102	0.1670	0.0211	
	0.1267	0.0104	0.0000	0.0000	
	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
INFLOW : ID= 2 (0030)	0.791	0.262	1.33	62.60	
OUTFLOW: ID= 1 (0013)	0.791	0.163	1.42	62.64	
PEAK FLOW REDUCTION [Qout/Qin](%)= 62.36					
TIME SHIFT OF PEAK FLOW (min)= 5.00					
MAXIMUM STORAGE USED (ha.m.)= 0.0149					

CALIB			
STANDHYD (0031)			
ID= 1 DT= 5.0 min			
	Area	(ha)=	0.13
	Total Imp(%)=	24.53	Dir. Conn.(%)= 24.53

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)= 0.03	0.10
Dep. Storage	(mm)= 1.00	1.50
Average Slope	(%)= 1.00	2.00
Length	(m)= 29.13	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	2.18	1.083	52.37	2.083	11.13	3.08	3.12

0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
over (min) 5.00 15.00
Storage Coeff. (min)= 1.07 (ii) 10.39 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
PEAK FLOW (cms)= 0.01 0.01 0.017 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 70.95 28.49 38.85
TOTAL RAINFALL (mm)= 71.95 71.95 71.95
RUNOFF COEFFICIENT = 0.99 0.40 0.54

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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	Area (ha)= 0.04
STANDHYD (0043)	Total Imp(%)= 35.80
ID= 1 DT= 5.0 min	Dir. Conn.(%)= 35.80

Surface Area (ha)= 0.02	IMPERVIOUS	PERVIOUS (i)
Dep. Storage (mm)= 1.00	0.03	0.03
Average Slope (%)= 1.00	1.50	1.50
Length (m)= 17.28	2.00	2.00
Mannings n = 0.013	40.00	40.00
	0.250	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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
over (min) 5.00 15.00
Storage Coeff. (min)= 0.78 (ii) 10.10 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.10

TOTALS
PEAK FLOW (cms)= 0.01 0.00 0.008 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 70.95 28.49 43.53
TOTAL RAINFALL (mm)= 71.95 71.95 71.95
RUNOFF COEFFICIENT = 0.99 0.40 0.60

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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	Area (ha)= 0.03
STANDHYD (0049)	Total Imp(%)= 23.67
ID= 1 DT= 5.0 min	Dir. Conn.(%)= 23.67

Surface Area (ha)= 0.01	IMPERVIOUS	PERVIOUS (i)
Dep. Storage (mm)= 1.00	0.02	0.02
Average Slope (%)= 1.00	1.50	1.50
Length (m)= 14.51	2.00	2.00
Mannings n = 0.013	40.00	40.00
	0.250	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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
over (min) 5.00 15.00
Storage Coeff. (min)= 0.70 (ii) 10.02 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.34 0.10

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.004 (iii)
TIME TO PEAK (hrs)= 1.33 1.50 1.33
RUNOFF VOLUME (mm)= 70.95 28.49 38.35
TOTAL RAINFALL (mm)= 71.95 71.95 71.95
RUNOFF COEFFICIENT = 0.99 0.40 0.53

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	0.79	0.163	1.42	62.64
ID1= 1 (0013):	0.13	0.017	1.33	38.85
+ ID2= 2 (0031):	0.92	0.179	1.33	59.34
ID = 3 (0034):	0.92	0.179	1.33	59.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	0.92	0.179	1.33	59.34
ID1= 3 (0034):	0.03	0.002	1.58	26.18
+ ID2= 2 (0037):	0.95	0.181	1.33	58.39
ID = 1 (0034):	0.95	0.181	1.33	58.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	0.95	0.181	1.33	58.39
ID1= 1 (0034):	0.04	0.008	1.33	43.53
+ ID2= 2 (0043):	0.95	0.181	1.33	58.39
ID = 2 (0043):	0.95	0.181	1.33	58.39

=====
 ID = 3 (0034): 0.99 0.188 1.33 57.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 | ADD HYD (0034) |
3 + 2 = 1
 AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
 ID1= 3 (0034): 0.99 0.188 1.33 57.72
 + ID2= 2 (0049): 0.03 0.004 1.33 38.35

 ID = 1 (0034): 1.02 0.192 1.33 57.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 | CALIB |
 | STANDHYD (0001) | Area (ha)= 0.79
 | ID= 1 DT= 5.0 min | Total Imp(%)= 64.30 Dir. Conn.(%)= 64.30

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.51 0.28
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 72.63 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) = 5.00 10.00
 Storage Coeff. (min)= 1.84 (ii) 6.72 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.32 0.14

TOTALS
 PEAK FLOW (cms)= 0.20 0.03 0.222 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 55.79
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0039) | Area (ha)= 0.09
 | ID= 1 DT= 5.0 min | Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.03 0.06
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 23.90 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) = 5.00 15.00
 Storage Coeff. (min)= 0.95 (ii) 10.27 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
 PEAK FLOW (cms)= 0.01 0.01 0.015 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 43.62
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.61

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0041) | Area (ha)= 0.14
 | ID= 1 DT= 5.0 min | Total Imp(%)= 42.40 Dir. Conn.(%)= 42.40

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.06 0.08
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 30.94 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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max.Eff.Inten.(mm/hr)= 139.71 49.88
 over (min) = 5.00 15.00
 Storage Coeff. (min)= 1.11 (ii) 10.43 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.34 0.09

TOTALS
 PEAK FLOW (cms)= 0.02 0.01 0.028 (iii)
 TIME TO PEAK (hrs)= 1.33 1.50 1.33
 RUNOFF VOLUME (mm)= 70.95 28.49 46.45
 TOTAL RAINFALL (mm)= 71.95 71.95 71.95
 RUNOFF COEFFICIENT = 0.99 0.40 0.65

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0040)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0001):	0.79	0.222	1.33	55.79
+ ID2= 2 (0039):	0.09	0.015	1.33	43.62
ID = 3 (0040):	0.88	0.237	1.33	54.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0040)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0040):	0.88	0.237	1.33	54.60
+ ID2= 2 (0041):	0.14	0.028	1.33	46.45
ID = 1 (0040):	1.02	0.264	1.33	53.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	Area (ha)=	0.93
STANDHYD (0048)	Total Imp(%)=	73.29
ID= 1 DT= 5.0 min	Dir. Conn.(%)=	73.29

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	0.69	0.25
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	78.95	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	2.18	1.083	52.37	2.083	11.13	3.08	3.12
0.167	2.18	1.167	52.37	2.167	11.13	3.17	3.12
0.250	2.89	1.250	139.71	2.250	8.44	3.25	2.68
0.333	2.89	1.333	139.71	2.333	8.44	3.33	2.68
0.417	4.02	1.417	68.44	2.417	6.62	3.42	2.33
0.500	4.02	1.500	68.44	2.500	6.62	3.50	2.33
0.583	5.96	1.583	36.37	2.583	5.33	3.58	2.04
0.667	5.96	1.667	36.37	2.667	5.33	3.67	2.04
0.750	9.77	1.750	22.56	2.750	4.38	3.75	1.81
0.833	9.77	1.833	22.56	2.833	4.38	3.83	1.81
0.917	18.93	1.917	15.36	2.917	3.67	3.92	1.61
1.000	18.93	2.000	15.36	3.000	3.67	4.00	1.61

Max. Eff. Inten. (mm/hr)=	139.71	49.88
over (min)	5.00	10.00
Storage Coeff. (min)=	1.94 (ii)	6.06 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.15

PEAK FLOW (cms)=	0.26	0.03	*TOTALS*
TIME TO PEAK (hrs)=	1.33	1.42	0.288 (iii)
RUNOFF VOLUME (mm)=	70.95	28.49	59.61
TOTAL RAINFALL (mm)=	71.95	71.95	71.95
RUNOFF COEFFICIENT =	0.99	0.40	0.83

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES: CN* = 71.0 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.

V V I SS U U A A L
 V V I SS U U A A A A L
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***** DETAILED OUTPUT *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\vo2\voin.dat
 Output filename: C:\Users\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\0b3c
 Summary filename: C:\Users\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\0b3c

DATE: 01-26-2024 TIME: 03:09:05

USER:

COMMENTS:

 ** SIMULATION : 6) 100 Year **

CHICAGO STORM	IDF curve parameters: A=1770.000
Ptotal= 78.03 mm	B= 4.000
	C= 0.820

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

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	4.34	1.00	38.21	2.00	10.60	3.00	5.19
0.17	5.00	1.17	203.31	2.17	8.96	3.17	4.81
0.33	5.92	1.33	50.96	2.33	7.78	3.33	4.48
0.50	7.33	1.50	25.51	2.50	6.90	3.50	4.20
0.67	9.77	1.67	17.18	2.67	6.21	3.67	3.96
0.83	15.10	1.83	13.06	2.83	5.65	3.83	3.74

CALIB	Area (ha)=	0.03	Curve Number (CN)=	71.0
NASHYD (0037)	Ia (mm)=	5.00	# of Linear Res. (N)=	3.00
ID= 1 DT= 5.0 min	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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Unit Hyd Qpeak (cms)= 0.005

PEAK FLOW (cms)= 0.003 (i)
 TIME TO PEAK (hrs)= 1.500
 RUNOFF VOLUME (mm)= 30.082
 TOTAL RAINFALL (mm)= 78.027
 RUNOFF COEFFICIENT = 0.386

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

CALIB
 STANDHYD (0011) | Area (ha)= 0.21
 ID= 1 DT= 5.0 min | Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.19 0.02
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 37.53 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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
 over (min)= 5.00 5.00
 Storage Coeff.(min)= 1.07 (ii) 3.27 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.34 0.27

PEAK FLOW (cms)= 0.11 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.33 0.112 (iii)
 RUNOFF VOLUME (mm)= 77.03 32.49 72.56
 TOTAL RAINFALL (mm)= 78.03 78.03 78.03
 RUNOFF COEFFICIENT = 0.99 0.42 0.93

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0036) | Area (ha)= 0.03
 ID= 1 DT= 5.0 min | Total Imp(%)= 47.97 Dir. Conn.(%)= 47.97

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.01 0.01
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 13.79 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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48

0.500 5.92 | 1.500 50.96 | 2.500 7.78 | 3.50 4.48
 0.583 7.33 | 1.583 25.51 | 2.583 6.90 | 3.58 4.20
 0.667 7.33 | 1.667 25.51 | 2.667 6.90 | 3.67 4.20
 0.750 9.77 | 1.750 17.18 | 2.750 6.21 | 3.75 3.96
 0.833 9.77 | 1.833 17.18 | 2.833 6.21 | 3.83 3.96
 0.917 15.10 | 1.917 13.06 | 2.917 5.65 | 3.92 3.74
 1.000 15.10 | 2.000 13.06 | 3.000 5.65 | 4.00 3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
 over (min)= 5.00 10.00
 Storage Coeff.(min)= 0.59 (ii) 8.36 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.12

PEAK FLOW (cms)= 0.01 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.42 0.009 (iii)
 RUNOFF VOLUME (mm)= 77.03 32.49 1.33
 TOTAL RAINFALL (mm)= 78.03 78.03 53.65
 RUNOFF COEFFICIENT = 0.99 0.42 78.03
 0.69

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0038) | Area (ha)= 0.45
 ID= 1 DT= 5.0 min | Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.40 0.04
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 54.68 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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
 over (min)= 5.00 5.00
 Storage Coeff.(min)= 1.34 (ii) 3.55 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.33 0.26

PEAK FLOW (cms)= 0.23 0.01 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.33 0.238 (iii)
 RUNOFF VOLUME (mm)= 77.03 32.49 1.33
 TOTAL RAINFALL (mm)= 78.03 78.03 72.57
 RUNOFF COEFFICIENT = 0.99 0.42 78.03
 0.93

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0042) | Area (ha)= 0.02

|ID= 1 DT= 5.0 min | Total Imp(%)= 17.02 Dir. Conn.(%)= 17.02

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.53	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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)=	203.31	78.45
over (min)	5.00	10.00
Storage Coeff. (min)=	0.50 (ii)	8.28 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.34	0.13

			TOTALS
PEAK FLOW (cms)=	0.00	0.00	0.003 (iii)
TIME TO PEAK (hrs)=	1.33	1.42	1.33
RUNOFF VOLUME (mm)=	77.03	32.49	39.75
TOTAL RAINFALL (mm)=	78.03	78.03	78.03
RUNOFF COEFFICIENT =	0.99	0.42	0.51

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
 ***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20% YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0044) | Area (ha)= 0.04
| ID= 1 DT= 5.0 min | Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.03
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	16.85	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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)=	203.31	78.45
over (min)	5.00	10.00

Storage Coeff. (min)=	0.66 (ii)	8.44 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.34	0.12

			TOTALS
PEAK FLOW (cms)=	0.01	0.00	0.012 (iii)
TIME TO PEAK (hrs)=	1.33	1.42	1.33
RUNOFF VOLUME (mm)=	77.03	32.49	48.29
TOTAL RAINFALL (mm)=	78.03	78.03	78.03
RUNOFF COEFFICIENT =	0.99	0.42	0.62

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0045) | Area (ha)= 0.02
| ID= 1 DT= 5.0 min | Total Imp(%)= 23.86 Dir. Conn.(%)= 23.86

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.68	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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)=	203.31	78.45
over (min)	5.00	10.00
Storage Coeff. (min)=	0.50 (ii)	8.28 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.34	0.13

			TOTALS
PEAK FLOW (cms)=	0.00	0.00	0.004 (iii)
TIME TO PEAK (hrs)=	1.33	1.42	1.33
RUNOFF VOLUME (mm)=	77.03	32.49	42.82
TOTAL RAINFALL (mm)=	78.03	78.03	78.03
RUNOFF COEFFICIENT =	0.99	0.42	0.55

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0046) | Area (ha)= 0.00
| ID= 1 DT= 5.0 min | Total Imp(%)= 50.97 Dir. Conn.(%)= 50.97

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	5.66	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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
over (min) 5.00 10.00
Storage Coeff. (min)= 0.34 (ii) 8.12 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.13

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.002 (iii)
TIME TO PEAK (hrs)= 1.33 1.42 1.33
RUNOFF VOLUME (mm)= 77.03 32.49 47.44
TOTAL RAINFALL (mm)= 78.03 78.03 78.03
RUNOFF COEFFICIENT = 0.99 0.42 0.61

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0047)			
ID= 1 DT= 5.0 min			
Area	(ha)=	0.01	
Total Imp(%)=	52.52	Dir. Conn.(%)=	52.52
Surface Area	(ha)=	0.00	PERVIOUS (i)
Dep. Storage	(mm)=	1.00	0.00
Average Slope	(%)=	1.00	1.50
Length	(m)=	6.42	2.00
Mannings n	=	0.013	40.00
			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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
over (min) 5.00 10.00
Storage Coeff. (min)= 0.37 (ii) 8.15 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.13

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.002 (iii)
TIME TO PEAK (hrs)= 1.33 1.42 1.33
RUNOFF VOLUME (mm)= 77.03 32.49 50.22
TOTAL RAINFALL (mm)= 78.03 78.03 78.03
RUNOFF COEFFICIENT = 0.99 0.42 0.64

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0050)			
ID= 1 DT= 5.0 min			
Area	(ha)=	0.02	
Total Imp(%)=	19.50	Dir. Conn.(%)=	19.50
Surface Area	(ha)=	0.00	PERVIOUS (i)
Dep. Storage	(mm)=	1.00	0.01
Average Slope	(%)=	1.00	1.50
Length	(m)=	10.05	2.00
Mannings n	=	0.013	40.00
			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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
over (min) 5.00 10.00
Storage Coeff. (min)= 0.48 (ii) 8.26 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.13

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.003 (iii)
TIME TO PEAK (hrs)= 1.33 1.42 1.33
RUNOFF VOLUME (mm)= 77.03 32.49 40.86
TOTAL RAINFALL (mm)= 78.03 78.03 78.03
RUNOFF COEFFICIENT = 0.99 0.42 0.52

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

***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0030)				
1 + 2 = 3				
ID	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	0.21	0.112	1.33	72.56
+ ID2= 2 (0036):	0.03	0.009	1.33	53.65
ID = 3 (0030):	0.24	0.122	1.33	70.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
ID	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	0.24	0.122	1.33	70.32
+ ID2= 2 (0038):	0.45	0.238	1.33	72.57
ID = 1 (0030):	0.69	0.360	1.33	71.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.69	0.360	1.33	71.79
+ ID2= 2 (0042):	0.02	0.003	1.33	39.75

ID = 3 (0030):	0.70	0.363	1.33	71.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.70	0.363	1.33	71.03
+ ID2= 2 (0044):	0.04	0.012	1.33	48.29

ID = 1 (0030):	0.75	0.375	1.33	69.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.75	0.375	1.33	69.73
+ ID2= 2 (0045):	0.02	0.004	1.33	42.82

ID = 3 (0030):	0.76	0.379	1.33	69.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.76	0.379	1.33	69.13
+ ID2= 2 (0046):	0.00	0.002	1.33	47.44

ID = 1 (0030):	0.77	0.381	1.33	69.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.77	0.381	1.33	69.00
+ ID2= 2 (0047):	0.01	0.002	1.33	50.22

ID = 3 (0030):	0.78	0.383	1.33	68.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.78	0.383	1.33	68.85
+ ID2= 2 (0050):	0.02	0.003	1.33	40.86

ID = 1 (0030):	0.79	0.386	1.33	68.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)				
IN= 2--> OUT= 1				
DT= 5.0 min				
OVERFLOW IS OFF				
OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
0.0000	0.0000	0.1531	0.0109	
0.0024	0.0000	0.1552	0.0110	
0.0030	0.0068	0.1572	0.0110	
0.0473	0.0071	0.1592	0.0112	
0.0743	0.0078	0.1612	0.0120	
0.0942	0.0087	0.1632	0.0141	

0.1099	0.0096	0.1651	0.0174
0.1236	0.0102	0.1670	0.0211
0.1267	0.0104	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0030)	0.791	0.386	1.33	68.31
OUTFLOW: ID= 1 (0013)	0.791	0.166	1.42	68.33

PEAK FLOW REDUCTION [Qout/Qin]= 43.12
 TIME SHIFT OF PEAK FLOW (min)= 5.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0207

CALIB			
STANDHYD (0031)			
ID= 1 DT= 5.0 min	Area (ha)	Imp(%)	Dir. Conn.(%)
	0.13	24.53	24.53

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.10
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	29.13	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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
 over (min) = 5.00 10.00
 Storage Coeff. (min)= 0.92 (ii) 8.70 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.12

PEAK FLOW (cms)= 0.02 0.01 *TOTALS*
 TIME TO PEAK (hrs)= 1.33 1.42 0.029 (iii)
 RUNOFF VOLUME (mm)= 77.03 32.49 43.38
 TOTAL RAINFALL (mm)= 78.03 78.03 78.03
 RUNOFF COEFFICIENT = 0.99 0.42 0.56

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0043)			
ID= 1 DT= 5.0 min	Area (ha)	Imp(%)	Dir. Conn.(%)
	0.04	35.80	35.80

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.03
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	17.28	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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
over (min) 5.00 10.00
Storage Coeff. (min)= 0.67 (ii) 8.45 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.12

TOTALS
PEAK FLOW (cms)= 0.01 0.00 0.012 (iii)
TIME TO PEAK (hrs)= 1.33 1.42 1.33
RUNOFF VOLUME (mm)= 77.03 32.49 48.29
TOTAL RAINFALL (mm)= 78.03 78.03 78.03
RUNOFF COEFFICIENT = 0.99 0.42 0.62

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0049)
ID= 1 DT= 5.0 min
Area (ha)= 0.03
Total Imp(%)= 23.67 Dir. Conn.(%)= 23.67

IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 0.01 0.02
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 14.51 40.00
Mannings n = 0.013 0.250

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

--- TRANSFORMED HYETOGRAPH ---							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
over (min) 5.00 10.00
Storage Coeff. (min)= 0.60 (ii) 8.38 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.34 0.12

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.007 (iii)
TIME TO PEAK (hrs)= 1.33 1.42 1.33
RUNOFF VOLUME (mm)= 77.03 32.49 42.87
TOTAL RAINFALL (mm)= 78.03 78.03 78.03
RUNOFF COEFFICIENT = 0.99 0.42 0.55

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0034)
1 + 2 = 3
AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
ID1= 1 (0013): 0.79 0.166 1.42 68.33
+ ID2= 2 (0031): 0.13 0.029 1.33 43.38

ID = 3 (0034): 0.92 0.194 1.33 64.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
3 + 2 = 1
AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
ID1= 3 (0034): 0.92 0.194 1.33 64.87
+ ID2= 2 (0037): 0.03 0.003 1.50 30.08

ID = 1 (0034): 0.95 0.196 1.33 63.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
1 + 2 = 3
AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
ID1= 1 (0034): 0.95 0.196 1.33 63.87
+ ID2= 2 (0043): 0.04 0.012 1.33 48.29

ID = 3 (0034): 0.99 0.208 1.33 63.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)
3 + 2 = 1
AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
ID1= 3 (0034): 0.99 0.208 1.33 63.17
+ ID2= 2 (0049): 0.03 0.007 1.33 42.87

ID = 1 (0034): 1.02 0.215 1.33 62.54

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
STANDHYD (0001)
ID= 1 DT= 5.0 min
Area (ha)= 0.79
Total Imp(%)= 64.30 Dir. Conn.(%)= 64.30

IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 0.51 0.28
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 72.63 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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
over (min) 5.00 10.00
Storage Coeff. (min)= 1.59 (ii) 5.79 (ii)

Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.33 0.15

TOTALS
 PEAK FLOW (cms)= 0.29 0.05 0.327 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 77.03 32.49 61.12
 TOTAL RAINFALL (mm)= 78.03 78.03 78.03
 RUNOFF COEFFICIENT = 0.99 0.42 0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0039)
 ID= 1 DT= 5.0 min

Area (ha)= 0.09
 Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.03 0.06
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 23.90 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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max. Eff. Inten. (mm/hr)= 203.31 78.45
 over (min)= 5.00 10.00
 Storage Coeff. (min)= 0.81 (ii) 8.59 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.12

PEAK FLOW (cms)= 0.02 0.01 0.024 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 77.03 32.49 48.39
 TOTAL RAINFALL (mm)= 78.03 78.03 78.03
 RUNOFF COEFFICIENT = 0.99 0.42 0.62

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0041)
 ID= 1 DT= 5.0 min

Area (ha)= 0.14
 Total Imp(%)= 42.40 Dir. Conn.(%)= 42.40

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.06 0.08
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 30.94 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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max. Eff. Inten. (mm/hr)= 203.31 78.45
 over (min)= 5.00 10.00
 Storage Coeff. (min)= 0.95 (ii) 8.73 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.34 0.12

PEAK FLOW (cms)= 0.03 0.01 0.044 (iii)
 TIME TO PEAK (hrs)= 1.33 1.42 1.33
 RUNOFF VOLUME (mm)= 77.03 32.49 51.33
 TOTAL RAINFALL (mm)= 78.03 78.03 78.03
 RUNOFF COEFFICIENT = 0.99 0.42 0.66

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0040)
 1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	0.79	0.327	1.33	61.12
+ ID2= 2 (0039):	0.09	0.024	1.33	48.39
ID = 3 (0040):	0.88	0.351	1.33	59.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0040)
 3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0040):	0.88	0.351	1.33	59.88
+ ID2= 2 (0041):	0.14	0.044	1.33	51.33
ID = 1 (0040):	1.02	0.395	1.33	58.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
 STANDHYD (0048)
 ID= 1 DT= 5.0 min

Area (ha)= 0.93
 Total Imp(%)= 73.29 Dir. Conn.(%)= 73.29

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.69 0.25
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 78.95 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	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81

0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)= 203.31 78.45
over (min) 5.00 10.00
Storage Coeff. (min)= 1.67 (ii) 5.22 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.32 0.16

TOTALS
0.423 (iii)
0.83

PEAK FLOW (cms)= 0.39 0.04
TIME TO PEAK (hrs)= 1.33 1.42 1.33
RUNOFF VOLUME (mm)= 77.03 32.49 65.13
TOTAL RAINFALL (mm)= 78.03 78.03 78.03
RUNOFF COEFFICIENT = 0.99 0.42 0.83

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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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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 A A A A L
V V I SS U U A A L
V V I SSSSS UUUUU A A LLLLL

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000 TTTT TTTT H H Y Y M M 000 TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
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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\voindat
Output filename: C:\Users\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\7b68
Summary filename: C:\Users\matthew.holmes\AppData\Local\Civica\vh5\12d87476-b24b-4d30-b2b7-a6ec5e7db2e7\7b68

DATE: 01-26-2024 TIME: 03:09:07

USER:

COMMENTS: _____

** SIMULATION : 7) 25mm Rainfall **

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| READ STORM | Filename: C:\Users\matthew.holmes\AppData
|            | ata\Local\Temp\
| Ptotal= 25.00 mm | 522cbdd3-3d34-4a61-8235-cc6d784e880a\ca97181d
|            | Comments: 25MM4HR
-----

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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	2.07	1.00	5.70	2.00	5.19	3.00	2.80
0.17	2.27	1.17	10.78	2.17	4.47	3.17	2.62
0.33	2.52	1.33	50.21	2.33	3.95	3.33	2.48
0.50	2.88	1.50	13.37	2.50	3.56	3.50	2.35
0.67	3.38	1.67	8.29	2.67	3.25	3.67	2.23
0.83	4.18	1.83	6.30	2.83	3.01	3.83	2.14

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| CALIB |
| NASHYD ( 0037) | Area (ha)= 0.03 Curve Number (CN)= 71.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
|            | U.H. Tp(hrs)= 0.20
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

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----- TRANSFORMED HYETOGRAPH -----

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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Unit Hyd Qpeak (cms)= 0.005

PEAK FLOW (cms)= 0.000 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 3.195
TOTAL RAINFALL (mm)= 24.997
RUNOFF COEFFICIENT = 0.128

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

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| CALIB |
| STANDHYD ( 0011) | Area (ha)= 0.21
| ID= 1 DT= 5.0 min | Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00
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IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 0.19 0.02
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 37.53 40.00
Mannings n = 0.013 0.250

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

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----- TRANSFORMED HYETOGRAPH -----

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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 7.11
over (min) 5.00 10.00
Storage coeff. (min)= 1.87 (ii) 5.73 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.32 0.15

TOTALS
PEAK FLOW (cms)= 0.03 0.00 0.027 (iii)
TIME TO PEAK (hrs)= 1.50 1.58 1.50
RUNOFF VOLUME (mm)= 24.00 4.34 22.03
TOTAL RAINFALL (mm)= 25.00 25.00 25.00
RUNOFF COEFFICIENT = 0.96 0.17 0.88

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0036)
ID= 1 DT= 5.0 min | Area (ha)= 0.03
Total Imp(%)= 47.97 Dir. Conn.(%)= 47.97

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.01	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	13.79	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)=	50.21	4.41	
over (min)	5.00	30.00	
Storage Coeff. (min)=	1.03 (ii)	25.63 (ii)	
Unit Hyd. Tpeak (min)=	5.00	30.00	
Unit Hyd. peak (cms)=	0.34	0.04	
PEAK FLOW (cms)=	0.00	0.00	*TOTALS* 0.002 (iii)
TIME TO PEAK (hrs)=	1.50	1.92	
RUNOFF VOLUME (mm)=	24.00	4.34	13.52
TOTAL RAINFALL (mm)=	25.00	25.00	25.00
RUNOFF COEFFICIENT =	0.96	0.17	0.54

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0038)
ID= 1 DT= 5.0 min | Area (ha)= 0.45
Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.40	0.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	54.68	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35

0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)=	50.21	7.11	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.34 (ii)	6.20 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.15	
PEAK FLOW (cms)=	0.06	0.00	*TOTALS* 0.056 (iii)
TIME TO PEAK (hrs)=	1.50	1.58	
RUNOFF VOLUME (mm)=	24.00	4.34	
TOTAL RAINFALL (mm)=	25.00	25.00	
RUNOFF COEFFICIENT =	0.96	0.17	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0042)
ID= 1 DT= 5.0 min | Area (ha)= 0.02
Total Imp(%)= 17.02 Dir. Conn.(%)= 17.02

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.53	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)=	50.21	4.41	
over (min)	5.00	30.00	
Storage Coeff. (min)=	0.87 (ii)	25.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	30.00	
Unit Hyd. peak (cms)=	0.34	0.04	
PEAK FLOW (cms)=	0.00	0.00	*TOTALS* 0.000 (iii)
TIME TO PEAK (hrs)=	1.50	1.92	
RUNOFF VOLUME (mm)=	24.00	4.34	
TOTAL RAINFALL (mm)=	25.00	25.00	
RUNOFF COEFFICIENT =	0.96	0.17	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING: FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0044)
Area (ha)= 0.04

|ID= 1 DT= 5.0 min | Total Imp(%)= 35.80 Dir. Conn.(%)= 35.80

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.03
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	16.85	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 4.41
 over (min) = 5.00 30.00
 Storage Coeff. (min)= 1.16 (ii) 25.76 (ii)
 Unit Hyd. Tpeak (min)= 5.00 30.00
 Unit Hyd. peak (cms)= 0.34 0.04

PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.50 1.92 0.002 (iii)
 RUNOFF VOLUME (mm)= 24.00 4.34 11.06
 TOTAL RAINFALL (mm)= 25.00 25.00 25.00
 RUNOFF COEFFICIENT = 0.96 0.17 0.44

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0045) | Area (ha)= 0.02
 ID= 1 DT= 5.0 min | Total Imp(%)= 23.86 Dir. Conn.(%)= 23.86

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.68	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 4.41
 over (min) = 5.00 30.00
 Storage Coeff. (min)= 0.88 (ii) 25.48 (ii)
 Unit Hyd. Tpeak (min)= 5.00 30.00

Unit Hyd. peak (cms)= 0.34 0.04
 PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.50 1.92 0.001 (iii)
 RUNOFF VOLUME (mm)= 24.00 4.34 6.53
 TOTAL RAINFALL (mm)= 25.00 25.00 25.00
 RUNOFF COEFFICIENT = 0.96 0.17 0.26

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0046) | Area (ha)= 0.00
 ID= 1 DT= 5.0 min | Total Imp(%)= 50.97 Dir. Conn.(%)= 50.97

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	5.66	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 4.41
 over (min) = 5.00 30.00
 Storage Coeff. (min)= 0.60 (ii) 25.20 (ii)
 Unit Hyd. Tpeak (min)= 5.00 30.00
 Unit Hyd. peak (cms)= 0.34 0.04

PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
 TIME TO PEAK (hrs)= 1.50 1.92 0.000 (iii)
 RUNOFF VOLUME (mm)= 24.00 4.34 7.90
 TOTAL RAINFALL (mm)= 25.00 25.00 25.00
 RUNOFF COEFFICIENT = 0.96 0.17 0.32

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0047) | Area (ha)= 0.01
 ID= 1 DT= 5.0 min | Total Imp(%)= 52.52 Dir. Conn.(%)= 52.52

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	6.42	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 4.41
over (min) 5.00 30.00
Storage Coeff. (min)= 0.65 (ii) 25.25 (ii)
Unit Hyd. Tpeak (min)= 5.00 30.00
Unit Hyd. peak (cms)= 0.34 0.04

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.00 (iii)
TIME TO PEAK (hrs)= 1.50 1.92 1.50
RUNOFF VOLUME (mm)= 24.00 4.34 8.13
TOTAL RAINFALL (mm)= 25.00 25.00 25.00
RUNOFF COEFFICIENT = 0.96 0.17 0.33

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0050) ID= 1 DT= 5.0 min	Area (ha)= 0.02 Total Imp(%)= 19.50	Dir. Conn.(%)= 19.50
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.00	0.01
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	10.05	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 4.41
over (min) 5.00 30.00
Storage Coeff. (min)= 0.85 (ii) 25.45 (ii)
Unit Hyd. Tpeak (min)= 5.00 30.00
Unit Hyd. peak (cms)= 0.34 0.04

TOTALS
PEAK FLOW (cms)= 0.00 0.00 0.00 (iii)
TIME TO PEAK (hrs)= 1.50 1.92 1.50
RUNOFF VOLUME (mm)= 24.00 4.34 5.19
TOTAL RAINFALL (mm)= 25.00 25.00 25.00
RUNOFF COEFFICIENT = 0.96 0.17 0.21

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0030) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	0.21	0.027	1.50	22.03
+ ID2= 2 (0036):	0.03	0.002	1.50	13.52
ID = 3 (0030):	0.24	0.029	1.50	21.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.24	0.029	1.50	21.01
+ ID2= 2 (0038):	0.45	0.056	1.50	22.02
ID = 1 (0030):	0.69	0.085	1.50	21.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.69	0.085	1.50	21.67
+ ID2= 2 (0042):	0.02	0.000	1.50	5.13
ID = 3 (0030):	0.70	0.085	1.50	21.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.70	0.085	1.50	21.28
+ ID2= 2 (0044):	0.04	0.002	1.50	11.06
ID = 1 (0030):	0.75	0.087	1.50	20.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	0.75	0.087	1.50	20.70
+ ID2= 2 (0045):	0.02	0.001	1.50	6.53
ID = 3 (0030):	0.76	0.088	1.50	20.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.76	0.088	1.50	20.38
+ ID2= 2 (0046):	0.00	0.000	1.50	7.90
ID = 1 (0030):	0.77	0.088	1.50	20.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
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ID1= 1 (0030): 0.77 0.088 1.50 20.31
 + ID2= 2 (0047): 0.01 0.000 1.50 8.13

 ID = 3 (0030): 0.78 0.089 1.50 20.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)
 3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	0.78	0.089	1.50	20.21
+ ID2= 2 (0050):	0.02	0.000	1.50	5.19

ID = 1 (0030):	0.79	0.089	1.50	19.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR (0013)
 IN= 2--> OUT= 1
 DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1531	0.0109
0.0024	0.0000	0.1552	0.0110
0.0030	0.0068	0.1572	0.0110
0.0473	0.0071	0.1592	0.0112
0.0743	0.0078	0.1612	0.0120
0.0942	0.0087	0.1632	0.0141
0.1099	0.0096	0.1651	0.0174
0.1236	0.0102	0.1670	0.0211
0.1267	0.0104	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0030)	0.791	0.089	1.50	19.92
OUTFLOW: ID= 1 (0013)	0.791	0.036	1.58	19.96

PEAK FLOW REDUCTION [Qout/Qin](%)= 40.03
 TIME SHIFT OF PEAK FLOW (min)= 5.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0071

CALIB
 STANDHYD (0031)
 ID= 1 DT= 5.0 min

	Area (ha)	Total Imp(%)	Dir. Conn.(%)
	0.13	24.53	24.53

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.03	0.10
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	29.13	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max. Eff. Inten. (mm/hr)= 50.21
 over (min)= 5.00
 Storage Coeff. (min)= 1.61 (ii)
 Unit Hyd. Tpeak (min)= 5.00
 Unit Hyd. peak (cms)= 0.32

TOTALS
 PEAK FLOW (cms)= 0.00
 TIME TO PEAK (hrs)= 1.50
 RUNOFF VOLUME (mm)= 24.00

TOTAL RAINFALL (mm)= 25.00 25.00 25.00
 RUNOFF COEFFICIENT = 0.96 0.17 0.36

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0043)
 ID= 1 DT= 5.0 min

	Area (ha)	Total Imp(%)	Dir. Conn.(%)
	0.04	35.80	35.80

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.02	0.03
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	17.28	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max. Eff. Inten. (mm/hr)= 50.21
 over (min)= 5.00
 Storage Coeff. (min)= 1.17 (ii)
 Unit Hyd. Tpeak (min)= 5.00
 Unit Hyd. peak (cms)= 0.34

TOTALS
 PEAK FLOW (cms)= 0.00
 TIME TO PEAK (hrs)= 1.50
 RUNOFF VOLUME (mm)= 24.00
 TOTAL RAINFALL (mm)= 25.00
 RUNOFF COEFFICIENT = 0.96

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 71.0 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 (0049)
 ID= 1 DT= 5.0 min

	Area (ha)	Total Imp(%)	Dir. Conn.(%)
	0.03	23.67	23.67

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.01	0.02
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	14.51	40.00
Mannings n =	0.013	0.250

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

--- TRANSFORMED HYETOGRAPH ---

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80

0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max. Eff. Inten. (mm/hr)= 50.21 4.41
over (min) = 5.00 30.00
Storage Coeff. (min)= 1.06 (ii) 25.66 (ii)
Unit Hyd. Tpeak (min)= 5.00 30.00
Unit Hyd. peak (cms)= 0.34 0.04

PEAK FLOW (cms)= 0.00 0.00 *TOTALS*
TIME TO PEAK (hrs)= 1.50 1.92 0.001 (iii)
RUNOFF VOLUME (mm)= 24.00 4.34 8.62
TOTAL RAINFALL (mm)= 25.00 25.00 25.00
RUNOFF COEFFICIENT = 0.96 0.17 0.34

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0034)				
1 + 2 = 3				
ID1= 1 (0013):	0.79	0.036	1.58	19.96
+ ID2= 2 (0031):	0.13	0.004	1.50	9.05
=====				
ID = 3 (0034):	0.92	0.037	1.58	18.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)				
3 + 2 = 1				
ID1= 3 (0034):	0.92	0.037	1.58	18.45
+ ID2= 2 (0037):	0.03	0.000	1.67	3.20
=====				
ID = 1 (0034):	0.95	0.037	1.58	18.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)				
1 + 2 = 3				
ID1= 1 (0034):	0.95	0.037	1.58	18.01
+ ID2= 2 (0043):	0.04	0.002	1.50	11.06
=====				
ID = 3 (0034):	0.99	0.038	1.58	17.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0034)				
3 + 2 = 1				
ID1= 3 (0034):	0.99	0.038	1.58	17.69
+ ID2= 2 (0049):	0.03	0.001	1.50	8.62
=====				
ID = 1 (0034):	1.02	0.038	1.58	17.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (0001)				
ID= 1 DT= 5.0 min	Area (ha)=	0.79	Dir. Conn.(%)=	64.30
	Total Imp(%)=	64.30		

IMPERVIOUS PERVIOUS (i)		
Surface Area (ha)=	0.51	0.28
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	72.63	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max. Eff. Inten. (mm/hr)= 50.21 4.41
over (min) = 5.00 30.00
Storage Coeff. (min)= 2.78 (ii) 27.38 (ii)
Unit Hyd. Tpeak (min)= 5.00 30.00
Unit Hyd. peak (cms)= 0.28 0.04

PEAK FLOW (cms)= 0.07 0.00 *TOTALS*
TIME TO PEAK (hrs)= 1.50 1.92 0.070 (iii)
RUNOFF VOLUME (mm)= 24.00 4.34 16.96
TOTAL RAINFALL (mm)= 25.00 25.00 25.00
RUNOFF COEFFICIENT = 0.96 0.17 0.68

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0039)			
ID= 1 DT= 5.0 min	Area (ha)=	0.09	Dir. Conn.(%)= 35.80
	Total Imp(%)=	35.80	

IMPERVIOUS PERVIOUS (i)		
Surface Area (ha)=	0.03	0.06
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	23.90	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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max. Eff. Inten. (mm/hr)= 50.21 4.41
over (min) = 5.00 30.00
Storage Coeff. (min)= 1.43 (ii) 26.03 (ii)
Unit Hyd. Tpeak (min)= 5.00 30.00
Unit Hyd. peak (cms)= 0.33 0.04

TOTALS
 PEAK FLOW (cms)= 0.00 0.00 0.004 (iii)
 TIME TO PEAK (hrs)= 1.50 1.92 1.50
 RUNOFF VOLUME (mm)= 24.00 4.34 11.18
 TOTAL RAINFALL (mm)= 25.00 25.00 25.00
 RUNOFF COEFFICIENT = 0.96 0.17 0.45

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0041) | Area (ha)= 0.14
 ID= 1 DT= 5.0 min | Total Imp(%)= 42.40 Dir. Conn.(%)= 42.40

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.06 0.08
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 30.94 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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 4.41
 over (min) = 5.00 30.00
 Storage Coeff. (min)= 1.66 (ii) 26.27 (ii)
 Unit Hyd. Tpeak (min)= 5.00 30.00
 Unit Hyd. peak (cms)= 0.32 0.04

TOTALS
 PEAK FLOW (cms)= 0.01 0.00 0.009 (iii)
 TIME TO PEAK (hrs)= 1.50 1.92 1.50
 RUNOFF VOLUME (mm)= 24.00 4.34 12.57
 TOTAL RAINFALL (mm)= 25.00 25.00 25.00
 RUNOFF COEFFICIENT = 0.96 0.17 0.50

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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 (0040) |
 1 + 2 = 3 | AREA QPEAK TPEAK R.V.
 (ha) (cms) (hrs) (mm)
 ID1= 1 (0001): 0.79 0.070 1.50 16.96
 + ID2= 2 (0039): 0.09 0.004 1.50 11.18
 ID = 3 (0040): 0.88 0.074 1.50 16.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0040) |
 3 + 2 = 1 | AREA QPEAK TPEAK R.V.

(ha) (cms) (hrs) (mm)
 ID1= 3 (0040): 0.88 0.074 1.50 16.39
 + ID2= 2 (0041): 0.14 0.009 1.50 12.57
 ID = 1 (0040): 1.02 0.083 1.50 15.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
 STANDHYD (0048) | Area (ha)= 0.93
 ID= 1 DT= 5.0 min | Total Imp(%)= 73.29 Dir. Conn.(%)= 73.29

IMPERVIOUS PERVIOUS (i)
 Surface Area (ha)= 0.69 0.25
 Dep. Storage (mm)= 1.00 1.50
 Average Slope (%)= 1.00 2.00
 Length (m)= 78.95 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	2.07	1.083	5.70	2.083	5.19	3.08	2.80
0.167	2.07	1.167	5.70	2.167	5.19	3.17	2.80
0.250	2.27	1.250	10.78	2.250	4.47	3.25	2.62
0.333	2.27	1.333	10.78	2.333	4.47	3.33	2.62
0.417	2.52	1.417	50.21	2.417	3.95	3.42	2.48
0.500	2.52	1.500	50.21	2.500	3.95	3.50	2.48
0.583	2.88	1.583	13.37	2.583	3.56	3.58	2.35
0.667	2.88	1.667	13.37	2.667	3.56	3.67	2.35
0.750	3.38	1.750	8.29	2.750	3.25	3.75	2.23
0.833	3.38	1.833	8.29	2.833	3.25	3.83	2.23
0.917	4.18	1.917	6.30	2.917	3.01	3.92	2.14
1.000	4.18	2.000	6.30	3.000	3.01	4.00	2.14

Max.Eff.Inten.(mm/hr)= 50.21 4.41
 over (min) = 5.00 30.00
 Storage Coeff. (min)= 2.92 (ii) 27.52 (ii)
 Unit Hyd. Tpeak (min)= 5.00 30.00
 Unit Hyd. peak (cms)= 0.28 0.04

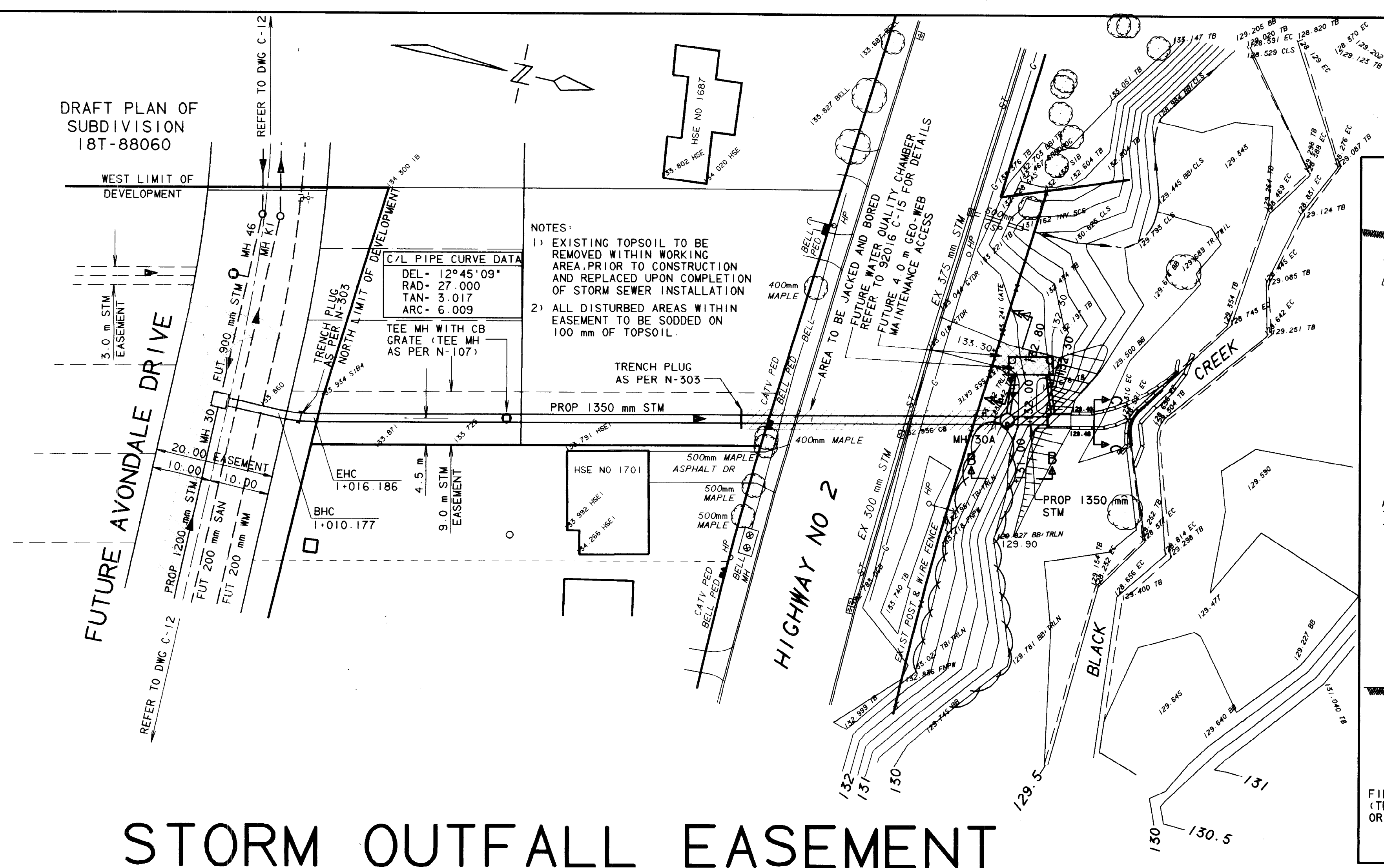
TOTALS
 PEAK FLOW (cms)= 0.09 0.00 0.093 (iii)
 TIME TO PEAK (hrs)= 1.50 1.92 1.50
 RUNOFF VOLUME (mm)= 24.00 4.34 18.73
 TOTAL RAINFALL (mm)= 25.00 25.00 25.00
 RUNOFF COEFFICIENT = 0.96 0.17 0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

FINISH

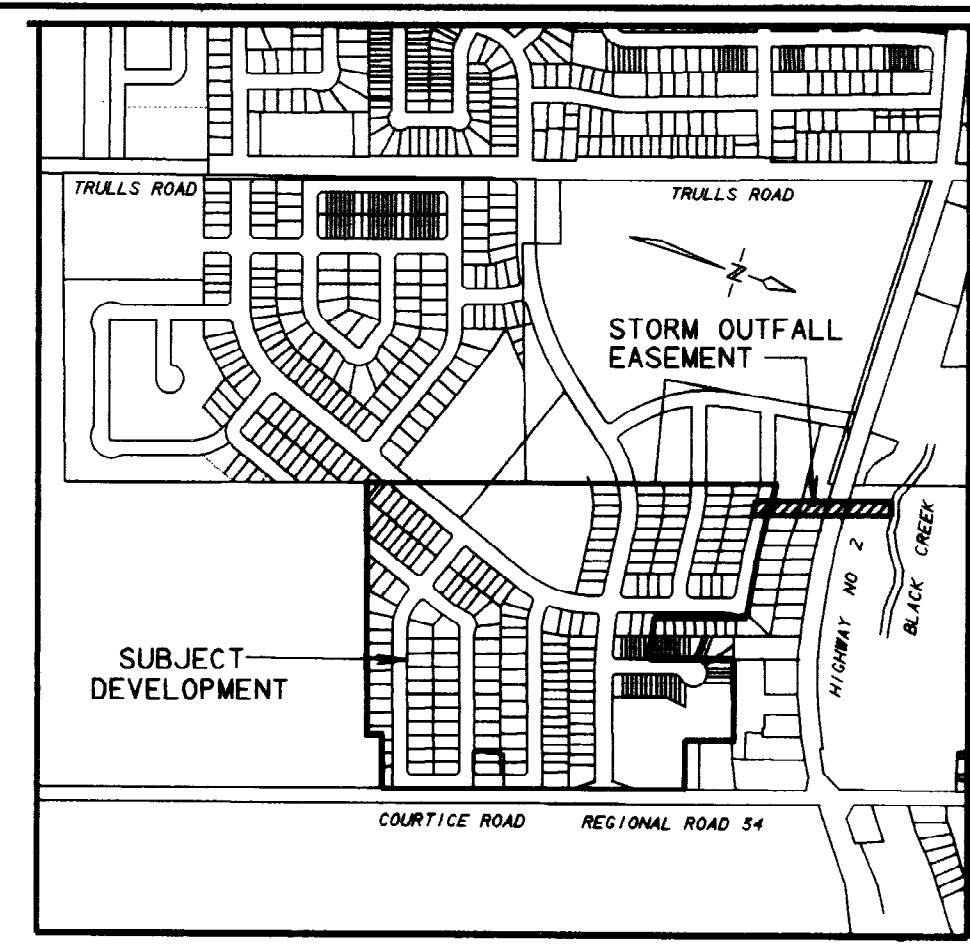
DRAFT PLAN OF
SUBDIVISION
18T-88060



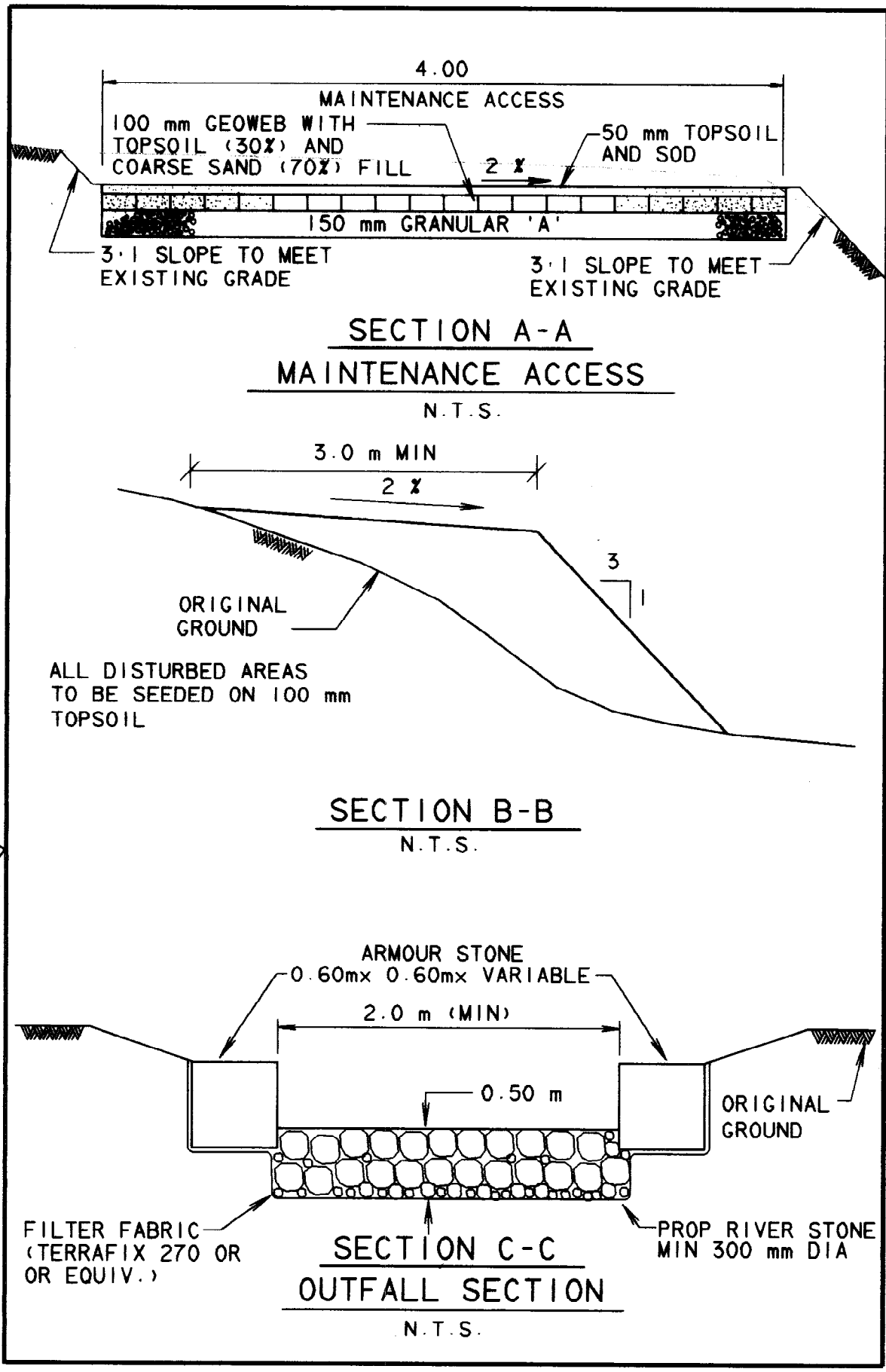
NOTES:
1) EXISTING TOPSOIL TO BE REMOVED WITHIN WORKING AREA PRIOR TO CONSTRUCTION AND REPLACED UPON COMPLETION OF STORM SEWER INSTALLATION.
2) ALL DISTURBED AREAS WITHIN EASEMENT TO BE SODDED ON 100 mm OF TOPSOIL.

C/L PIPE CURVE DATA
DEL - 12° 45' 09"
RAD - 27.000
TAN - 5.017
ARC - 6.009

ATTENTION CONTRACTORS:
ALL QUANTITIES, DIMENSIONS AND ELEVATIONS ON ALL CONTRACT DRAWINGS TO BE VERIFIED BY THE CONTRACTOR BEFORE COMMENCING CONSTRUCTION OR ORDERING MATERIALS.



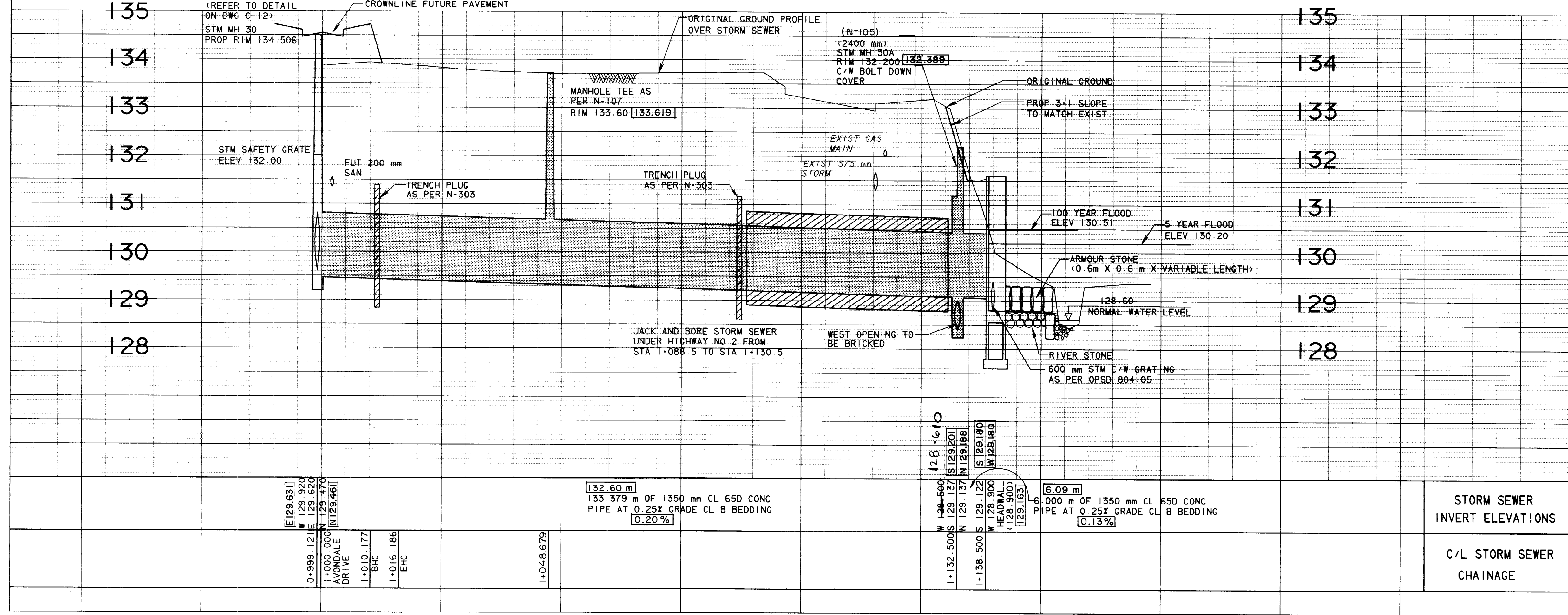
KEY PLAN
SCALE 1:10000



NOTES

- 1) ALL DISTURBED AREAS WITHIN VALLEY TO BE RESTORED WITH 100 mm TOPSOIL AND SEED.
- 2) ALL DISTURBED BOULEVARDS WITHIN HWY NO.2 ROAD ALLOWANCE TO BE SODDED ON 100 mm TOPSOIL.
- 3) CONTRACTOR TO PROVIDE THE MINISTRY OF TRANSPORTATION OF ONTARIO 48 HOURS NOTICE PRIOR TO PROCEEDING WITH ANY WORK WITHIN THE ROAD ALLOWANCE.
- 4) REFER TO KORTEKAAS & ASSOC DWG 92054 W-1 & W-2 FOR STORM SEWER OUTFALL PLANTING DETAILS AND ADDITIONAL OUTFALL DETAILS.
- 5) ALL WORKS WITHIN BLACK CREEK TO BE CARRIED OUT IN THE DRY. REFER TO DWG 92016 C-15 FOR DETAILS.
- 6) MAINTENANCE ACCESS GRANULAR BASE AND GEO-WEB TO BE INSTALLED AFTER INSTALLATION OF THE WATER QUALITY CHAMBER.
- 7) 600 mm STORM OPENING IN HEADWALL TO BE TEMPORARILY BRICKED.
- 8) REFER TO DRAWING C-15 FOR STORM SEWER OUTFALL DETAILS.
- 9) STORM MANHOLE 31 AND FUTURE WATER QUALITY TANK TO HAVE BOLT DOWN COVER AS PER N-120.

STORM OUTFALL EASEMENT



NO.	REVISION	DATE	BY	APPROVED
2	AS CONSTRUCTED LENGTHS AND INVERTS	JAN/95	DCR	
1	REVISED 1350 mm STM SEWER PIPE GRADE	SEP/95	D.P.	

APPROVED
PUBLIC WORKS DEPARTMENT
TOWN OF NEWCASTLE
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF D.G. BIDDLE & ASSOCIATES AS TO DESIGN AND SPECIFICATION
DATE: 9/15/93
WORKS DEPARTMENT
REGION OF DURHAM
DATE:

CORPORATION OF THE TOWN OF NEWCASTLE
DEPARTMENT OF PUBLIC WORKS
COURTICE CROSSINGS
UNDERGROUND SERVICES
STORM OUTFALL EASEMENT
FROM: FUTURE AVONDALE DRIVE
TO: BLACK CREEK

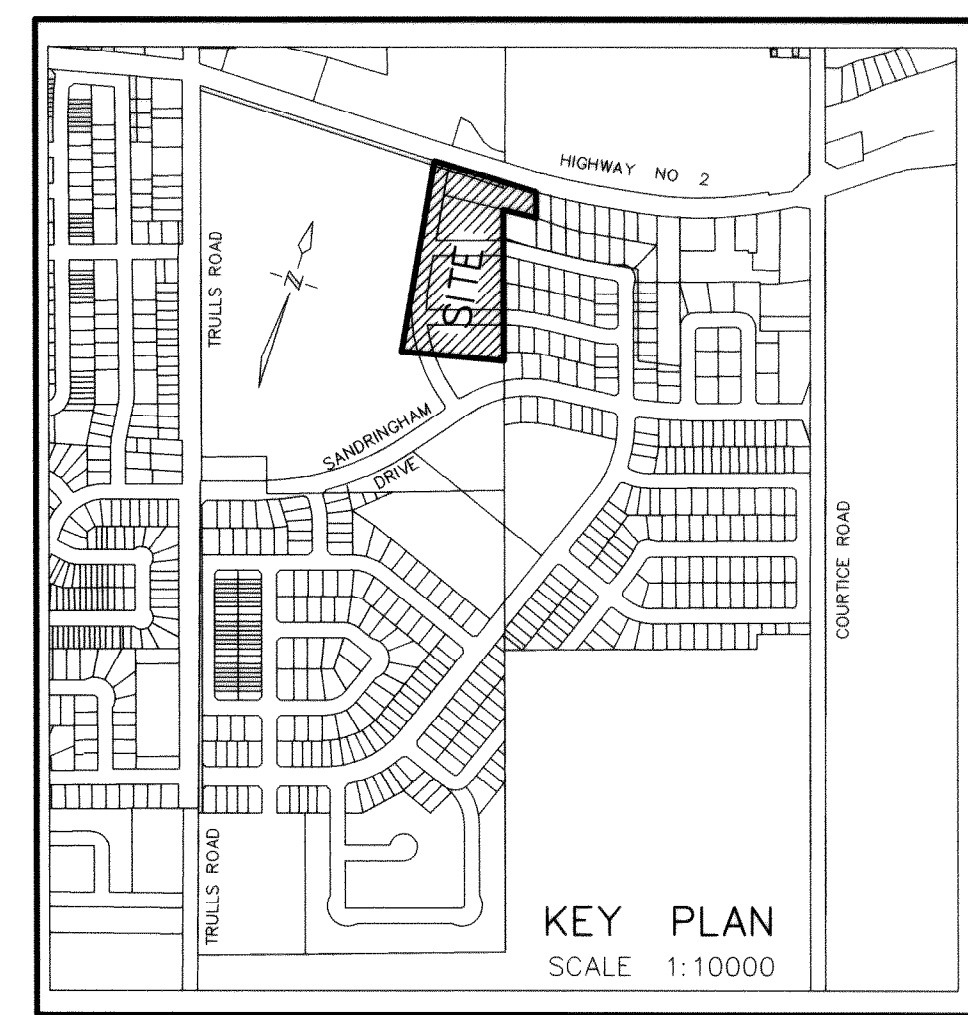
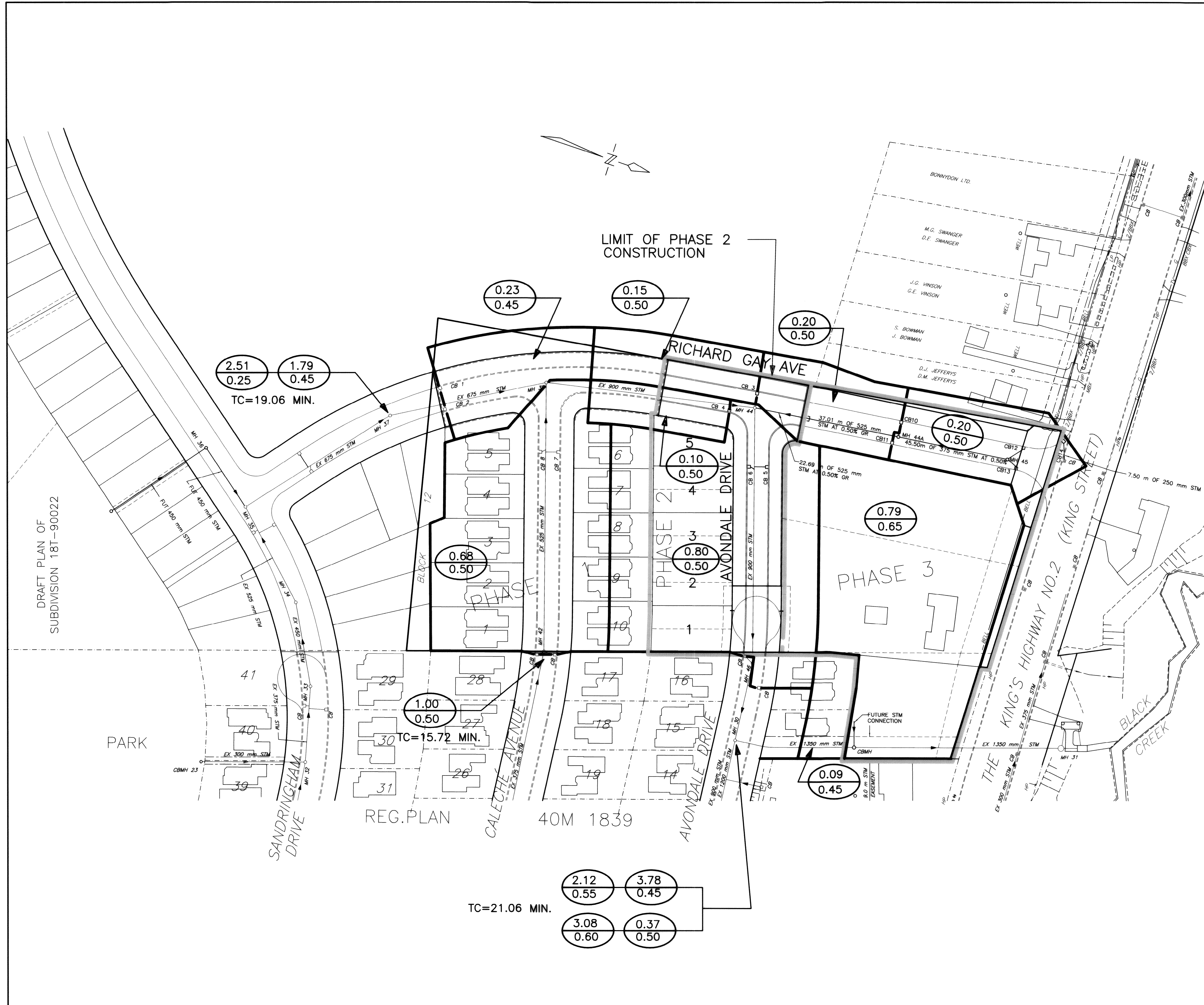
D.G. Biddle & Associates Limited
consulting engineers

96 KING STREET EAST · OSHAWA, ON L1H 1B6
PHONE (416) 576-8500 · FAX (416) 576-9750

	SCALE:	HORZ 1:500 VERT 1:50	PROJECT NO: 92016
	DRAWN BY:	B. C. C.	DRAWING NO: C-13
	DESIGN BY:	R. M. L.	CAD FILE: JEFFC18 PLOT DATE: 93/09/14 SUBMISSION: FINAL
	CHECKED BY:	D. G. B.	DATE: OCTOBER 1992

STORM SEWER
INVERT ELEVATIONS

C/L STORM SEWER
CHAINAGE



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE AREA
- RUN-OFF COEFFICIENT
- OVERLAND FLOW DIRECTION

NOTE: THIS PLAN IS FOR STORM DRAINAGE AREAS ONLY

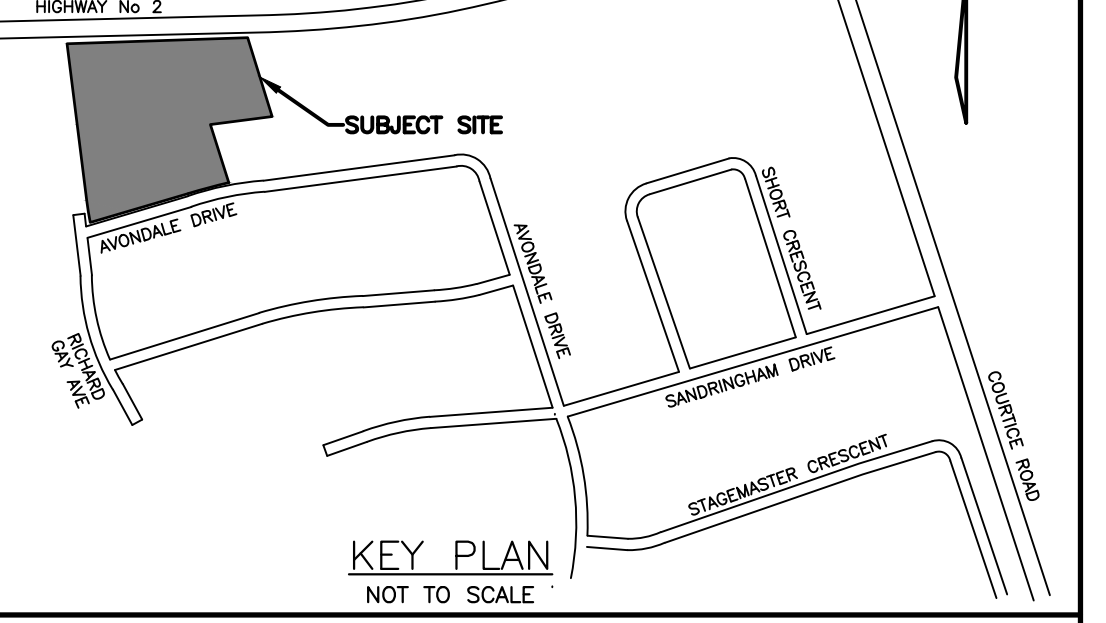
1 JULY/12 ISSUED FOR CONSTRUCTION M.C	
NO.	DATE
REVISIONS	
APPROVED	
APPROVED	
WORKS DEPARTMENT REGION OF DURHAM	
DATE: June 1, 2012	
CORPORATION OF THE MUNICIPALITY OF CLARINGTON ENGINEERING SERVICES DEPARTMENT	
RICHARD H GAY HOLDINGS LTD DRAFT PLAN OF SUBDIVISION 18T-88060	
PHASE 2 STORM DRAINAGE SCHEME	
D.G. Biddle & Associates Limited consulting engineers and planners 96 KING STREET EAST • OSHAWA, ON L1H 1B6 PHONE (905)576-8500 • FAX (905)576-9730 info@dgbiddle.com	
	PROJECT NO. 95075-2A DRAWING NO. D-3
SCALE: 1:750 DRAWN BY: F.H.V. DESIGN BY: W.G.C. CHECKED BY: D.G.B. DATE: FEB 1996	

D:\DATA\18T_UB FILES\18000\18075-2\PHASE 2\18075-2A-GENERAL SERVICES PLAN -RECORDED.DWG

HIGHWAY No. 2

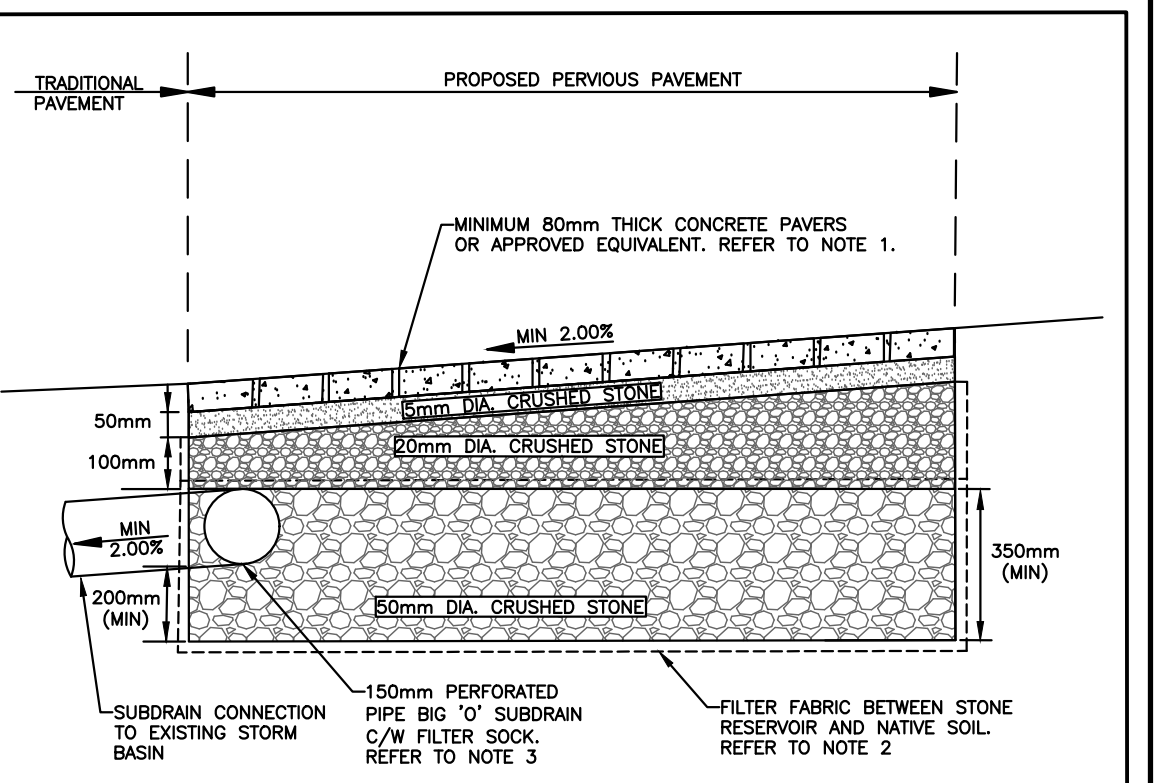
BENCH MARK
GEODETIC BENCH MARK: 67-U-027
COURTICE ROAD BRIDGE OVER BLACK
CREEK, 45.5m NORTH OF HWY NO. 2.
TABLET IN WEST FACE OF CONCRETE
ABUTMENT 4.0m FROM NORTH END OF
BRIDGE, 1.2m NORTH OF SOUTHWEST
CORNER, 450mm BELOW TOP OF
SIDEWALK.
ELEVATION: 132.044
(PRIOR TO 1978 ELEVATION)

MUNICIPALITY OF
CLARINGTON



SITE GRADING NOTES

- 1. THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND SERVICES TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING CONSTRUCTION. CONCERNED UTILITIES TO BE GIVEN ADVANCED NOTICE FOR STAKE OUT. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE UTILITIES SHOWN ON THE DRAWINGS.
- 2. QUANTITIES, DIMENSIONS AND ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR COMMENCING CONSTRUCTION.
- 3. ALL SLOPES SHALL BE CONSTRUCTED AT 3:1 (MAXIMUM) UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- 4. ALL SWALES SHALL BE CONSTRUCTED WITH 2% MINIMUM GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- 5. ALL SLOPES, SWALES AND OPEN SPACE AREAS SHALL BE SODDED ON A MINIMUM OF 150mm OF TOPSOIL.
- 6. ALL DISTURBED AREAS WITHIN ABUTTING MUNICIPAL RIGHT OF WAYS SHALL BE SODDED ON A MINIMUM OF 300mm OF TOPSOIL.
- 7. THE PARKING LOT SHALL CONSIST OF THE FOLLOWING UNLESS OTHERWISE APPROVED BY THE ENGINEER:
LIGHT DUTY ASPHALT
- 350mm GRANULAR 'B'
- 150mm GRANULAR 'A'
- 50mm HLB ASPHALT
- 40mm HL3 ASPHALT
- BARRIER CURB AS PER C-302
HEAVY DUTY ASPHALT
- 400mm GRANULAR 'B'
- 150mm GRANULAR 'A'
- 90mm HLB ASPHALT (2 LIFTS)
- 40mm HLB ASPHALT



- NOTES:
- 1. GAPS BETWEEN PAVERS TO BE FILLED WITH 5mm DIA. CRUSHED STONE.
 - 2. 300mm DEEP 60mm CLEAR STONE TO BE COMPLETELY WRAPPED IN FILTER FABRIC WITH 300mm OVERLAP AT JOINTS. FILTER FABRIC TO BE NON-WOVEN NEEDLE-PUNCHED OR WOVEN MONOPHILAM GEOTEXTILE.
 - 3. PERFORATED PIPE SUBDRAIN TO BE INTO EX SITE CATCHBASIN.
 - 4. AGGREGATE MATERIALS USED IN CONSTRUCTION OF PERMEABLE PAVEMENTS SHALL BE CLEAN AND CONTAIN NO NUMBER 200 SIEVE SIZE MATERIALS (FINES). THE AGGREGATE MATERIALS MUST SERVE AS A LOAD BEARING PLATFORM OF THE PAVEMENT AS WELL AS A TEMPORARY RECEPTOR FOR INFILTRATED WATER THAT IS COLLECTED THROUGH THE OPENINGS IN THE PAVEMENT.

NO.	DATE	REVISION	BY
2.	01/26/2024	REVISED AS PER 2ND SUBMISSION COMMENTS	MH
1.	11/01/2023	REVISED AS PER 1ST SUBMISSION COMMENTS	MH

1697 HIGHWAY No 2, COURTICE, CLARINGTON

SITE GRADING PLAN

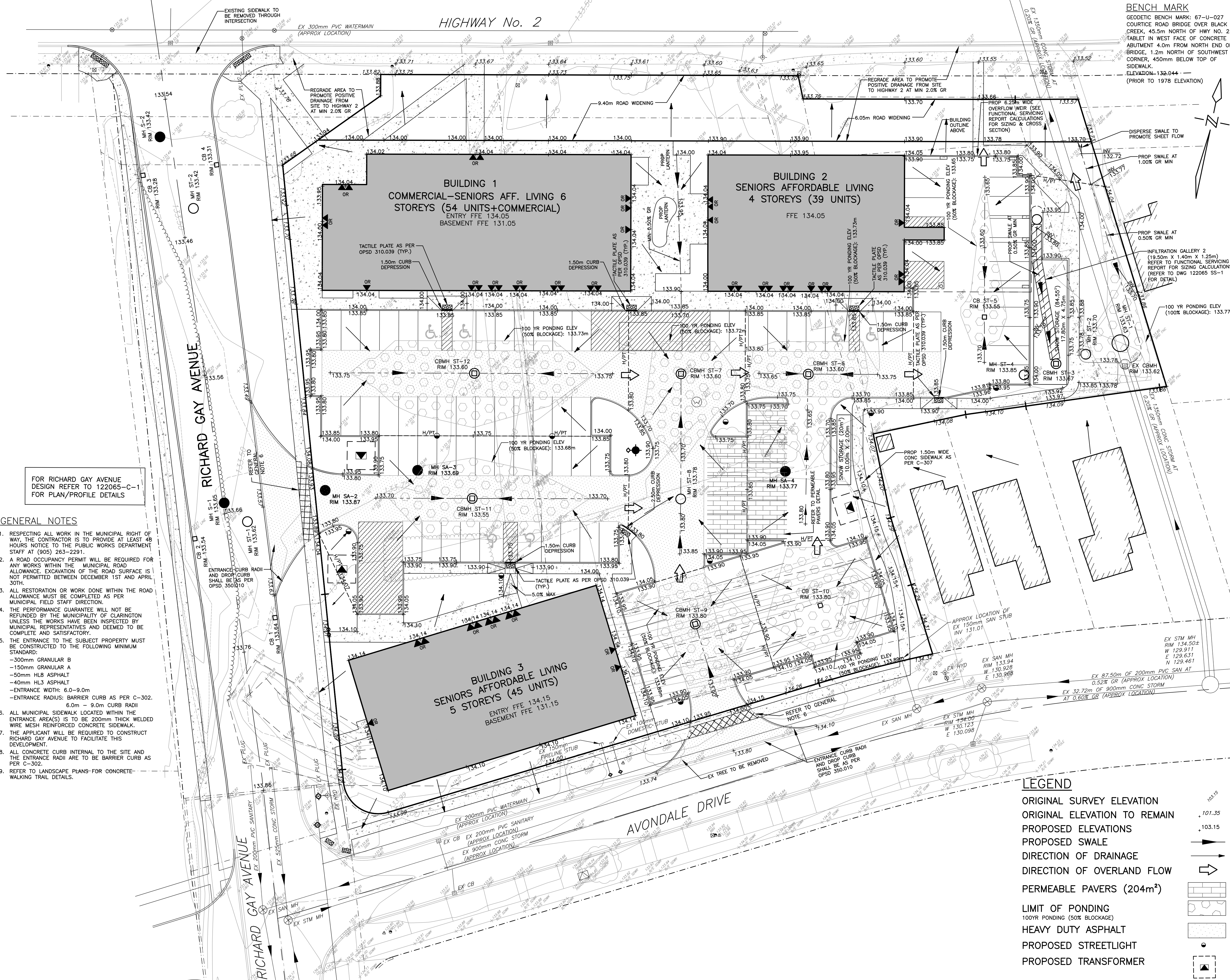
D.G. Biddle & Associates Limited
consulting engineers and planners
96 KING STREET EAST - OSHAWA, ON L1H 1B6
PHONE (905) 576-8500 • FAX (905) 576-9730
info@dgbbiddle.com

SCALE: 1:250	PROJECT NO. 122065
DRAWN BY: B.B.	DRAWING NO. SG-1
DESIGN BY: M.H.	
CHECKED BY: M.B.C.	
DATE: OCTOBER 2022	

GENERAL NOTES

- 1. RESPECTING ALL WORK IN THE MUNICIPAL RIGHT OF WAY, THE CONTRACTOR IS TO PROVIDE AT LEAST 48 HOURS NOTICE TO THE PUBLIC WORKS DEPARTMENT STAFF AT (905) 283-2291.
- 2. A ROAD OCCUPANCY PERMIT WILL BE REQUIRED FOR ANY WORKS WITHIN THE MUNICIPAL ROAD ALLOWANCE. EXCAVATION OF THE ROAD SURFACE IS NOT PERMITTED BETWEEN DECEMBER 1ST AND APRIL 30TH.
- 3. ALL RESTORATION OR WORK DONE WITHIN THE ROAD ALLOWANCE MUST BE COMPLETED AS PER MUNICIPAL FIELD STAFF DIRECTION.
- 4. THE PERFORMANCE GUARANTEE WILL NOT BE REFUNDED BY THE MUNICIPALITY OF CLARINGTON UNLESS THE WORKS HAVE BEEN INSPECTED BY MUNICIPAL REPRESENTATIVES AND DEEMED TO BE COMPLETE AND SATISFACTORY.
- 5. THE ENTRANCE TO THE SUBJECT PROPERTY MUST BE CONSTRUCTED TO THE FOLLOWING MINIMUM STANDARD:
- 300mm GRANULAR B
- 150mm GRANULAR A
- 50mm HLB ASPHALT
- 40mm HL3 ASPHALT
- ENTRANCE WIDTH: 6.0-9.0m
- ENTRANCE RADIUS: BARRIER CURB AS PER C-302. 6.0m - 9.0m CURB RADI
- 6. ALL MUNICIPAL SIDEWALK LOCATED WITHIN THE ENTRANCE AREA(S) IS TO BE 200mm THICK WELDED WIRE MESH REINFORCED CONCRETE SIDEWALK.
- 7. THE APPLICANT WILL BE REQUIRED TO CONSTRUCT RICHARD GAY AVENUE TO FACILITATE THIS DEVELOPMENT.
- 8. ALL CONCRETE CURB INTERNAL TO THE SITE AND THE ENTRANCE RADI ARE TO BE BARRIER CURB AS PER C-302.
- 9. REFER TO LANDSCAPE PLANS FOR CONCRETE WALKING TRAIL DETAILS.

FOR RICHARD GAY AVENUE DESIGN REFER TO 122065-C-1 FOR PLAN/PROFILE DETAILS



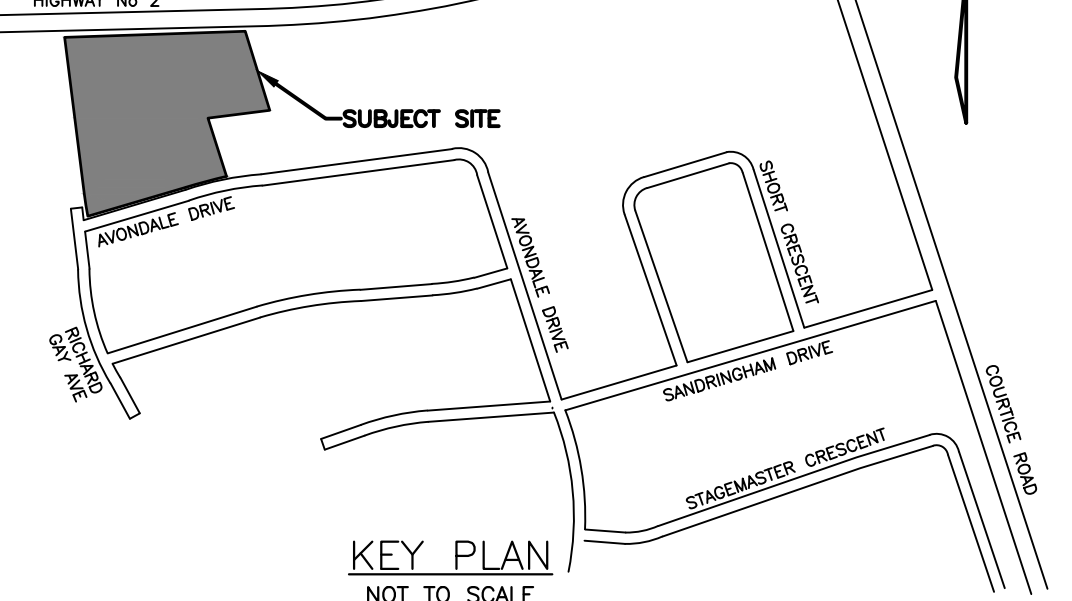
LEGEND

- ORIGINAL SURVEY ELEVATION
- ORIGINAL ELEVATION TO REMAIN
- PROPOSED ELEVATIONS
- PROPOSED SWALE
- DIRECTION OF DRAINAGE
- DIRECTION OF OVERLAND FLOW
- PERMEABLE PAVERS (204m²)
- LIMIT OF PONDING
- 100YR PONDING (50% BLOCKAGE)
- HEAVY DUTY ASPHALT
- PROPOSED STREETLIGHT
- PROPOSED TRANSFORMER

HIGHWAY No. 2

BENCH MARK
 GEODETIC BENCH MARK: 67-U-027
 COURTCICE ROAD BRIDGE OVER BLACK
 CREEK, 45.5m NORTH OF HWY NO. 2.
 TABLE IN WEST FACE OF CONCRETE
 ABUTMENT 4.0m FROM NORTH END OF
 BRIDGE, 1.2m NORTH OF SOUTHWEST
 CORNER, 450mm BELOW TOP OF
 SIDEWALK.
 ELEVATION 132.044
 (PRIOR TO 1978 ELEVATION)

MUNICIPALITY OF
 CLARINGTON



DRAINAGE AREAS AND RUNOFF
 COEFFICIENTS WERE EXTRACTED
 FROM DRAWING 95075-2A-D3

LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE AREA (ha)
- RUN-OFF COEFFICIENT
- DIRECTION OF DRAINAGE

NOTE: THIS PLAN IS FOR STORM
 DRAINAGE AREAS ONLY

NO.	DATE	REVISION	BY
2.	01/26/2024	REVISED AS PER 2ND SUBMISSION COMMENTS	MH
1.	11/01/2023	REVISED AS PER 1ST SUBMISSION COMMENTS	MH

1697 HIGHWAY No. 2, COURTCICE, CLARINGTON

**PRE-DEVELOPMENT
 STORM DRAINAGE PLAN**

D.G. Biddle & Associates Limited
 consulting engineers and planners
 96 KING STREET EAST - OSHAWA, ON L1H 1B6
 PHONE (905) 576-8500 • FAX (905) 576-9730
 info@dgbiddle.com

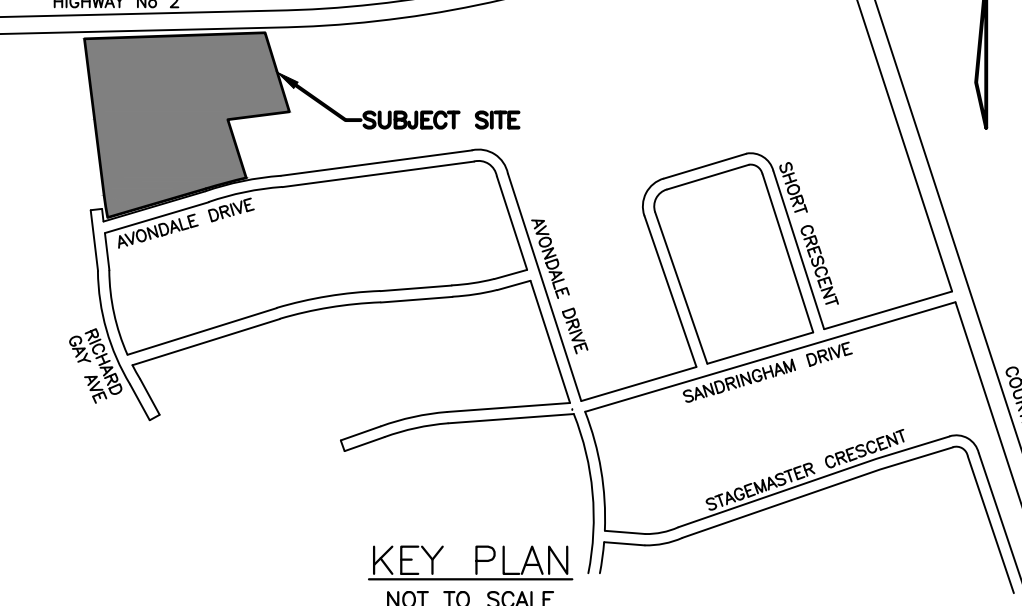
	SCALE: 1:250	PROJECT NO. 122065
	DRAWN BY: B.B.	DRAWING NO.
	DESIGN BY: M.H.	SD-1
	CHECKED BY: M.B.C.	
DATE: OCTOBER 2022		

X:\SPRINT\JOB FILES\122065\122065_1697 HIGHWAY 2, COURTCICE\122065 DRAWINGS\122065-30-SITE PLANNING

HIGHWAY No. 2

BENCH MARK
GEODETIC BENCH MARK: 67-U-027
COURTICE ROAD BRIDGE OVER BLACK
CREEK, 45.5m NORTH OF HWY NO. 2.
TABLET IN WEST FACE OF CONCRETE
ABUTMENT 4.0m FROM NORTH END OF
BRIDGE, 1.2m NORTH OF SOUTHWEST
CORNER, 450mm BELOW TOP OF
SIDEWALK.
ELEVATION 132.044
(PRIOR TO 1978 ELEVATION)

MUNICIPALITY OF
CLARINGTON



SITE SERVICING NOTES

- 1. A ROAD OCCUPANCY PERMIT WILL BE REQUIRED FOR ANY WORKS WITHIN THE MUNICIPAL RIGHT OF WAY.
- 2. ALL WORKS OR RESTORATION WITHIN THE MUNICIPAL RIGHT OF WAY SHALL BE COMPLETED AS PER MUNICIPALITY OF CLARINGTON STAFF DIRECTION.
- 3. THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND SERVICES TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING CONSTRUCTION. CONCERNED UTILITIES TO BE GIVEN ADVANCED NOTICE FOR STAKE OUT. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE UTILITIES SHOWN ON THE DRAWINGS.
- 4. QUANTITIES, DIMENSIONS AND ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR COMMENCING CONSTRUCTION.
- 5. ALL SANITARY SEWER AND APPURTENANCES SHALL COMPLY WITH THE REGION OF DURHAM STANDARDS AND THE ONTARIO PLUMBING CODE.
 - SANITARY SEWER PIPES, 200mm TO BE CL DR28 PVC PIPE, CL P BEDDING
 - SANITARY MANHOLES AS PER OPSD 701.010 C/W GRATE AS PER OPSD 401.010
 - ALL TRENCHES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH REGION OF DURHAM STANDARDS.
- 6. ALL WATER MAINS AND APPURTENANCES SHALL COMPLY WITH THE REGION OF DURHAM STANDARDS AND THE ONTARIO PLUMBING CODE.
 - ALL WATER MAINS SHALL BE CONSTRUCTED A MINIMUM OF 1.80m BELOW FINISHED GRADE
 - ALL TRENCHES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH REGION OF DURHAM STANDARDS
 - 150mm WATERMAIN AND 200mm WATERMAIN TO BE DR18 PVC PIPE, CL P BEDDING
 - PROP HYDRANT ASSEMBLY AS PER S-210.010. HYDRANTS TO BE PAINTED RED.
 - DEFLECTIONS UNDER WATERMAIN AS PER REGION STANDARD S-200.070.
- 7. ALL STORM SEWERS AND APPURTENANCES SHALL COMPLY WITH THE MUNICIPALITY OF CLARINGTON STANDARDS AND THE ONTARIO PLUMBING CODE.
 - STORM SEWER PIPE 450mm AND SMALLER SHALL BE DR35 PVC PIPE, CL P BEDDING
 - STORM SEWER MANHOLES AND CATCH BASIN MANHOLES SHALL BE AS PER OPSD 701.010
 - CATCH BASINS SHALL BE AS PER OPSD 705.010
 - MANHOLE GRATES SHALL BE AS PER OPSD 401.010
 - CATCH BASIN GRATES SHALL BE AS PER OPSD 400.020
 - ALL TRENCHES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH OPSD STANDARDS
 - CLEAR STONE BEDDING MATERIAL IS NOT TO BE USED IN ANY CASE AS PER THE GEOTECHNICAL REPORT RECOMMENDATIONS.
- 8. GENERALLY, A MINIMUM OF 0.25m SHALL BE PROVIDED BETWEEN THE OUTSIDE OF PIPE BARRELS AT THE POINT OF CROSSING FOR STORM AND SANITARY SEWERS. A MINIMUM OF 0.50m SHALL BE PROVIDED BETWEEN THE OUTSIDE OF PIPE BARRELS AT THE POINT OF CROSSING FOR ALL SEWERS CROSSING WATER MAINS.
- 9. THE PARKING LOT SHALL CONSIST OF THE FOLLOWING UNLESS OTHERWISE APPROVED BY THE ENGINEER (SEE GRADING PLAN 122065-SG-1):
 - LIGHT DUTY ASPHALT
 - HEAVY DUTY ASPHALT
 - 350mm GRANULAR 'B'
 - 400mm GRANULAR 'B'
 - 150mm GRANULAR 'A'
 - 150mm GRANULAR 'A'
 - 50mm HLB ASPHALT
 - 90mm HLB ASPHALT (2 LIFTS)
 - 40mm HL3 ASPHALT
 - 40mm HL3 ASPHALT
 - BARRIER CURB AS PER C-302
- 10. AVONDALE DRIVE TO BE RESTORED WITH THE FOLLOWING UPON REMOVAL OF WATER SERVICES:
 - 300mm GRANULAR 'B'
 - 150mm GRANULAR 'A'
 - 50mm HLB ASPHALT
 - 40mm HL3 ASPHALT
 - CURB AND GUTTER SHALL BE RESTORED AS PER C-302
 - BOULEVARD TO BE RESTORED WITH 150mm OF TOPSOIL AND SOD

RICHARD GAY AVENUE

FOR RICHARD GAY AVENUE
DESIGN REFER TO 122065-C-1
FOR PLAN/PROFILE DETAILS

PIPE CROSSING CLEARANCES

A	300mm STM INV	132.01
	200mm SAN OBV	131.23
	CLEARANCE	0.78
B	200mm SAN OBV	131.40
	150/200mm WM INV	131.90
	CLEARANCE	0.50
C	300mm STM INV	131.88
	150/200mm WM OBV	131.25
	CLEARANCE	0.63
D	200mm SAN OBV	131.30
	200mm WM INV	131.80
	CLEARANCE	0.50
E	150mm SAN INV	131.76
	150/200mm WM OBV	131.25
	CLEARANCE	0.51
F	150mm SAN INV	131.59
	300mm STM OBV	131.21
	CLEARANCE	0.38
G	300mm STM INV	131.59
	200mm SAN OBV	131.38
	CLEARANCE	0.21

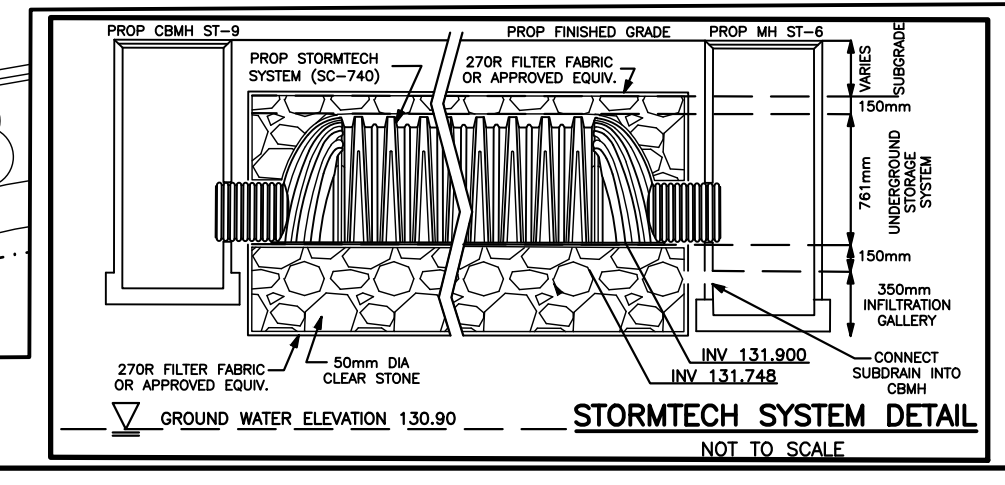
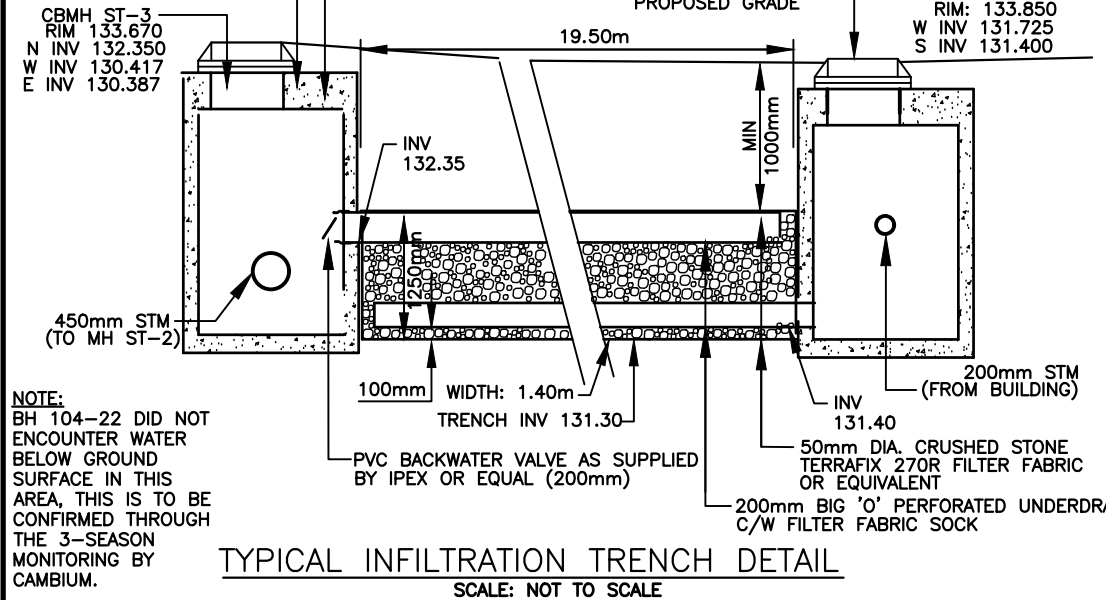
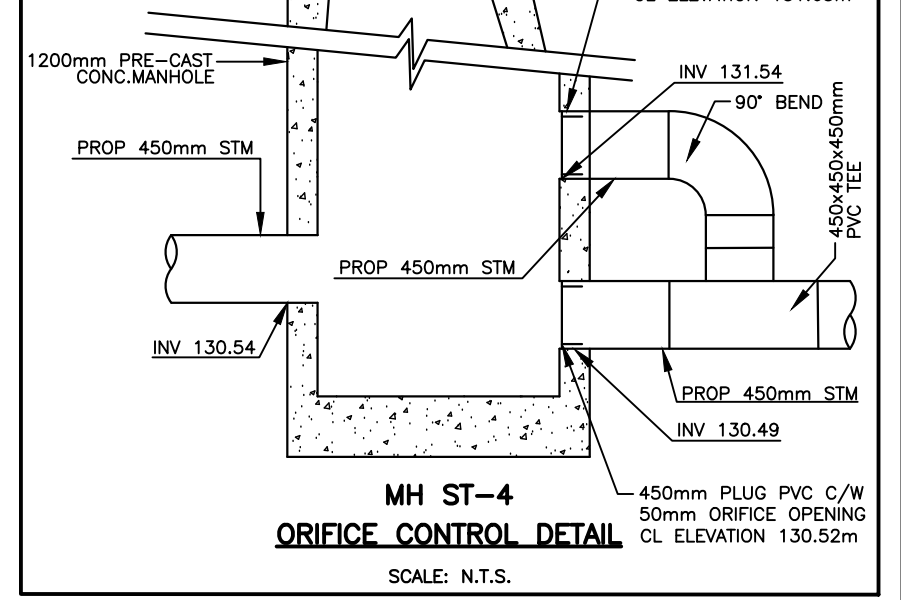
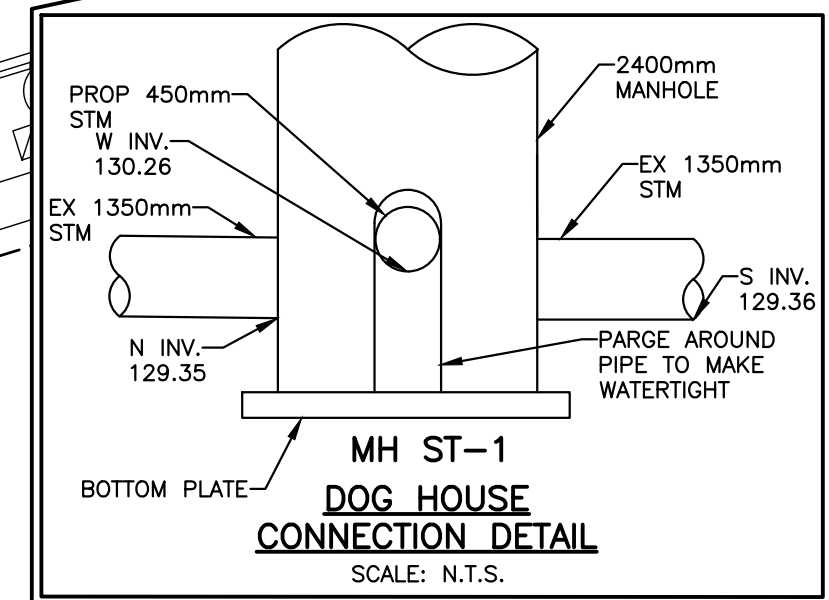
- GENERAL NOTES
- 1. RESPECTING ALL WORK IN THE MUNICIPAL RIGHT OF WAY, THE CONTRACTOR IS TO PROVIDE AT LEAST 48 HOURS NOTICE TO THE PUBLIC WORKS DEPARTMENT STAFF AT (905) 263-2291.
 - 2. A ROAD OCCUPANCY PERMIT WILL BE REQUIRED FOR ANY WORKS WITHIN THE MUNICIPAL ROAD ALLOWANCE. EXCAVATION OF THE ROAD SURFACE IS NOT PERMITTED BETWEEN DECEMBER 1ST AND APRIL 30TH.
 - 3. ALL RESTORATION OR WORK DONE WITHIN THE ROAD ALLOWANCE MUST BE COMPLETED AS PER MUNICIPAL FIELD STAFF DIRECTION.
 - 4. THE PERFORMANCE GUARANTEE WILL NOT BE REFUNDED BY THE MUNICIPALITY OF CLARINGTON UNLESS THE WORKS HAVE BEEN INSPECTED BY MUNICIPAL REPRESENTATIVES AND DEEMED TO BE COMPLETE AND SATISFACTORY.
 - 5. THE ENTRANCE TO THE SUBJECT PROPERTY MUST BE CONSTRUCTED TO THE FOLLOWING MINIMUM STANDARD:
 - 300mm GRANULAR B
 - 150mm GRANULAR A
 - 50mm HLB ASPHALT
 - 40mm HL3 ASPHALT
 - ENTRANCE WIDTH: 6.0-9.0m
 - ENTRANCE RADIUS: BARRIER CURB AS PER C-302.
 - 6. ALL MUNICIPAL SIDEWALK LOCATED WITHIN THE ENTRANCE AREA(S) IS TO BE 200mm THICK WELDED WIRE MESH REINFORCED CONCRETE SIDEWALK.
 - 7. THE APPLICANT WILL BE REQUIRED TO CONSTRUCT RICHARD GAY AVENUE TO FACILITATE THIS DEVELOPMENT.
 - 8. ALL CONCRETE CURB INTERNAL TO THE SITE AND THE ENTRANCE RADI ARE TO BE BARRIER CURB AS PER C-302.
 - 9. REFER TO LANDSCAPE PLANS FOR CONCRETE WALKING TRAIL DETAILS.

RICHARD GAY AVENUE

BUILDING 1
COMMERCIAL-SENIORS AFF. LIVING 6
STOREYS (54 UNITS+COMMERCIAL)
ENTRY FFE 134.05
BASEMENT FFE 131.05

BUILDING 2
SENIORS AFFORDABLE LIVING
4 STOREYS (39 UNITS)
FFE 134.05

BUILDING 3
SENIORS AFFORDABLE LIVING
5 STOREYS (45 UNITS)
ENTRY FFE 134.15
BASEMENT FFE 131.15



NO.	DATE	REVISION	BY
2.	01/26/2024	REVISED AS PER 2ND SUBMISSION COMMENTS	MH
1.	11/01/2023	REVISED AS PER 1ST SUBMISSION COMMENTS	MH

1697 HIGHWAY No 2, COURTICE, CLARINGTON

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96 KING STREET EAST - OSHAWA, ON L1H 1B6
PHONE (905) 576-8500 • FAX (905) 576-9730
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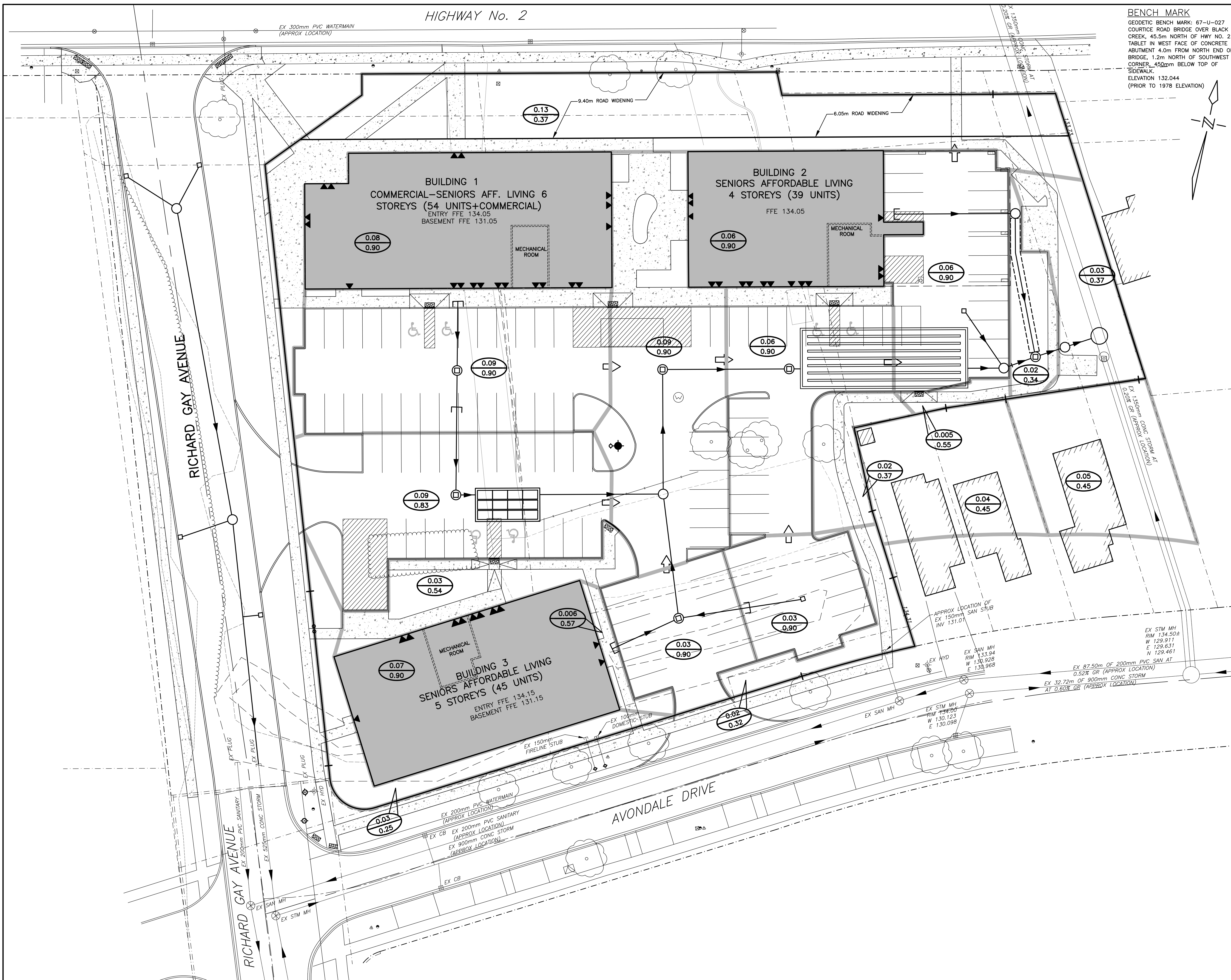
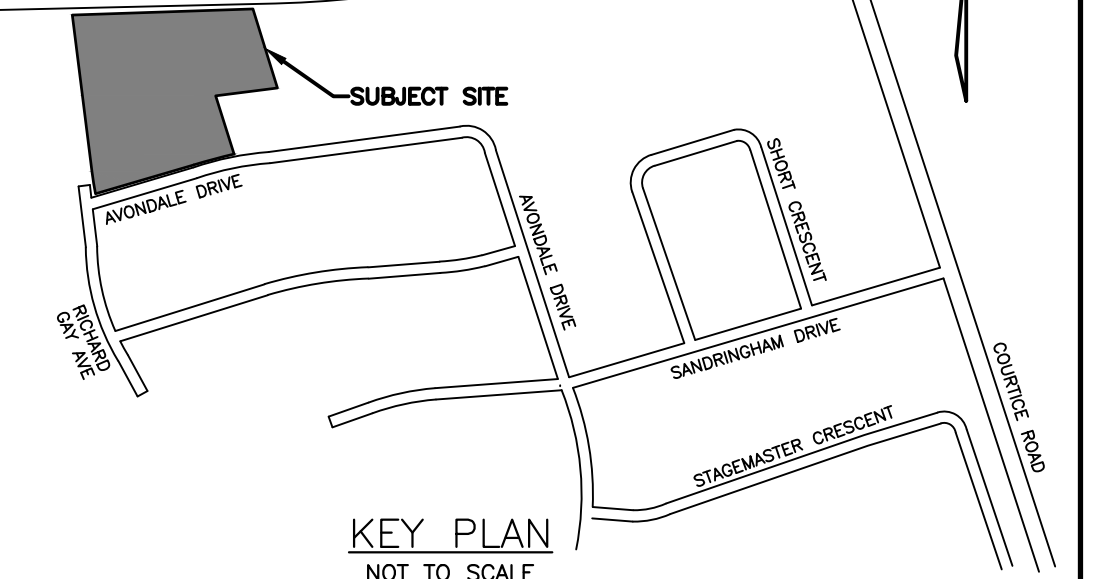
SCALE: 1:250	PROJECT NO. 122065
DRAWN BY: B.B.	DRAWING NO. SS-1
DESIGN BY: M.H.	CHECKED BY: M.B.C.
DATE: OCTOBER 2022	

S:\2023\1697 HWY 2\122065\122065_1697 HWY 2 - COURTICE\122065 ENGINEERING DRAWINGS\122065-30-SITE PLAN.DWG

HIGHWAY No. 2

BENCH MARK
 GEODETIC BENCH MARK: 67-U-027
 COURTYARD BRIDGE OVER BLACK
 CREEK, 45.5m NORTH OF HWY NO. 2.
 TABLE IN WEST FACE OF CONCRETE
 ABUTMENT 4.0m FROM NORTH END OF
 BRIDGE, 1.2m NORTH OF SOUTHWEST
 CORNER, 450mm BELOW TOP OF
 SIDEWALK.
 ELEVATION 132.044
 (PRIOR TO 1978 ELEVATION)

MUNICIPALITY OF CLARINGTON



LEGEND

- DRAINAGE BOUNDARY
 - DRAINAGE AREA (ha)
RUN-OFF COEFFICIENT
 - OVERLAND FLOW DIRECTION
- NOTE: THIS PLAN IS FOR STORM DRAINAGE AREAS ONLY

NO.	DATE	REVISION	BY
2.	01/26/2024	REVISED AS PER 2ND SUBMISSION COMMENTS	MH
1.	11/01/2023	REVISED AS PER 1ST SUBMISSION COMMENTS	MH

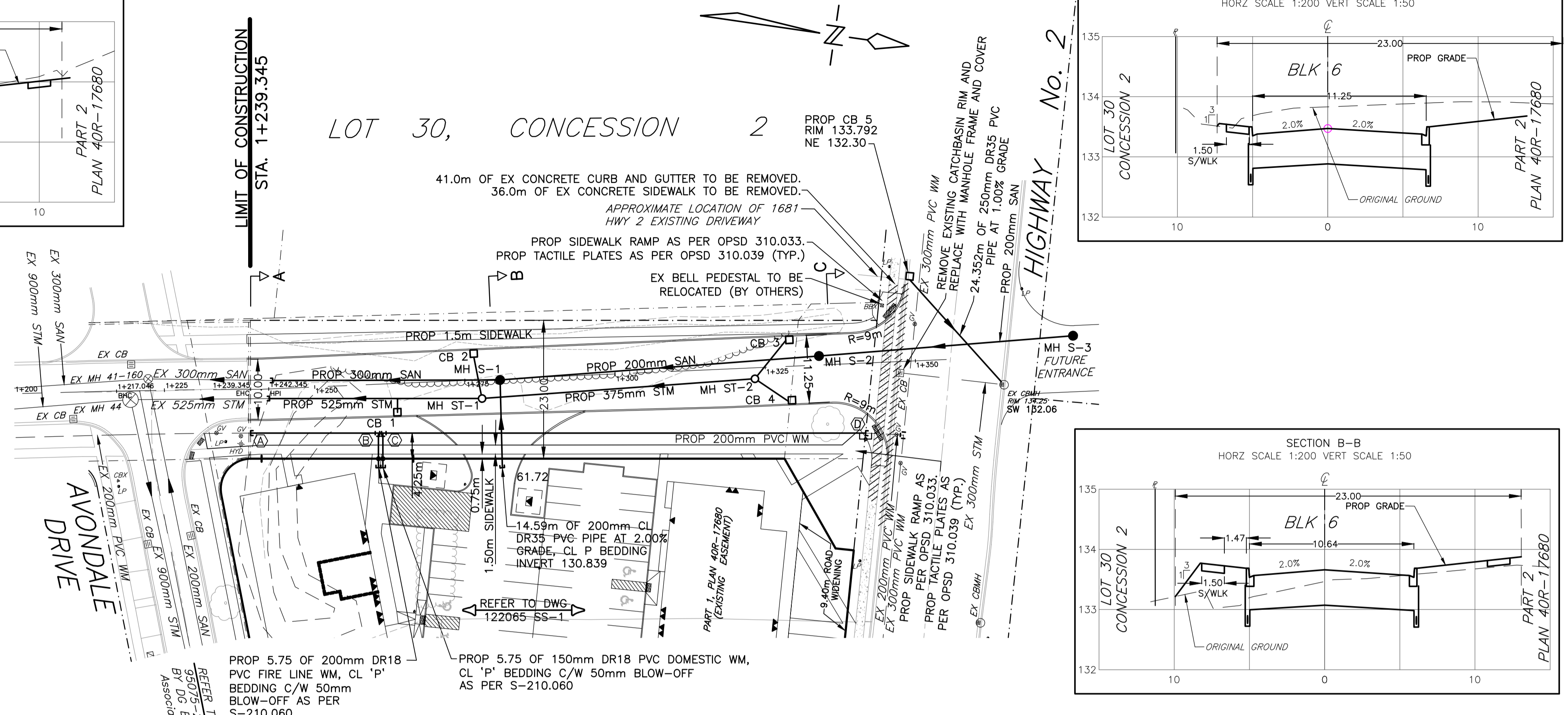
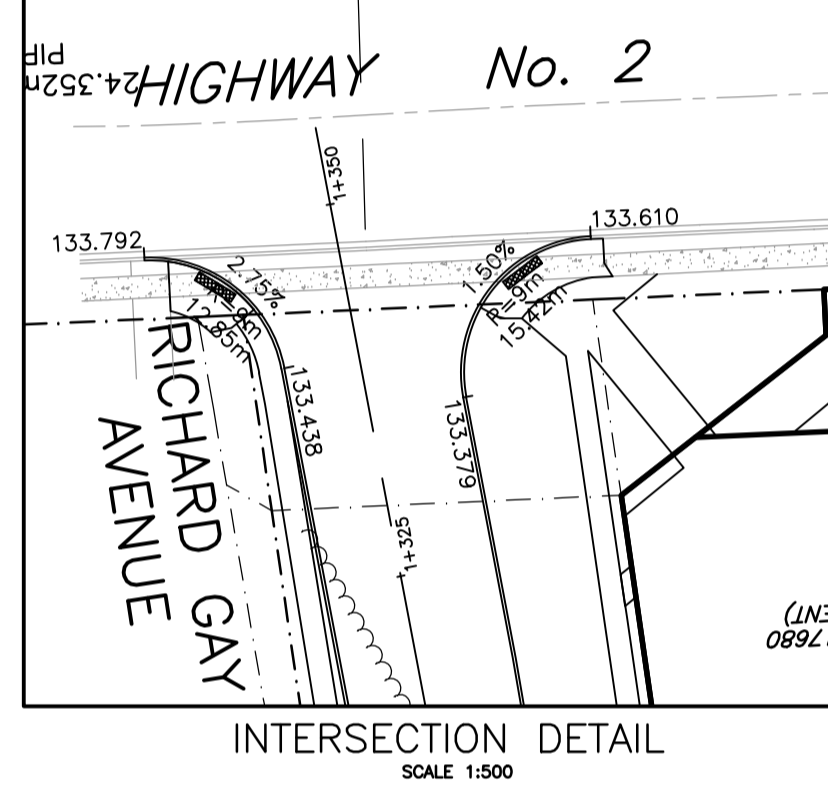
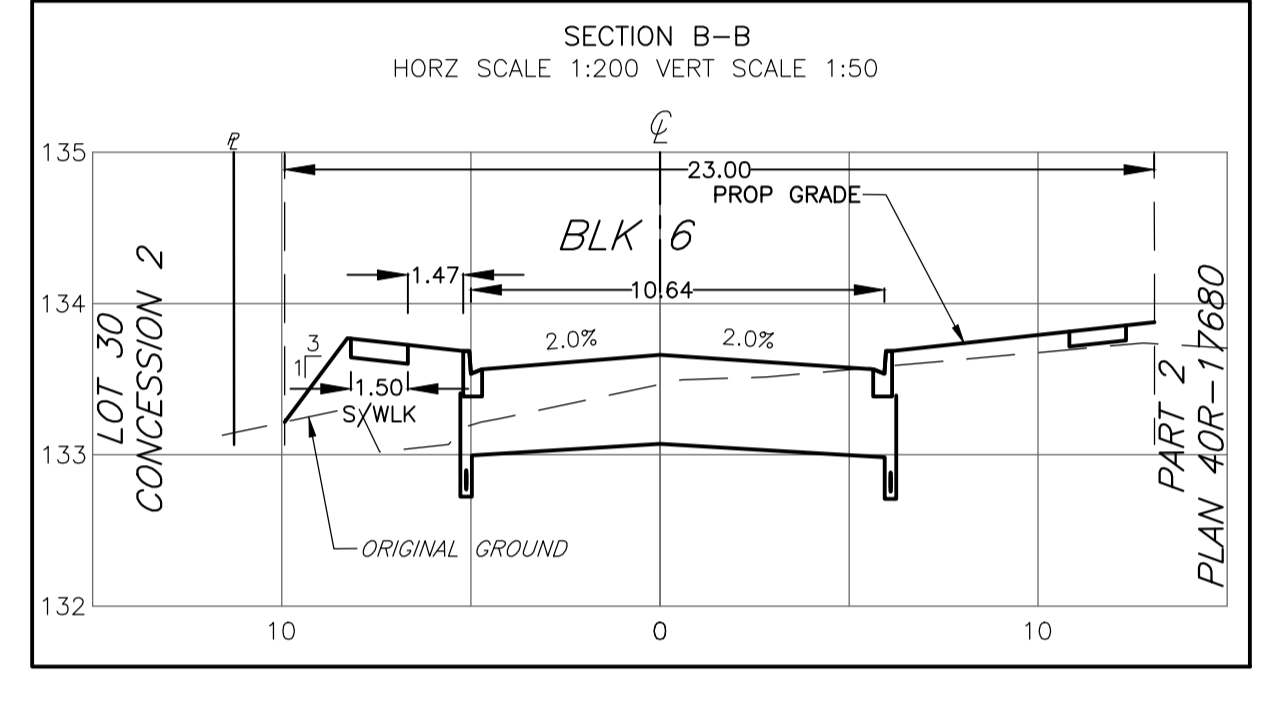
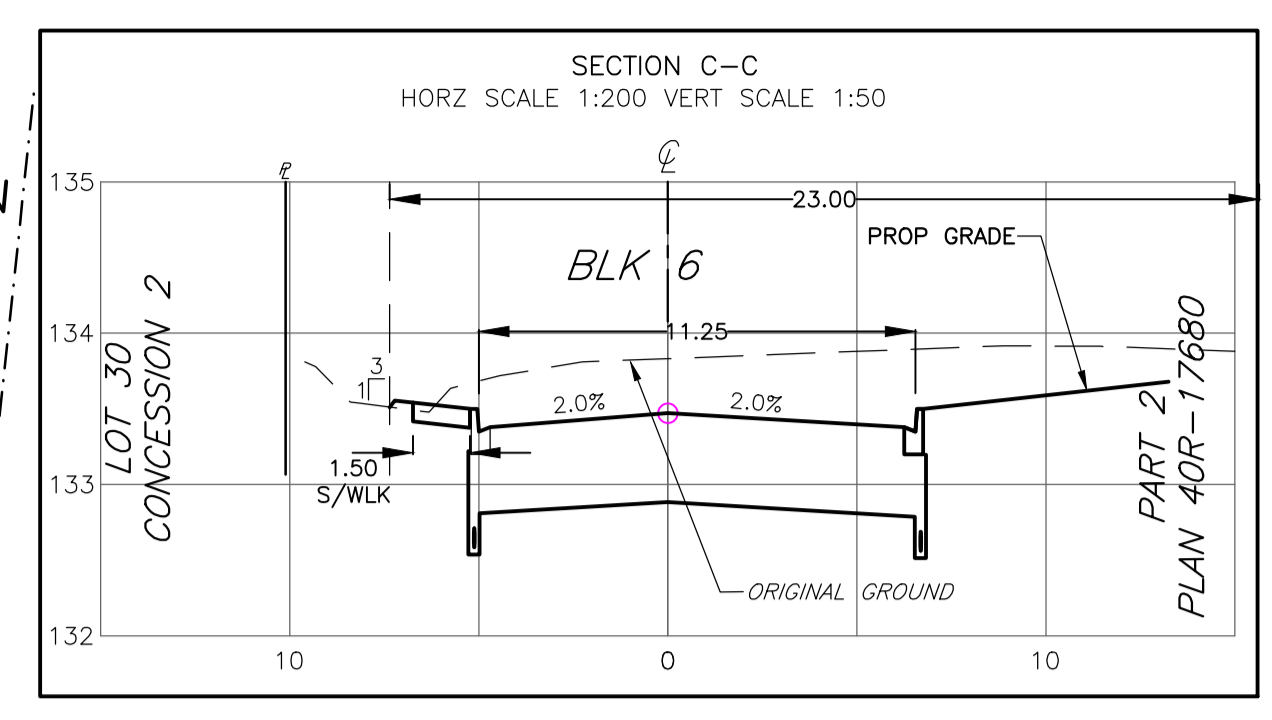
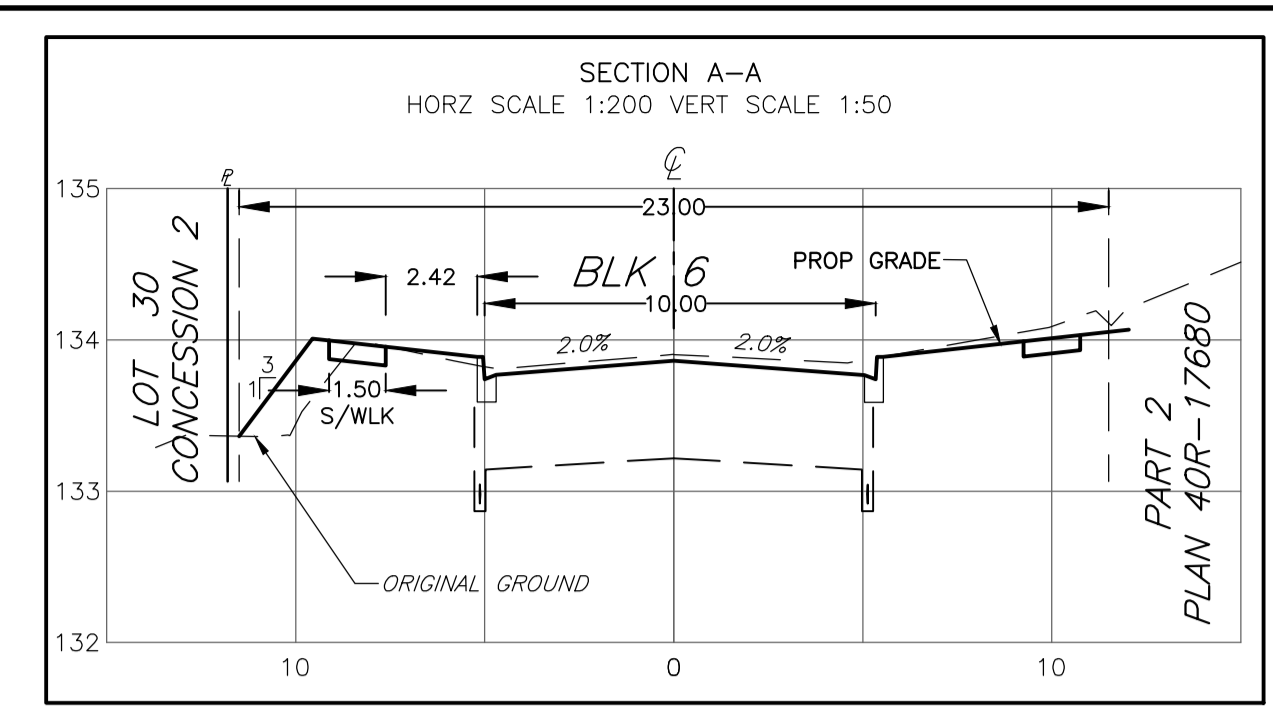
1697 HIGHWAY No. 2, COURTYARD, CLARINGTON

**POST-DEVELOPMENT
STORM DRAINAGE PLAN**

D.G. Biddle & Associates Limited
 consulting engineers and planners
 96 KING STREET EAST - OSHAWA, ON L1H 1B6
 PHONE (905) 576-8500 • FAX (905) 576-9730
 info@dgbiddle.com

	SCALE: 1:250	PROJECT NO. 122065
	DRAWN BY: B.B.	DRAWING NO. SD-2
	DESIGN BY: M.H.	
	CHECKED BY: M.B.C.	
	DATE: OCTOBER 2022	

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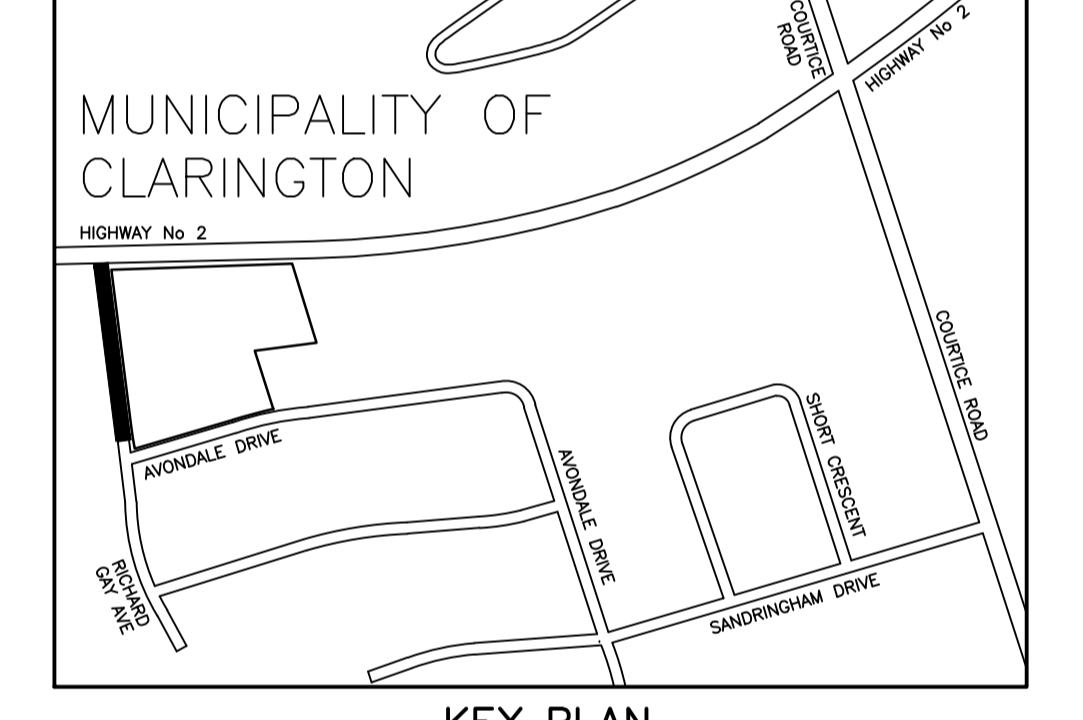


RICHARD GAY AVENUE

CATCH BASIN DATA					CATCH BASIN DATA				
CB No.	CHAINAGE	FINAL RIM ELEV	PROP RIM ELEV	PROP INVERT ELEV	LEN m	DIA. mm	CLASS OF PIPE	GRADE	CLASS OF BED G
1	1+263.547	133.637	133.597	132.097	2.0	250	DR35	P	P
2	1+276.665	133.541	133.501	132.001	7.5	250	DR35	P	P
3	1+329.199	133.284	133.244	131.744	8.2	250	DR35	P	P
4	1+329.199	133.314	133.274	131.774	6.6	250	DR35	P	P

WM DATA CHART			
MARK	DESCRIPTION	STATION	ELEVATION
A	REMOVE EX PLUG AND CONNECT (AFTER TESTING)	1+239.300	132.12
B	200x200x200mm Tee C/W 200mm RESTRAINED GATE VALVE & BOX	1+260.250	132.01
C	200x200x150mm TEE C/W 150mm RESTRAINED GATE VALVE & BOX	1+260.999	132.00
D	REMOVE EX PLUG AND CONNECT TO EX 200mm WM INSTALL TYPICAL TEST POINT BY-PASS	1+341.197	131.48

- NOTES**
- CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENT OF THE WATERMAIN SHALL BE MADE THROUGH DEFLECTION OF THE PIPE UNLESS OTHERWISE NOTED AS A BEND.
 - MINIMUM BASEMENT FLOOR ELEVATIONS SHALL BE 0.50m ABOVE THE 100 YEAR HYDRAULIC GRADE LINE.
 - CONSULTANT TO VERIFY PROPER TRENCH COMPACTION UNDER SIDEWALKS ON 18M ROW'S AND FOR JOINT USE TRENCH INSTALLATION OF UTILITIES.
 - SUFFICIENT EXISTING CURB, PAVEMENT AND BOULEVARD WORKS TO BE REMOVED AND RESTORED TO PROVIDE A SMOOTH TRANSITION TO EXISTING CONDITIONS. EXTENT OF REMOVAL AND RESTORATION TO BE DETERMINED BY THE MUNICIPALITY.
 - SURFACE PAVEMENT JOINT TREATMENT AS PER STANDARD C-311
 - CB'S 3 AND 4 TO BE EQUIPPED WITH INLET CONTROL DEVICE (ICD) IPEX TYPE 'B' (30L/s).
 - RICHARD GAY AVENUE SUBGRADE SHALL CONSIST OF:
 - 375mm GRANULAR B
 - 150mm GRANULAR A
 - 80mm HL8 ASPHALT
 - 40mm HL3 ASPHALT



STATION	PROPOSED SUBGRADE	PROPOSED ROAD PROFILE	EXISTING SUBGRADE	EXISTING ROAD PROFILE	ELEVATION
1+200.000					136
1+213.855					135
1+217.046					134
1+219.324					133
1+223.360					132
1+225.000					131
1+233.855					130
1+239.345					129
1+242.345					
1+250.000					
1+275.000					
1+277.713					
1+280.848					
1+300.000					
1+323.194					
1+325.000					
1+327.195					
1+328.000					
1+334.003					
1+334.195					
1+341.195					
1+346.659					
1+347.527					
1+350.000					
1+376.363					

NO.	DATE	REVISION	BY
2.	2024/01/26	REVISED AS PER 2ND SUBMISSION COMMENTS	HR
1.	2023/11/02	REVISED AS PER 1ST SUBMISSION COMMENTS	MH

APPROVED

MANAGER, DEVELOPMENT ENGINEERING
PLANNING AND INFRASTRUCTURE SERVICES
MUNICIPALITY OF CLARINGTON

APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF D.G. BIDDLE & ASSOCIATES LIMITED AS TO DESIGN AND SPECIFICATION.

DATE: _____

CORPORATION OF THE MUNICIPALITY OF CLARINGTON
PUBLIC WORKS DEPARTMENT

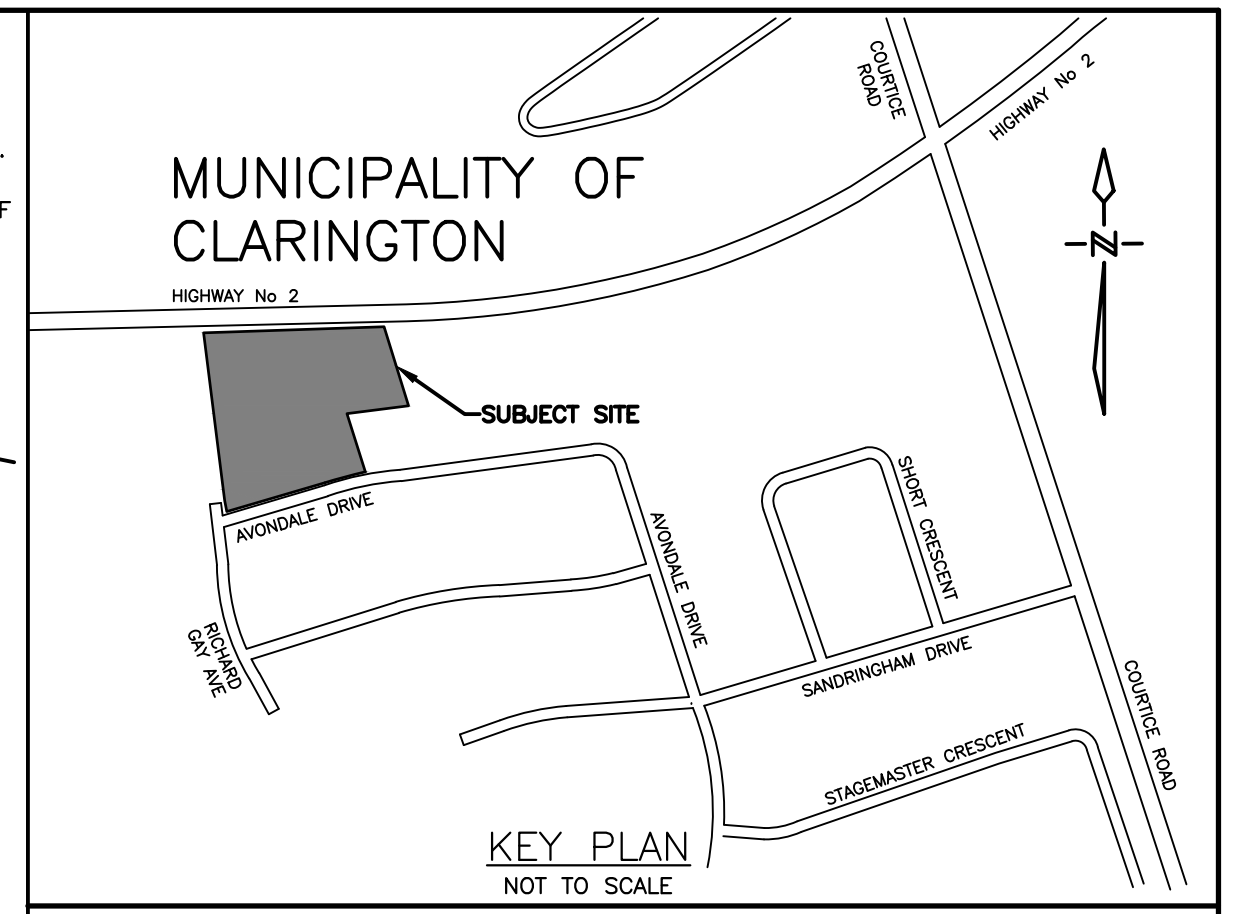
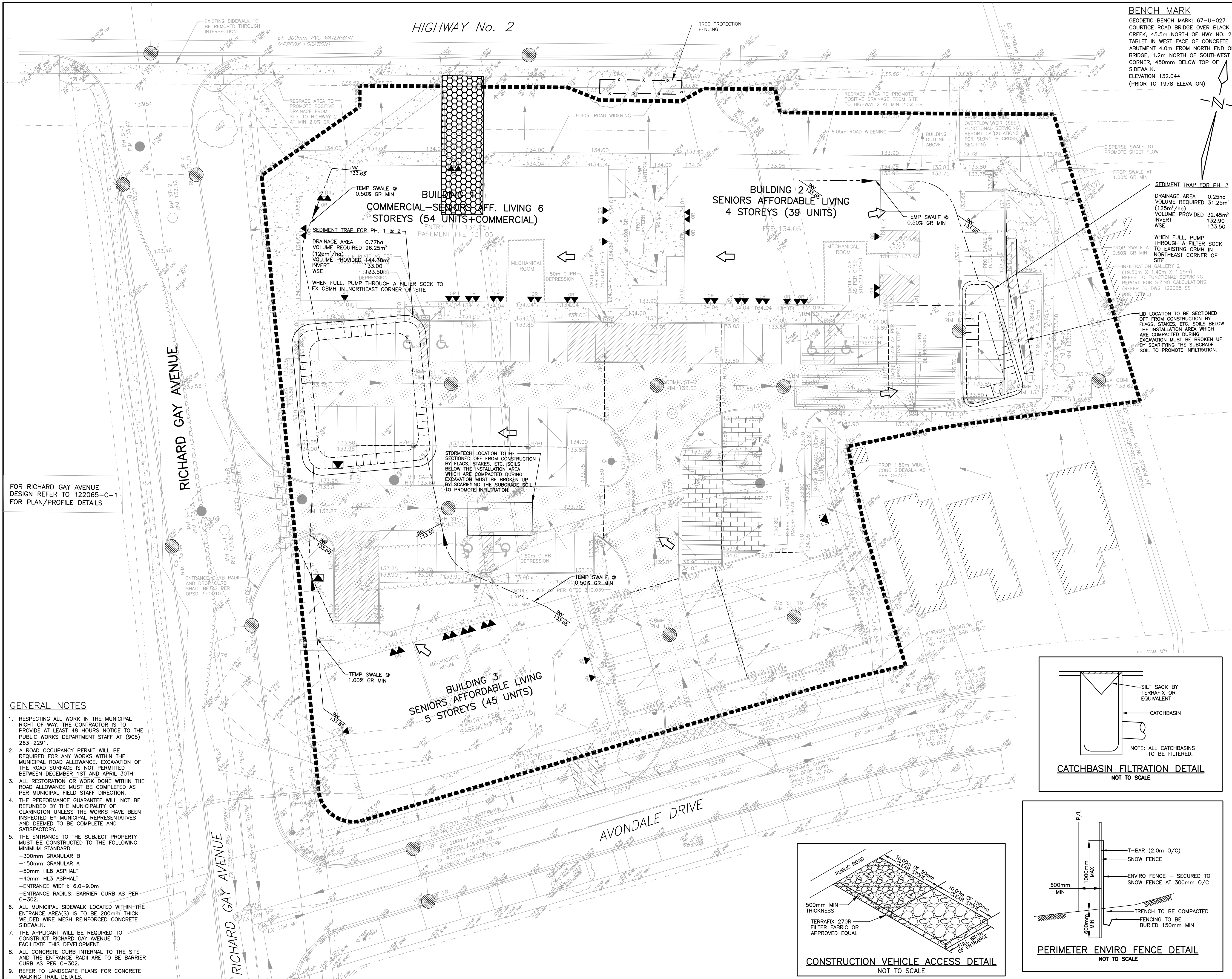
1697 HIGHWAY No 2
STREET SITE DEVELOPMENT

UNDERGROUND SERVICES AND ROAD WORK
RICHARD GAY AVENUE
FROM: 40m SOUTH OF AVONDALE DRIVE
TO: HIGHWAY No. 2

D.G. Biddle & Associates Limited
consulting engineers and planners
96 KING STREET EAST • OSHAWA, ON L1H 1B6
PHONE (905) 576-8500 • FAX (905) 576-9730
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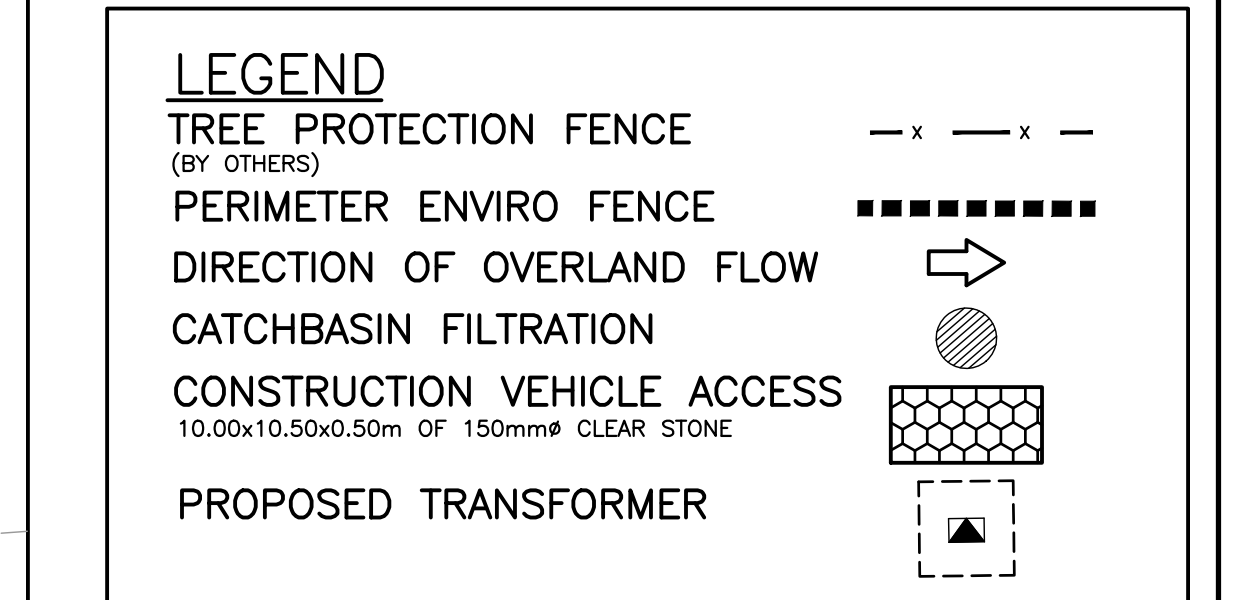
PROFESSIONAL ENGINEER
M.B.C. CARSWELL
90561374
JAN 26/24
PROVINCE OF ONTARIO

SCALE:	HORIZ 1:500 VERT 1:50	PROJECT NO.	122065
DRAWN BY:	H.R.	DRAWING NO.	C-1
DESIGN BY:	H.R.		
CHECKED BY:	M.B.C.		
DATE:	NOV 2022		



- DUST CONTROL MEASURES:**
- A. PRE-GRADING PLANNING**
- THE SITE SERVICING FOR THE SITE SHALL BE SCHEDULED SUCH THAT THE OVERALL TIME THE AREAS ARE LEFT OPEN TO WIND THAT CREATE BLOWING DUST FROM THE EARTHWORK OPERATIONS IS MINIMIZED.
 - THE TOPSOIL STOCKPILE (IF APPLICABLE) SHALL BE STABILIZED WITHIN 30 DAYS OF STOCKPILING MATERIALS IN ACCORDANCE WITH CITY'S CRITERIA. ALL DISTURBED LANDS OUTSIDE THE PHASE OF WORK SHALL BE STABILIZED/VEGETATED.
 - THE CONTRACTOR SHALL APPLY WATER TO HAUL ROADS AND STOCKPILES (IF APPLICABLE) BY WAY OF WATER TRUCK.
- B. WATERING (POST GRADING)**
- WITHIN AREAS WHERE EARTHWORKS AND/OR UNDERGROUND MUNICIPAL SERVICING IS ON-GOING, WATER IS TO BE UTILIZED AT SUFFICIENT QUANTITY TO PREVENT VISIBLE EMISSIONS FROM EXTENDING MORE THAN 30m FROM THE POINT OF ORIGIN.
- C. REDUCE VEHICLE SPEED**
- THE ON-SITE SPEED LIMIT FOR CONSTRUCTION VEHICLES SHALL BE MINIMIZED AND TO BE USED IN CONJUNCTION WITH WATERING TO PREVENT VISIBLE DUST EMISSIONS.
- D. RESTRICT ACTIVITIES DURING HIGH WIND PERIODS**
- THE HIGH VISIBILITY OF CERTAIN WORKS AND THE CLOSE PROXIMITY AND POPULATION IMPACT SHOULD BE TAKEN INTO CONSIDERATION WHEN SCHEDULING DUST-PRODUCING WORK. APPROPRIATE DUST CONTROL MEASURES SHALL BE IN PLACE IN SUCH SITUATIONS.
- E. ROAD CLEANING**
- SPILLAGE, EROSION OR MATERIALS "TRACKED OUT" ON A ROAD TO BE CLEANED USING MECHANICAL STREET SWEEPERS OR FLUSHER TRUCK AT LEAST BY THE END OF THE WORK DAY. HOWEVER, IF SPILLAGE EXTENDS MORE THAN 15m ALONG A PAVED PUBLIC ROADWAY, IT MUST BE CLEANED UP IMMEDIATELY.
 - IMPORTING AND EXPORTING OF MATERIALS ON AND OFF-SITE WILL BE SHUT DOWN DURING AND FOLLOWING UNCLEMATE WEATHER UNTIL THE ROAD SURFACES HAVE BEEN CLEANED.

- SEDIMENT CONTROL CONSTRUCTION SCHEDULE**
- INSTALL PERIMETER ENVIRO FENCE AND CONSTRUCTION VEHICLE ACCESS.
 - EXCAVATE PERIMETER SWALES AND SEDIMENT PONDS AS REQUIRED.
 - STRIP SITE OF TOPSOIL AND REMOVE OFF SITE OR STOCK PILE AND PROVIDE ENVIRO FENCE AROUND BOTTOM OF PILE.
 - INSTALL MINOR STORM SEWER SYSTEM ALONG WITH OTHER SERVICES.
 - INSTALL CATCHBASIN FILTRATION ON ALL CATCHBASINS AND CATCHBASIN.
 - SEDIMENT CONTROL MEASURES ARE TO BE MAINTAINED UNTIL ALL AREAS OF THE SITE HAVE BEEN STABILIZED WITH SOD OR ASPHALT.



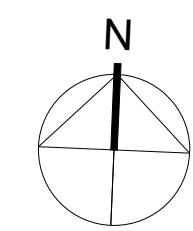
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1.	11/01/2023	REVISED AS PER 1ST SUBMISSION COMMENTS	MH

1697 HIGHWAY No 2, COURTYARD, CLARINGTON

EROSION AND SEDIMENT CONTROL PLAN

D.G. Biddle & Associates Limited
 consulting engineers and planners
 96 KING STREET EAST - OSHAWA, ON L1H 1B6
 PHONE (905) 576-8500 • FAX (905) 576-9730
 info@dgbiddle.com

SCALE: 1:250	PROJECT NO. 122065
DRAWN BY: B.B.	DRAWING NO. ES-1
DESIGN BY: M.H.	
CHECKED BY: M.B.C.	
DATE: OCTOBER 2022	



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AND SEALED BY THE CONSULTANT.

NO.	ISSUES	DATE	BY
1	SITE PLAN APPLICATION	JAN. 25 2023	BBA
2	REVISED PRE CONSULTATION	JUNE 22 2022	BBA
3	INTERNAL REVIEW	NOV 29 2022	BBA
4	SITE PLAN APPLICATION	DEC 09 2022	BBA
5	SITE PLAN APPLICATION-R1	NOV 03 2023	BBA

NO.	REVISIONS	DATE	BY

PROJECT:
**Proposed Courtye
Mixed-Use Building
Development**

1697 Durham Regional Hwy 2, Courtye,
ON L1E 2R5
RH Gay Holdings Co.

DRAWING:
PHASING PLAN



**BARRY BRYAN
ASSOCIATES**

*Architects
Engineers
Project Managers*

201-250 Water Street
Whitby Ontario L1N 0G8
Tel: (905) 666-0262
Fax: (905) 666-5266
e-mail: bba@bba-arch.com

DESIGN BY:	AA
DRAWN BY:	AA/JP
CHECKED BY:	AA/NS
DATE:	2023-11-03
SCALE:	1 : 300
FILE:	

PROJECT NO: **21046**
DRAWING NO: **A103**

HIGHWAY 2

RICHARD H GAY AVENUE

AVONDALE DR.

BLDG -1
PHASE 2

BLDG -2
PHASE 3

PHASE 1
BLDG -3

PROPOSED ROAD
WIDENING

CANOPY OVER
GROUND FLOOR

PHASE 1

PHASE 2

PHASE 3

For discussion.
2024-01-22

PHASING NOTES:

1. Walking Trail to be part of Phase 3 final landscape amenities as well as common exterior landscape amenities for the development.
2. All service connections as per civil drawings, and pending regional phasing with respect to phase 3 of the project and main servicing