ATTN: Planning Department
Norfolk County
By Electronic Mail / Online Portal Submission Only
planning@norfolkcounty.ca

RE: Proposed Manufacturing Building,
Luscombe Drive, Simcoe, Norfolk County
Site Plan File: SPPL2025091

DATE: September 30, 2025

To Whom It May Concern,

As per the supplied Agency Comments to this Site Plan Application File, please see the attached materials with this letter as a response and resubmission of materials.

In conjunction with this letter, please see the attached CDN Buildings-supplied Comment Response Matrix and the items provided by J.H. Cohoon Engineering Limited.

The items from J.H. Cohoon Engineering Limited include their Comment Response Matrix/Letter, the Functional Servicing and Stormwater Management Report, the Schedule-H Estimated Cost and Securities Schedule, Site Plan, Grading and Siltation and Erosion Control Plan, Servicing Plan, and the Site Notes and Details.

Please also see the attached Land Appraisal Report.

We trust that the drawings, reports, and letters attached to this cover letter are satisfactory to Norfolk County for the requirements outlined in the Agency Comments. Please do not hesitate to contact the undersigned should any clarification be necessary.

Sincerely,

W. Reed.

William Reed
Senior Architectural/Structural Technologist
CDN Buildings
523 James St. Unit 3
Delhi, ON
N4B 2C2
wr@cdnbuildings.com
(519) 582-8222 - 232

24-1022
2712300 ONTARIO INCHFW HOLDINGS LIMITED
TONY KOUTNY
LUSCOMBE DRIVE [ARN 33104030250382500000]
SIMCOE, ON
SPPL2025091
CDN BUILDINGS - COMMENT RESPONSES - 2025-09-30

PLANNING COMMENTS		
NUMBER	**COMMENT**	**RESPONSE**
1	PLEASE PROVIDE A LAND APPRAISAL AND A SECURITY SCHEDULE FOR THE AGREEMENT MATERIALS	ATTACHED WITH THIS SUBMISSION.
2	GREAT SITE PLAN DRAWINGS, VERY DETAILED	NOTED, WITH THANKS.
BUILDING COMMENTS		
NUMBER	**COMMENT**	**RESPONSE**
1	CONDITIONS:	
1.1	THE OWNER SHALL AGREE TO MAKE APPLICATION FOR A BUILDING PERMIT, AND OBTAIN THE NECESSARY BUILDING PERMITS PRIOR TO COMMENCING CONSTRUCTION	NOTED, APPLICANT IS APPLYING FOR BUILDING PERMIT APPLICATION CONCURRENTLY WITH SITE PLAN APPLICATION, DOCUMENTS TO BE UPDATED AND SUPPLIED AS MADE AVAILABLE
1.2	AND FURTHER THAT ALL APPLICABLE LAW APPROVALS AS REQUIRED BY THE ONTARIO BUILDING CODE AND SUPPORTING DOCUMENTATION FROM APPROVAL AGENCIES RE SUBMITTED WITH A BUILDING PERMIT APPLICATION [OBC DIVISION A 1.4.1.3.] SPECIFICALLY: SOURCE WATER PROTECTION AND SITE PLAN APPROVAL.	NOTED. SECTION 59 SOURCE WATER PROTECTION AND SITE PLAN APPROVAL DOCUMENTS TO BE SUBMITTED WITH BUILDING PERMIT APPLICATION.
1.3	AND FURTHER THAT THE OWNER SHALL AGREE TO PROVIDE CONFIRMATION FROM ENVIRONMENTAL INFRASTRUCTURE SERVICES (EIS) OF THE FOLLOWING:	NOTED,
1.3.A.	SERVICING CAPACITY IS CONFIRMED AS BEING AVAILABLE FOR ALL WATERMAINS AND SANITARY SYSTEMS	REFER TO JH COHOON RESPONSE LETTER.
1.3.B.	WATERMAINS, STORM SEWERS, SANITARY SYSTEMS AND HYDRO SERVICE ARE CONSTRUCTED AND OPERATIONAL AND ALL REGULATORY APPROVALS HAVE BEEN RECEIVED TO THE SATISFACTION OF THE COUNTY OR APPROPRIATE APPROVAL AUTHORITY	REFER TO JH COHOON RESPONSE LETTER.
1.3.C.	STORMWATER MANAGEMENT FACILITIES, IF REQUIRED, ARE CONSTRUCTED AND OPERATIONAL	REFER TO JH COHOON RESPONSE LETTER.
1.3.D.	ADEQUATE WATER SUPPLY IS AVAILABLE FOR FIRE PROTECTION	REFER TO JH COHOON RESPONSE LETTER.
CONTINUED ON NEXT PAGE		
NUMBER	**COMMENT**	**RESPONSE**

| 1.3.E. | ROADWAYS AND/OR LANES ARE CONSTRUCTED TO THE SATISFACTION OF THE COUNTY AND PROVIDE SAFE AND ADEQUATE ACCESS TO ALL BUILDINGS OR STRUCTURES | AKNOWLEDGED. |

ZONING COMMENTS

NUMBER	COMMENT	RESPONSE
1	NO COMMENTS	NOTED

FIRE COMMENTS

NUMBER	COMMENT	RESPONSE
1	ENSURE ADEQUATE SPACE AND ACCESS FOR THE FUNCTION FOR THE FIRE DEPARTMENT CONNECTION (IF REQUIRED)	PROVIDED; FIRE ROUTE DESIGNED AND SHOWN ON SITE PLAN BY CDN BUILDINGS [A0.02], NO FDC PROPOSED. FIRE HYDRANT DIRECTLY ACROSS FROM SITE, OPPOSITE SIDE OF LUSCOMBE, APPROXIMATELY IN-LINE WITH NORTH PROPERTY LINE. SITE SERVICING SHOWS HYDRANT [17233-3]
2	ADEQUATE FIRE DEPARTMENT ACCESS THROUGH THE SITE	PROVIDED; FIRE ROUTE SHOWN ON SITE PLAN [A0.02] WITH DISTANCES, WIDTH, CENTRELINE RADII AND ACCESS LOCATIONS FOR BUILDINGS ON-SITE.
3	IF BATTERY STORAGE (IE TESLA WALL) AND/OR ELECTRIC VEHICLE CHARGING INFRASTRUCTURE IS PROVIDED PLEASE NOTIFY NCFD	NONE CURRENTLY PROPOSED - NOT APPLICABLE

CANADA POST COMMENTS

NUMBER	COMMENT	RESPONSE
1	PLEASE BE ADVISED THAT CANADA POST DOES NOT HAVE ANY COMMENTS ON THIS APPLICATION FOR A NEW BUSINESS ON LUSCOMBE DR. THIS NEW BUSINESS WILL HAVE MAIL DELIVERY SERVICE THROUGH AN EXISTING COMMUNITY MAILBOX ON LUSCOMBE DR. THE CUSTOMER WILL HAVE TO REGISTER FOR MAIL DELIVERY THROUGH THE SIMCOE POST OFFICE OR BY CALLING OUR CUSTOMER SERVICE LINE AT 1-800-267-1177 TO REGISTER.	NOTED, OWNER TO REGISTER.

ENBRIDGE GAS COMMENTS

NUMBER	COMMENT	RESPONSE
1	THANK YOU FOR YOUR CORRESPONDENCE REGARDING THE PROPOSED SITE PLAN APPLICATION. ENBRIDGE GAS INC. (ENBRIDGE GAS), DOES HAVE SERVICE LINES RUNNING WITHIN THE AREA WHICH MAY OR MAY NOT BE AFFECTED BY THE PROPOSED SITE PLAN.	NOTED, CDN TO CONFIRM WITH ENBRIDGE REGARDING SITE PLANS AND SERVICING PLANS, THAT THE PROPOSED WORKS DO NOT IMPACT ENBRIDGE GAS' EXISTING WORKS. CDN TO PERFORM LOCATES PRIOR TO ANY CONSTRUCTION.
	CONTINUED ON NEXT PAGE	
NUMBER	COMMENT	RESPONSE

NUMBER	COMMENT	RESPONSE
2	SHOULD THE PROPOSED SITE PLAN IMPACT THESE SERVICES, IT MAY BE NECESSARY TO TERMINATE THE GAS SERVICE AND RELOCATE THE LINE ACCORDING TO THE NEW PROPERTY BOUNDARIES. ANY SERVICE RELOCATION REQUIRED WOULD BE AT THE COST OF THE PROPERTY OWNER.	REFER TO POINT 1, CDN DOES NOT INTEND TO IMPACT SERVICES. NEW PROPERTY BOUNDARIES DO NOT APPEAR TO IMPACT EXISTING SERVICES. NOTED THAT RELOCATION COST IS BORNE BY THE OWNER IF REQUIRED.
3	IF THERE IS ANY WORK (I.E. UNDERGROUND INFRASTRUCTURE REBUILD OR GRADING CHANGES) AT OUR EASEMENT AND ON/NEAR ANY OF OUR EXISTING FACILITIES, PLEASE CONTACT US AS EARLY AS POSSIBLE (MINIMUM 1 MONTH IN ADVANCE) SO WE CAN EXERCISE ENGINEERING ASSESSMENT OF YOUR WORK TO ENSURE THE INTEGRITY OF OUR MAIN IS MAINTAINED AND PROTECTED.	NATURAL GAS DEMARCATION POSTS ARE LOCATED IN THE BOULEVARD ON THE OPPOSITE FACE OF THE RIGHT OF WAY OF THE PROPOSED SITE DEVELOPMENT, APPROXIMATELY 3-4m FROM THE ASPHALT EDGE, ON THE OPPOSING SIDE OF THE STREET. CDN BUILDINGS DOES NOT FORSEE CONFLICT OR CHANGES AT THESE LOCATIONS. CONTACT TO BE GAINED WITH ENBRIDGE TO CONFIRM LOCATIONS OF GAS SERVICES FOR COORDINATION WITH THE SITE SERVICING. RESTORATIONS WITHIN THE RIGHT OF WAY, AS REQUIRED, FOR THE INSTALLATION OF SERVICE LATERALS TO BE COMPLETED TO THE COUNTY'S SATISFACTION AND EXISTING GRADES MAINTAINED. CONNECTION TO NATURAL GAS TO BE CARRIED OUT IN CONFORMANCE WITH ENBRIDGE GAS'S STANDARDS.
4	CONFIRMATION OF OUR NATURAL GAS PIPELINE SHOULD BE MADE THROUGH ONTARIO ONE CALL 1-800-400-2255 PRIOR TO ANY ACTIVITY. WE TRUST THE FORGOING IS SATISFACTORY.	CDN TO OBTAIN NATURAL GAS PIPELINE CONFIRMATION WITH ENBRIDGE.

DEVELOPMENT ENGINEERING COMMENTS		
NUMBER	**COMMENT**	**RESPONSE**
1	PLEASE PROVIDE A RESPONSE MATRIX IN YOUR NEXT SUBMISSION TO ADDRESS ALL COMMENTS	NOTED, PLEASE REFER TO THIS DOCUMENT AND JH COHOON LETTER AS RESPONSE MATRIX FOR THIS APPLICATION
2	SANITARY AND WATER MODELLING WILL BE REQUIRED. THIS IS TO BE COMPLETED BY NORFOLK COUNTY'S THIRD-PARTY CONSULTANT. THE COST TO COMPLETE THE MODELLING AND ANY RECOMMENDATIONS FROM REPORTS ARE TO BE IMPLEMENTED INTO THE DESIGN AT THE APPLICANT'S EXPENSE. THE FOLLOWING INFORMATION WILL BE REQUIRED TO RECEIVE A QUOTE AND COMPLETE THE MODELLING.	REFER TO JH COHOON RESPONSE LETTER.
2.A.	GENERAL PLAN OF SERVICES	REFER TO JH COHOON RESPONSE LETTER.
CONTINUED ON NEXT PAGE		
NUMBER	**COMMENT**	**RESPONSE**

2.B.	FUNCTIONAL SERVICING REPORT	REFER TO JH COHOON RESPONSE LETTER.
2.B.I.	TOTAL WASTEWATER DESIGN FLOWS SHOWN IN SANITARY DESIGN SHEETS	REFER TO JH COHOON RESPONSE LETTER.
2.B.II.	TOTAL DOMESTIC WATER AND FIRE FLOWS AS PER NORFOLK COUNTY DESIGN CRITERIA SECTION 10.1.1.	REFER TO JH COHOON RESPONSE LETTER.
2.1	THE FUNCTIONAL SERVICING REPORT MUST INCLUDE WATER/SANITARY SERVICING AND FIRE FLOW CALCULATIONS. FIRE FLOW CALCULATIONS ARE TO BE COMPLETED IN ACCORDANCE WITH "WATER SUPPLY FOR PUBLIC FIRE PROTECTION 2020" BY FIRE UNDERWRITERS SURVEY.	REFER TO JH COHOON RESPONSE LETTER.
2.2	ONCE THE QUOTE HAS BEEN RECEIVED, APPROVAL FROM THE APPLICANT WILL BE REQUIRED BEFORE PROCESSING.	NOTED, APPLICANT TO PROVIDE APPROVAL ONCE QUOTE IS RECEIVED
3	SECURITIES WILL BE REQUIRED IN THE FORM OF A SCHEDULE H TEMPLATE. 10% FOR SITE WORKS COMPLETED ON PRIVATE PROPERTY AND 100% OF WORKS COMPLETED WITHIN THE MUNICIPAL R.O.W.	REFER TO JH COHOON RESPONSE LETTER.
3.A.	AS-CONSTRUCTED DRAWINGS MUST BE INCLUDED AS PART OF THE SECURITIES. THE MINIMUM AMOUNT OF $1500.00 @ 100% WILL BE REQUIRED.	REFER TO JH COHOON RESPONSE LETTER.
FUNCTIONAL SERVICING REPORT (APRIL 2025) COMMENTS		
NUMBER	COMMENT	RESPONSE
4	IN ADDITION TO L/s PLEASE PROVIDE AVERAGE AND PEAK FLOW RATES IN m3/DAY	REFER TO JH COHOON RESPONSE LETTER.
5	PLEASE PROVIDE COMMENTARY ON THE SITE'S PROPOSED DRAINAGE, OUTLET CONTROLS AND OVERALL SWM STRATEGY	REFER TO JH COHOON RESPONSE LETTER.
6	ASSESS AND VERIFY THE DOWNSTREAM HYDRAULIC CAPACITY OF THE EXISTING 750mm STORM SEWER INFRASTRUCTURE WITHIN THE MUNICIPAL RIGHT-OF-WAY, RECOGNIZING IT WAS ORIGINALLY DESIGNED FOR A 5-YEAR STORM EVENT.	REFER TO JH COHOON RESPONSE LETTER.
7	CONFIRM AND EVALUATE THE MAJOR SYSTEM'S HISTORICAL DESIGN, WHICH PROVIDED ON-SITE PONDING IN LOW AREAS TO ACCOMMODATE A 25-YEAR STORM FREQUENCY. ENSURE THAT THE MAJOR SYSTEM CAPACITY AND DESIGN CRITERIA ARE STILL VALID AND ADEQUATE FOR THE PROPOSED DEVELOPMENT.	REFER TO JH COHOON RESPONSE LETTER.
CONTINUED ON NEXT PAGE		
NUMBER	COMMENT	RESPONSE

NUMBER	COMMENT	RESPONSE
8	PLEASE IDENTIFY RUNOFF COEFFICIENTS FOR ALL AREAS	REFER TO JH COHOON RESPONSE LETTER.
9	CONFIRM IF PIPE STORAGE IS REQUIRED FOR THE 100-YEAR STORM EVENT. PROVIDE CALCULATIONS SHOWING THE ADEQUATE CAPACITY OF ONSITE PIPE STORAGE	REFER TO JH COHOON RESPONSE LETTER.
10	PROVIDE CALCULATIONS FOR SIZING ALL STORM PIPES, CATCH BASINS AND CULVERTS	REFER TO JH COHOON RESPONSE LETTER.
11	PLEASE REVISE THE CONCLUSION TO DESCRIBE ACCURATE DEVELOPMENT DETAILS, REFLECTING AN INDUSTRIAL DEVELOPMENT INSTEAD OF RESIDENTIAL	REFER TO JH COHOON RESPONSE LETTER.
TRAFFIC BRIEF COMMENTS		
NUMBER	COMMENT	RESPONSE
12	NO COMMENTS	NOTED
SITE PLAN COMMENTS		
NUMBER	COMMENT	RESPONSE
13	PROPERTY BOUNDARIES ARE TO BE EXACT SURVEYS COORDINATES, NOT 'APPROXIMATE BOUNDARIES'	NOTED, CDN WILL PROVIDE SURVEYED BEARINGS AND DISTANCES ON THE SITE PLAN. REFER TO JH COHOON RESPONSE LETTER.
14	INDICATE SNOW STORAGE AREAS	REFER TO JH COHOON RESPONSE LETTER.
GRADING AND SILTATION AND EROSION CONTROL PLAN COMMENTS		
15	PROVIDE A SECTION THROUGH THE SWM FACILITY IN BOTH DIRECTIONS	REFER TO JH COHOON RESPONSE LETTER.
16	PROVIDE INTERIOR GRAVEL DRIVEWAY AND ASPHALT ENTRANCE SPECIFICATIONS	REFER TO JH COHOON RESPONSE LETTER.
17	PLEASE PROVIDE A DIMENSION BETWEEN THE TWO PROPOSED ENTRANCES, AND THE WIDTH OF THE DRIVEWAYS. PER ENTRANCE BY-LAW 2016-32, A MINIMUM SPACING OF 30 METERS BETWEEN ENTRANCES IS REQUIRED ON COMMERCIAL/INDUSTRIAL LANDS.	CDN BUILDINGS SITE PLAN [A0.02] WILL PROVIDE DIMENSIONS FOR DISTANCING OF DRIVEWAYS. CONFIRMING THAT THE DRIVEWAYS HAVE MORE THAN 30m BETWEEN ENTRANCES
18	PLEASE CONFIRM IF THE POND NO. 1 AND NO. 2 AREA RETAINS THE 100 YR. STORM.	REFER TO JH COHOON RESPONSE LETTER.
19	PLEASE PROVIDE ADDITIONAL GRADES AND OVERLAND FLOW ARROWS NEAR PROPERTY LINES ON ADJACENT SITES	REFER TO JH COHOON RESPONSE LETTER.
20	DRAINAGE AREA 210 IS NOT PERMITTED TO DISCHARGE TO NEIGHBORING PROPERTIES. THE SITE STORMWATER AND OVERLAND FLOW MUST BE SELF-CONTAINED.	REFER TO JH COHOON RESPONSE LETTER.
21	SWM POND OVERFLOW SHALL NOT DISCHARGE TO NEIGHBOURING PROPERTIES	REFER TO JH COHOON RESPONSE LETTER.
CONTINUED ON NEXT PAGE		
NUMBER	COMMENT	RESPONSE

22	IT SHOULD BE NOTED THAT 3:1 SLOPE ON A SWM POND REQUIRE THE INSTALLATION OF A CHAIN LINK FENCE	CDN BUILDINGS TO PROVIDE CHAIN LINK FENCE AROUND SWM POND ON ITS SITE PLAN [A0.02]. REFER TO JH COHOON RESPONSE LETTER.
SITE SERVICING PLAN COMMENTS		
NUMBER	**COMMENT**	**RESPONSE**
23	PLEASE REVISE THE NAME OF THIS SHEET IN THE TITLE BLOCK. IT IS ASSUMED THAT THIS DRAWING IS INTENDED TO BE THE SITE SERVICING PLAN	REFER TO JH COHOON RESPONSE LETTER.
24	INSULATION FOR ALL PIPE REQUIRED STRUCTURES IS TO BE INDICATED ON THIS PLAN.	REFER TO JH COHOON RESPONSE LETTER.
25	AS PER NORFOLK COUNTY DESIGN CRITERIA SECTION 9.7.00., ALL SANITARY SEWER LATERAL CONNECTIONS SHALL BE INSTALLED USING PREFABRICATED TEES. HOWEVER, IT IS ACCEPTABLE TO TIE INTO THE EXISTING MANHOLE PROVIDED THERE ARE NO CONFLICTS WITH INLET/OUTLETS ON THE STRUCTURES, MINIMUM ADEQUATE SEPARATIONS ARE MAINTAINED AND THE MANHOLE IS RE-BENCHED TO CONFIRM ALL ELEVATIONS ARE SUFFICIENT.	REFER TO JH COHOON RESPONSE LETTER.
25.1	THE USE OF ANY SERVICE SADDLE MUST BE APPROVED BY NORFOLK COUNTY ENVIRONMENTAL SERVICES DIVISION. ALL CONNECTIONS SHALL CONFORM TO CURRENT OPSD 1006.010 AND OPSS 410. PLEASE INCLUDE THIS INFORMATION AS A NOTE ON THE DRAWING IN YOUR NEXT SUBMISSION.	REFER TO JH COHOON RESPONSE LETTER.
26	PER NORFOLK COUNTY DESIGN CRITERIA 9.7.00, SANITARY LATERALS SHALL BE INSTALLED ON A MINIMUM GRADE OF 2%	REFER TO JH COHOON RESPONSE LETTER.
27	SANITARY INSPECTION MANHOLE SHALL BE LOCATED ON THE MUNICIPAL SIDE OF THE PROPERTY LINE	REFER TO JH COHOON RESPONSE LETTER.
28	PLEASE INCLUDE A PIPE CROSSING CHART IN YOUR NEXT SUBMISSION, INCLUDING ALL SEPARATIONS BETWEEEN INTERSECTING WATER, SANITARY AND STORM INFRASTRUCTURE. SEPARATIONS MUST CONFORM TO MINIMUM MECP DIMENSIONS.	REFER TO JH COHOON RESPONSE LETTER.
29	LOCATE ADJACENT HYDRANTS AND THE ASSOCIATED FIRE SERVICE RADIUS	TO BE SHOWN ON CDN SITE PLAN [A0.02]; REFER TO JH COHOON RESPONSE LETTER.
30	PLEASE SHOW THE LIMITS OF ALL TRENCHING AND LIMITS OF PROPOSED RESTORATION OF ALL TRENCHES	REFER TO JH COHOON RESPONSE LETTER.
CONTINUED ON NEXT PAGE		
NUMBER	**COMMENT**	**RESPONSE**

31	PLEASE ADD A NOTE "ALL APPLICABLE PERMITS ARE TO BE APPLIED FOR PRIOR TO THE INSTALLATION OF ANY SERVICES"	REFER TO JH COHOON RESPONSE LETTER.
32	PLEASE ADD A NOTE TO THE DRAWINGS "NO WORK ON WATER SERVICES CAN TAKE PLACE WITHOUT SUPERVISION OF A LICENSED NORFOLK COUNTY WATER OPERATOR ON-SITE"	REFER TO JH COHOON RESPONSE LETTER.
33	PER NORFOLK COUNTY DESIGN CRITERIA 7.4.00, AREAS SUBJECT TO THE COLLECTION OF CONTAMINANTS OR SPILLS SHALL BE FITTED WITH ADEQUATE OIL/GRIT SEPARATORS	REFER TO JH COHOON RESPONSE LETTER.

CAMBIUM COMMENTS		
NUMBER	COMMENT	RESPONSE
1	…THERE ARE NO THREATS ASSOCIATED WITH THE PROPOSAL THAT ARE PROHIBITED OR REQUIRE A RISK MANAGEMENT PLAN	NOTED, RESTRICTED LAND USE NOTICE ISSUED MAY 20, 2025 BY MORGAN MARROTT, RMO.
2	THE PROPOSED SEWAGE INFRASTRUCTURE WILL BE A THREAT WITHIN THE WELLHEAD PROTECTION AREA AND IS SUBJECT TO THE DESIGN REQUIREMENTS SET OUT IN NORFOLK COUNTY'S ENVIRONMENTAL COMPLIANCE APPROVAL DEVELOPED UNDER THE CONSOLIDATED LINEAR APPROACH.	REFER TO JH COHOON RESPONSE LETTER.
3	POSSIBLE THREATS ARE LISTED IN APPENDIX A WHICH IS BASED ON THE 2017 TECHNICAL RULES WHICH ARE CURRENTLY IN EFFECT. PLEASE CONTACT THE RISK MANAGEMENT OFFICE IF ANY LISTED ACTIVITY IS PROPOSED AND LET US KNOW IF YOU HAVE ANY QUESTIONS OR REQUIRE FURTHER ASSISTANCE.	NOTED

AGREEMENT COORDINATOR COMMENTS

NUMBER	COMMENT	RESPONSE
1	COMMENTS PENDING	NOTED

REALTY SERVICES COMMENTS		

NUMBER	COMMENT	RESPONSE
1	IF PERFORMANCE SECURITIES FOR THE INFRASTRUCTURE WORKS IS AN OBLIGATION OF YOUR SITE PLAN APPROVAL YOU WILL BE REQUIRED TO ENTER INTO A DEVELOPMENT AGREEMENT WITH THE COUNTY. THE AGREEMENT WILL BE REGISTERED ON TITLE AT THE OWNER'S EXPENSE. THE OWNER WILL ALSO BE REQUIRED TO SECURE COMMERCIAL GENERAL LIABILITY INSURANCE COVERAGE. THE COVERAGE MUST BE KEPT IN FORCE DURING THE DURATION OF CONSTRUCTION UNTIL AFTER A SUCCESSFUL SITE INSPECTION AND RELEASE OF THE PERFORMANCE SECURITIES. PLEASE REACH OUT IF AN AGREEMENT IS REQUIRED.	NOTED - DEVELOPMENT AGREEMENT PER OWNER, SECURITIES SCHEDULE SUBMITTED WITH THIS SUBMISSION.

GIS COMMENTS		

NUMBER	COMMENT	RESPONSE
1	PLEASE CONTACT NORFOLK GIS FOR NEW CIVIC ADDRESSES WHEN BUILDING. YOU CAN APPLY FOR A NEW CIVIC ADDRESS HERE. IF A GREEN SIGN IS REQUIRED IN ORDER TO ISSUE AN ADDRESS (GENERALLY ANYWHERE OUTSIDE OF AN URBAN AREA) YOU WILL HAVE TO CALL NORFOLK COUNTY CUSTOMER SERVICE AFTER APPLYING TO MAKE PAYMENT BEFORE THE ADDRESS IS ISSUED (519-426-5870)(226-NORFOLK)	NOTED, VACANT PARCEL, TO BE DEALT WITH AS PART OF THE BUILDING PERMIT PROCESS.
2	IF YOU WOULD LIKE TO APPLY FOR A NEW CIVIC ADDRESS BECAUSE YOU ARE PLANNING TO BUILD ON A VACANT PARCEL OF LAND, THIS IS DEALT WITH AS PART OF THE BUILDING PERMIT PROCESS. THE BUILDING INSPECTOR CAN PROVIDE YOU WITH A COPY OF A CIVIC ADDRESS REQUEST FORM OR IT CAN BE DOWNLOADED BELOW. ON THE FORM THERE ARE SEVERAL AREAS THAT NEED TO BE FILLED OUT WITH INFORMATION, AND A SKETCH SHOWING THE LOT LAYOUT OF THE PROPERTY FOR WHICH THE CIVIC ADDRESS IS BEING REQUESTED. A SAMPLE SKETCH WILL BE INCLUDED WITH THE FORM.	NOTED, INSPECTOR TO PROVIDE COPY OF FORMS.

HYDRO ONE COMMENTS		

NUMBER	COMMENT	RESPONSE
1	COMMENTS PENDING	NOTED

MISSISSAUGA'S OF THE CREDIT COMMENTS		
NUMBER	**COMMENT**	**RESPONSE**
1	COMMENTS PENDING	NOTED

FIRST NATIONS COMMENTS		
NUMBER	**COMMENT**	**RESPONSE**
1	COMMENTS PENDING	NOTED

END OF DOCUMENT

September 18, 2025

Norfolk County
12 Gilbertson Drive
Simcoe, Ontario
N3Y 5L6

Attention:

Dear:

Re: **Luscombe Drive**
        Simcoe, Ontario
        (2712300 Ontario INCHFW Holdings Limited)
        SPPL2025091

In response to the comments received with regards to the above noted application, we have provided you with the comments received with the appropriate explanation for your review and approval.

Planning Comments

1. Please provide a Land appraisal and a security schedule for the agreement materials. The land appraisal is by others and the construction cost estimate is attached

2. Great Site Plan drawings, very detailed.
Information only and acknowledged

Building Comments

Conditions:
1. The Owner shall agree to make application for a Building Permit, and obtain the necessary Building Permits prior to commencing construction.
Information only and acknowledged

2. AND FURTHER THAT all applicable law approvals as required by the Ontario Building Code and supporting documentation from approval agencies re submitted with a building permit application. [OBC Division A 1.4.1.3]. Specifically: Source water protection, site plan approval.
Information only and acknowledged

Professional Engineers
Ontario

3. AND FURTHER THAT the Owner shall agree to provide confirmation from Environmental Infrastructure Services (EIS) of the following:
   a. Servicing capacity is confirmed as being available for all watermains and sanitary systems;
   The modelling is carried out by the Norfolk County staff and is based upon the FSR previously provided.
   b. Watermains, storm sewers, sanitary systems and hydro service are constructed and operational and all regulatory approvals have been received to the satisfaction of the County or appropriate approval authority;
   Information only and acknowledged
   c. Stormwater management facilities, if required, are constructed and operational;
   Information only and acknowledged
   d. Adequate water supply is available for fire protection; and e) roadways and/or lanes are constructed to the satisfaction of the County and provide safe and adequate access to all buildings or structures.
   Information only and acknowledged

Fire Comments

1. Ensure adequate space and access for the function for the fire department connection (if required).
Information only and acknowledged. The fire route as shown meets the requirement of the Ontario Building Code. The buildings are not anticipated to be sprinklered.

2. Adequate fire department access through the site.
Information only and acknowledged. The fire route as shown meets the requirement of the Ontario Building Code.

3. If battery storage (i.e., Tesla wall) and/or electric vehicle charging infrastructure is provided please notify NCFD.
Information only and acknowledged. No electric vehicle charging infrastructure is being provided to this site.

Development Engineering Comments
General
1. Please provide a response matrix in your next submission to address all comments.
This letter acts as a comment matrix for this site.

2. Sanitary and Water modelling will be required. This is to be completed by Norfolk County's third-party consultant. The cost to complete the modelling and any recommendations from reports are to be implemented into the design at the applicant's expense. The following information will be required to receive a quote and complete the modelling.
   a. General Plan of Services
   Included within this submission

      b. Functional Servicing Report;
          i. Total Wastewater Design Flows shown in Sanitary Design Sheets;
           Included in the re-submission
         ii. Total Domestic Water and Fire Flows as per Norfolk County Design Criteria Section 10.1.1
           Included with the FSR report

The Functional Servicing Report must include water / sanitary servicing and fire flow calculations. Fire Flow calculations are to be completed in accordance with "Water Supply for Public Fire Protection 2020" by Fire Underwriters Survey.

Once the quote has been received, approval from the applicant will be required before proceeding.
Information only and acknowledged

3. Securities will be required in the form of a Schedule 'H' template. 10% for site works completed on private property and 100% of works completed within the municipal R.O.W.

      a. As-constructed drawings must be included as part of the securities. The minimum amount of $1,500.00 @ 100% will be required.
Included within the cost estimate.

Functional Servicing Report (April 2025):

4. In addition to L/s, please provide average and peak flow rates in m³/day.
Updated FSR attached.

5. Please provide commentary on the site's proposed drainage, outlet controls and overall SWM strategy.
Updated FSR attached

6. Assess and verify the downstream hydraulic capacity of the existing 750mm storm sewer infrastructure within the municipal right-of-way, recognizing it was originally designed for a 5-year storm event.
The stormwater management report included for this development restricts the rate of runoff up to and including the 100 year storm event. Therefore, no impact to the downstream system is anticipated.

7. Confirm and evaluate the major system's historical design, which provided on-site ponding in low areas to accommodate a 25-year storm frequency. Ensure that the major system capacity and design criteria are still valid and adequate for the proposed development.
The stormwater management report included for this development restricts the rate of runoff up to and including the 100 year storm event. Therefore, no impact to the downstream system is anticipated.

8. Please identify runoff coefficients for all areas.
The stormwater management report includes the imperious surface calculations for the site and for this development restricts the rate of runoff up to and including the 100 year storm event. Therefore, no impact to the downstream system is anticipated.

9. Confirm if pipe storage is required for the 100-year storm event. Provide calculations showing the adequate capacity of onsite pipe storage.
Pipe storage although it will be utilized, is not accounted for the stormwater design.

10. Provide calculations for sizing all storm pipes, catch basins and culverts.
The sizing of the piping is embedded within the stormwater management report (attached).

11. Please revise the conclusion to describe accurate development details, reflecting an industrial development instead of residential.
The functions servicing report has been updated accordingly.

Site Plan (DWG No: 17233-1)

13. Property boundaries are to be exact surveys coordinates, not "Approximate Boundaries".
The boundaries are included on the survey to be provided under separate cover

14. Indicate snow storage areas.
The snow storage areas are illustrated on the plans.

Grading and Siltation & Erosion Control Plan (DWG No: 17233-2):

15. Provide a section through the SWM Facility in both directions.
The site plan has been updated accordingly.

16. Provide interior gravel driveway and asphalt entrance specifications.
The specification is included on the updated drawing.

17. Please provide a dimension between the two proposed entrances, and the width of the driveways. Per Entrance By-Law 2016-32, a minimum spacing of 30 meters between entrances is required on commercial/industrial lands.
The site plan has been updated accordingly.

18. Please confirm if the Pond No. 1 and No. 2 area retains the 100yr Storm.
These ponds are filled during the major storm event with the overland flow heading towards the stormwater management pond where additional control is provided.

19. Please provide additional grades and overland flow arrows near property lines on adjacent sites.

The site plan has been updated accordingly.

20. Drainage area 210 is not permitted to discharge to neighboring properties. The site stormwater and overland flow must be self-contained.
The drainage on the site is contained and directed to the stormwater management facility whereas no discharge to the abutting lands is anticipated with the exception of extremely high events.

21. SWM pond overflow shall not discharge to neighboring properties.
The pre-development drainage direction presently is directed towards the rear of the site and with the grades that are existing, direction of the overland flow to the front / municipal right-of-way is impossible to achieve without extensive amounts of fill.

22. It should be noted that 3:1 slope on a SWM Pond require the installation of a chain-link fence.
The site plan has been updated accordingly.

Site Servicing Plan (DWG No: 17233-3):

23. Please revise the name of this sheet in the title block. It is assumed that this drawing is intended to be the Site Servicing Plan.
The site plan has been updated accordingly.

24. Insulation for all pipe required structures is to be indicated on this plan.
The site plan has been updated accordingly.

25. As per Norfolk County Design Criteria Section 9.7.00, all sanitary sewer lateral connections shall be installed using prefabricated tees. However, it is acceptable to tie into the existing manhole provided there are no conflicts with inlet/outlets on the structures, minimum adequate separations are maintained and the manhole is re-benched to confirm all elevations are sufficient.
The site plan has been updated accordingly.

The use of any service saddle must be approved by Norfolk County Environmental Services Division. All connections shall conform to current OPSD 1006.010 and OPSS 410. Please include this information as a note on the drawing in your next submission.
The site plan has been updated accordingly.

26. Per Norfolk County Design Criteria 9.7.00, sanitary laterals shall be installed on a minimum grade of 2%.
The site plan has been updated accordingly. Noting that the initial length which has sufficient capacity is at 0.5%. We would consider this a sewer and not a lateral.

27. Sanitary inspection manhole shall be located on the municipal side of the property line.
The site plan has been updated accordingly.

28. Please include a pipe crossing chart in your next submission, including all separations between intersecting water, sanitary and storm infrastructure. Separations must conform to minimum MECP dimensions.
The site plan has been updated accordingly.

29. Locate adjacent hydrants and the associated fire service radius.
The site plan has been updated accordingly.

30. Please show the limits of all trenching and limits of proposed restoration of all trenches.
The site plan has been updated accordingly.

31. Please add a note "All applicable permits are to be applied for prior to the installation of any services".
The site plan has been updated accordingly.

32. Please add a note to the drawings "No work on Water services can take place without supervision of a licensed Norfolk County Water Operator on-site".
The site plan has been updated accordingly.

33. Per Norfolk County Design Criteria 7.4.00, areas subject to the collection of contaminants or spills shall be fitted with adequate oil/grit separators.
Information only and acknowledged.

If you have any further questions, or concerns, please do not hesitate to contact this office.

Yours truly,

J. H. COHOON ENGINEERING LIMITED

R.W. Phillips, P. Eng.
RWP/lc

PROPOSED MIXED USE BUILDING
Luscombe Drive
SCHEDULE H ESTIMATED COST AND SECURITIES
OUR PROJECT NO. 17233   "2025-09-18

REVISION

ITEM	DESCRIPTION	UNIT	QTY.	UNIT PRICE	TOTAL COST	Securities 10%	Securities 100% .
A. SANITARY SEWERS							
1	Excavate to existing sanitary sewer stub at Property Line	L.S.	1	$1,000	$1,000	$0	$1,000
2	Sanitary Sewer Size Noted below						
	a. Existing MH to S2 150 mm Dia	metre	10	$150	$1,470	$0	$1,470
	b. S2 to S1 150mm Dia	metre	29	$150	$4,275	$428	$0
	b. S2 to S1 150mm Dia	metre	7	$150	$1,050	$105	$0
	d. S2 to S1 150mm Dia	metre	24	$150	$3,660	$366	$0
3	Construct 1200mm Dia concrete maintenance holes complete.	EA	2	$4,500	$9,000	$900	$0
4	CCTV and Report	L.S.	1	$2,500	$2,500	$250	$0
	TOTAL SANITARY SEWERS				**$22,955**	**$2,049**	**$2,470**
B. WATERMAIN							
1	Excavate to existing watermain,	L.S.	1	$700	$700	$0	$700
2	Watermain of granular base complete.						
	a. Main to Property Line - 50mm Dia	metre	15	$105	$1,575	$0	$1,575
	a. Property Line to Bldgs - 50mm Dia	metre	42	$105	$4,410	$441	$0
	TOTAL WATERMAIN				**$5,985**	**$441**	**$1,575**
C. STORM SEWERS							
1	Supply and install storm sewer						
	a. 375 mm Dia	metre	207	$175	$36,278	$3,628	$0
	b. 250 mm dia.	metre	47	$175	$8,260	$826	$0
	c. 450 mm Dia.	metre	16	$175	$2,730	$273	$0
	d. 525 mm Dia.	metre	15	$175	$2,573	$257	$0
	e. 250 mm dia. In ROW	metre	14	$175	$2,363	$0	$2,363
2	Construct 600x600 precast concrete catchbasin including associated legs	EA	3	$3,500	$10,500	$1,050	$0
	in ROW	EA	1	$3,500	$3,500	$0	$3,500
3	Construct 1200 mm P/C CB MH complete	EA	5	$3,500	$17,500	$1,750	$0
4	Stormceptor	L.S.	1	$35,000	$35,000	$3,500	$0
5	Outlet Structure	L.S.	1	$3,500	$3,500	$350	$0
6	Headwall	L.S.	1	$4,500	$4,500	$450	$0
	TOTAL STORM SEWER				**$126,703**	**$12,084**	**$5,863**
D. ROAD CONSTRUCTION							
1	Sub excavation to a depth of 590mm below finish grade	sq.m.	8125	$15	$121,875	$12,188	$0
2	Supply, place and compact 300mm granular 'B'	sq.m.	8125	$15	$121,875	$12,188	$0
3	Supply, place and compact 150mm granular 'A'	sq.m.	8125	$8	$60,938	$6,094	$0
4	Supply, place and compact 50mm HL4 asphalt pavement including road cut	tonne	1025	$165	$169,125	$16,913	$0

ITEM	DESCRIPTION	UNIT	QTY.	UNIT PRICE	TOTAL COST	Securities 10%	100% .
5	Supply, place and compact 40mm HL3 asphalt for road.	tonne	725	$175	$126,875	$12,688	$0
6	Mud Mat and Site Controls	L.S.	1	$4,000	$4,000	$400	$0
7	Line Painting	L.S.	1	$1,500	$1,500	$150	$0
8	Proposed Topsoil and Seed	sq. m.	2700	$8	$20,250	$2,025	$0
	TOTAL ROAD CONSTRUCTION				**$626,438**	**$62,644**	**$0**

E. HYDRO

ITEM	DESCRIPTION	UNIT	QTY.	UNIT PRICE	TOTAL COST	10%	100%
1	Intestinally Removed	L.S.	1	$0	$0	$0	$0
	TOTAL HYDRO				**$0**	**$0**	**$0**

SUMMARY

	TOTAL COST	10%	100%
A. SANITARY SEWERS	$22,955	$0	$22,955
B. WATERMAIN	$5,985	$441	$1,575
C. STORM SEWERS	$126,703	$12,084	$5,863
D. ROAD CONSTRUCTION	$626,438	$62,644	$0
E. HYDRO	$0	$0	$0
TOTAL NORFOLK COUNTY ITEMS	**$782,080**	**$75,169**	**$30,393**
TOTAL HYDRO ITEMS	**$0**	**$0**	**$0**
TOTALS	**$782,080**	**$75,169**	**$30,393**

TOTAL SECURITIES REQUIRED   **$105,561.25**

KOUTNY TONY
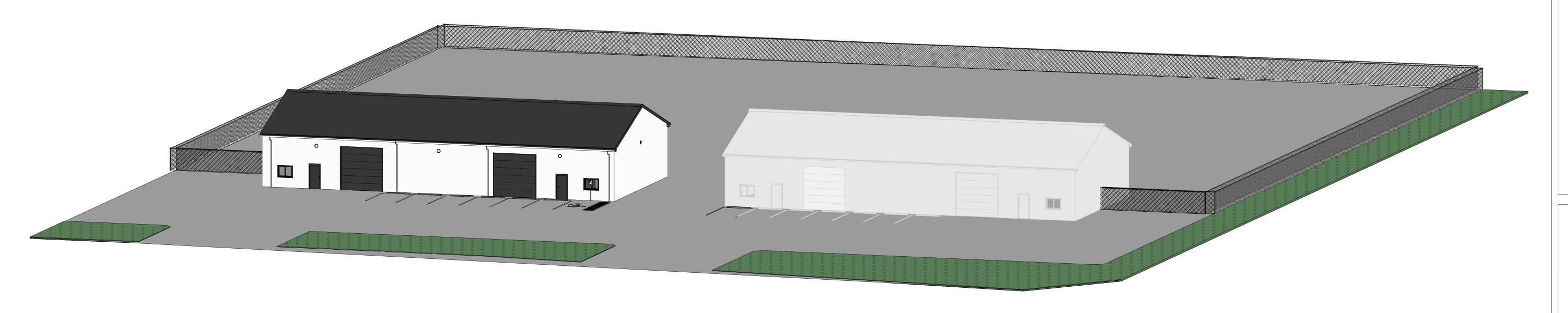
CONTACT: TONY KOUTNY

PHONE: (905)973-0791

PROPERTY ADDRESS: LUSCOMBE DRIVE,
SIMCOE, ON

PHONE: tony@koutny.ca

A. A. L. AYOUB
100558690
September 30, 2025
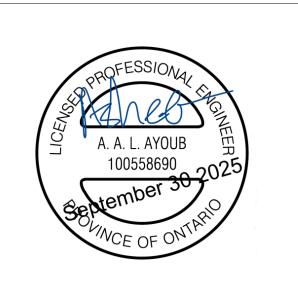
50'-0"W x 100'-0"L x 14'-0"H (4/12 PITCH)
CLEAR SPAN STEEL MANUFACTURING BUILDING

COLOURS:

WALLS: CHARCOAL
ROOF: BLACK
TRIM: BLACK
DOORS: BLACK (DEFAULT)
WINDOWS: BLACK (DEFAULT)

KOUTNY TONY

LUSCOMBE DRIVE,
SIMCOE,ONTARIO

COVER SHEET

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	BK
CHECKED BY	AA

A0.00

SCALE

CDN BUILDINGS

3-523 James Street
Delhi, ON
N4B 2C2

Office: 519 582 8222
Fax: 519 582 2098
Website: http://www.cdnbuildings.com

MATERIAL SPECIFICATIONS

PART	MATERIAL	FINISH
WIDE FLANGE, ANGLE, CHANNEL	G40.21 350W, ASTM A992 GR50, ASTM A572 GR50	GALVANIZED
HSS	G40.21 350W, ASTM 500 GRADE C OR EQUIVALENT	GALVANIZED/BLACK
PLATE/FLAT BAR	G40.21 380W	GALVANIZED
WEB BAR	G40.21 380W, ASTM A653 SS GR55, ASTM A653 HSLAS GR55 CLASS 1 OR 2	GALVANIZED
COLD FORMED ZEE & CEE	G40.21 380W, ASTM A653 SS GR33, ASTM A653 HSLAS GR55 CLASS 1 OR 2	GALVANIZED
	ASTM A101 SS GR55, ASTM A101 HSLAS GR55 CLASS 1 OR 2	
COLD FORMED NOTCHED ZEE & HAT/CHAIR	G40.21 380W, ASTM A653 SS GR33, ASTM A653 HSLAS GR55 CLASS 1 OR 2	Z275(G90) PRE-GALV
ROD	G40.21 350W, ASTM A529 GR50, ASTM A572 GR50	GALVANIZED
CABLE BRACING	ASTM A475 EHS 7 WIRE	CLASS A ZINC COATING
HIGH STRENGTH BOLTS < 1-1/2"	ASTM A325, GALV. GRADE 5	GALVANIZED
HIGH STRENGTH BOLTS > 1-1/2"	ASTM A325, GALV. GRADE 5	GALVANIZED
SECONDARY STRUCTURAL MEMBER BOLTS	ASTM A325, GALV. GRADE 5	GALVANIZED
ANCHOR RODS	G40.21 350W, ASTM A529 GR50,ASTM A572 GR50	GALVANIZED
EYE BOLTS	1030 CARBON STEEL	HOT DIP GALVANIZED
HILLSIDE/SLOPED WASHER	A47	GALVANIZED A153
BRACER HILLSIDE WASHER	A47	GREY ENAMEL
RTL PANEL	ASTM A792 SS GR50 CLASS 1 OR 4	AZ50 / AZM150 FOR PAINTED GALVALUME
REBAR	GRADE 400W OR EQUIVALENT	AZ55 / AZM165 FOR BARE GALVALUME
HEX BOLT ASSEMBLIES	GRADE 5 STEEL	GALVANIZED
SELF TAPPING SCREWS (TEK 3)	GRADE 2 STEEL	ZINC COAT
DIAMOND RIB 36 SHEET METAL PANEL	26 - 29 GA STRUCTURAL GRADE 80 STEEL ASTM.972	SMP STEEL-PAINT SYSTEM
TUFF RIB SHEET METAL PANEL	26 - 29 GA STRUCTURAL GRADE 80 STEEL ASTM.972	SMP STEEL-PAINT SYSTEM

STEEL FINISH

ALL STRUCTURAL MEMBERS OF THE STEEL BUILDING SYSTEM TO BE HOT DIP GALVANIZED TO ASTM A123 AND FASTENERS TO ASTM A153.

COLD FORMED ZEE/CEE MEMBER SIZES

DESIGN EXAMPLES: 08Z16: WHERE 08=SECTION DEPTH, Z=ZEE SECTION 16=16GA
                   10C12: WHERE 10=SECTION DEPTH, C=CEE SECTION, 12=12GA

PART	DEPTH in[mm]	FLANGE WIDTH in[mm]	LIP LENGTH in[mm]	LIP ANGLE
06Z	6[152]	2.50[64]	0.95[24]	45
08Z	8[203]	2.80[71]	1.08[27]	45
09Z	9[229]	2.88[73]	1.08[27]	45
10Z	10[254]	3.02[77]	1.18[30]	45
12Z	12[305]	3.14[80]	1.18[30]	45
14Z	14[356]	3.14[80]	1.18[30]	45
06C	6[152]	2.26[57]	0.94[24]	90
08C	8[203]	2.94[75]	0.94[24]	90
09C	9[229]	3.08[78]	0.94[24]	90
10C	10[254]	3.26[83]	0.94[24]	90
12C	12[305]	3.38[86]	0.94[24]	90
14C	14[356]	3.50[89]	0.94[24]	90

DAMAGE TO MATERIAL FINISHES

MINOR ABRASIONS TO GALVANIZED FINISH, CAUSED BY HANDLING, LOADING, SHIPPING, UNLOADING AND ERECTION; ARE UNAVOIDABLE AND ARE NOT SUBJECT TO CLAIM. TOUCH UP OF THESE MINOR ABRASIONS IS THE RESPONSIBILITY OF THE ERECTOR AND/OR THE END CUSTOMER.

GENERAL NOTES

1. INFORMATION ON THIS DRAWING IS INTENDED FOR CONSTRUCTION ONLY WHEN BEARING A CDN BUILDINGS ENGINEERS SIGNED PROFESSIONAL SEAL AND WHEN FREE OF ANY NOTATIONS STATING OTHERWISE.
2. FOUNDATION DESIGN AND CONSTRUCTION IS NOT THE RESPONSIBILITY OF CDN BUILDINGS.
3. THE EMBEDMENT OF THE ANCHOR BOLTS IN THE CONCRETE IS THE RESPONSIBILITY OF THE FOUNDATION DESIGNER. THE FRAME REACTIONS LISTED ARE THE MINIMUM LOADS TO BE DEVELOPED
4. THE BUILDING REACTION DATA REPORTS THE LOAD WHICH THIS BUILDING PLACES ON THE FOUNDATIONS
5. THE ENDWALL WIND LOAD REACTIONS INCLUDE REACTION FROM ENDWALL BRACING
6. COLUMN BASE PLATES ARE DESIGNED ASSUMING A MINIMUM SPECIFIED COMPRESSIVE STRENGTH (fc`) OF CONCRETE OD 2,900 P.S.I (20MPA) AT 28 DAYS.
7. ANCHOR BOLT DIAMETER, QUANTITY AND PLACEMENT SHOULD BE AS SHOWN
8. ANCHOR BOLTS ARE TO BE ASTM A307 OR EQUAL
9. ALL REACTIONS ARE IN KIPS OR KIP-FEET
10. MAXIMUM FRAME REACTIONS INCLUDE WIND AND SEISMIC REACTION FROM SIDEWALL BRACING.
11. SEISMIC REACTION HAVE NOT BEEN AMPLIFIED BY Rd, Ro
12. FOUNDATION IS DESIGNED WITH THE ASSUMPTION THAT THE SOIL BEARING CAPACITY IS 3000 psf.
13. GEOTECHNICAL SOIL REPORT TO OTHERWISE STATE SOIL BEARING CAPACITY.

BASE LOAD DEFINITIONS FOR RIGID FRAMES

DEAD – SELFWEIGHT OF THE BUILDING SYSTEM.
COLLATERAL – MECHANICAL, ELECTRICAL, CEILINGS, SPRINKLER, ETC.
ROOF_LIVE – MINIMUM ROOF LIVE LOAD (NOT COMBINED WITH SNOW LOAD).
FLOOR_LIVE – LOADS INDUCED DUE TO INTENDED USE AND OCCUPANCY.
CRANE – LOADS INDUCED FROM CRANES IN THE BUILDING.
SNOW – GRAVITY LOADS DUE TO SNOW
WIND_LEFT1 – WIND FROM THE LEFT TO RIGHT COMBINED WITH POSITIVE INTERNAL PRESSURE.
WIND_RIGHT1 – WIND FROM THE RIGHT TO LEFT COMBINED WITH POSITIVE INTERNAL PRESSURE.
WIND_LEFT2 – WIND FROM THE LEFT TO RIGHT COMBINED WITH NEGATIVE INTERNAL PRESSURE.
WIND_RIGHT2 – WIND FROM THE RIGHT TO LEFT COMBINED WITH NEGATIVE INTERNAL PRESSURE.
WIND_LONG1 – WIND FROM NORMAL TO THE RIGID FRAME COMBINED WITH POSITIVE INTERNAL PRESSURE.
WIND_LONG2 – WIND DIRECTION REVERSED FROM LNWIND_1COMBINED WITH POSITIVE INTERNAL PRESSURE.
SEISMIC_LEFT – SEISMIC FORCE IN DIRECTION FROM LEFT TO RIGHT.
SEISMIC_RIGHT – SEISMIC FORCE IN FREIGHT FROM RIGHT TO LEFT.
SEISMIC_LONG – SEISMIC FORCE NORMAL TO THE RIGID FRAME.
FIUNB_SL_L – GRAVITY LOADS DUE TO PATTERNED SNOW LOAD FOR RAFTER DESIGN.
FIUNB_SL_R – GRAVITY LOADS DUE TO PATTERNED SNOW LOAD FOR RAFTER DESIGN
FIPAT_SL – GRAVITY LOADS DUE TO UNBALANCED SNOW LOAD.

BASIC LOAD DEFINITIONS FOR ENDWALL FRAMES

DEAD – SELFWEIGHT OF THE BUILDING SYSTEM.
COLLATERAL – MECHANICAL, ELECTRICAL, CEILINGS, SPRINKLER, ETC.
ROOF_LIVE – MINIMUM ROOF LIVE LOAD (NOT COMBINED WITH SNOW LOAD).
FLOOR_LIVE – LOADS INDUCED DUE TO INTENDED USE AND OCCUPANCY.
CRANE – LOADS INDUCED FROM CRANES IN THE BUILDING.
SNOW – GRAVITY LOADS DUE TO SNOW
WIND_LEFT1 – WIND FROM THE LEFT TO RIGHT COMBINED WITH POSITIVE INTERNAL PRESSURE (RAFTER).
WIND_RIGHT1 – WIND FROM THE RIGHT TO LEFT COMBINED WITH POSITIVE INTERNAL PRESSURE (RAFTER).
WIND_LEFT2 – WIND FROM THE LEFT TO RIGHT COMBINED WITH POSITIVE INTERNAL PRESSURE (WITH BRACING).
WIND_RIGHT2 – WIND FROM THE RIGHT TO LEFT COMBINED WITH POSITIVE INTERNAL PRESSURE (WITH BRACING).
WIND_P – WIND PRESSURE(NORMAL (INWARD) TO ENDWALL).
WIND_S – WIND SUCTION (NORMAL (OUTWARD) TO ENDWALL).
WIND_LONG1 – WIND FROM NORMAL TO THE RIGID FRAME COMBINED WITH POSITIVE INTERNAL PRESSURE.
WIND_LONG2 – WIND DIRECTION REVERSED FROM LNWIND_1COMBINED WITH POSITIVE INTERNAL PRESSURE.
SEISMIC_LEFT – SEISMIC FORCE IN DIRECTION FROM LEFT TO RIGHT.
SEISMIC_RIGHT – SEISMIC FORCE IN FREIGHT FROM RIGHT TO LEFT.
SEISMIC_LONG – SEISMIC FORCE NORMAL TO THE RIGID FRAME.
FIUNB_SL_L – GRAVITY LOADS DUE TO PATTERNED SNOW LOAD FOR RAFTER DESIGN.
FIUNB_SL_R – GRAVITY LOADS DUE TO PATTERNED SNOW LOAD FOR RAFTER DESIGN
FIPAT_SL – GRAVITY LOADS DUE TO UNBALANCED SNOW LOAD.

TYPICAL MEMBER SIZES

NO.	ITEM	MATERIAL
1	ANCHOR POSTS (MAIN)	4 1/2" HSS TUBE X 0.125" WALL X 54" LONG HDG
2	ANCHOR POSTS (GABLE)	3 1/2" HSS TUBE X 0.125" WALL X 54" LONG HDG
3	MAIN POSTS	5" HSS TUBE X 0.125" WALL x'x" LONG HDG
4	GABLE/END POSTS	4" HSS TUBE X 0.125" WALL X TO SUIT HDG
5	X'W TRUSS WELDMENTS	TOP CHORDS
	ON X'-X" CENTERS	3" SQ HSS TUBE X 0.125" WALL HDG
	TYP OF #	BOTTOM CHORDS
		3" SQ HSS TUBE X 0.125" WALL HDG
		WEBBING MEMBERS
		2" SQ HSS TUBE X 0.125" WALL HDG
6	ROOF PURLINS	2" SQ HSS TUBE X 0.125" WALL @ 36" C/C
7	WALL BRACING	1/2"Ø THREADED STEEL RODS @ 12'-0' LENGTHS HDG
8	WALL PURLINS	2" SQ HSS TUBE X 0.125" WALL @ 36" C/C
9	POST BRACING	1/2"Ø THREADED STEEL RODS @ 12'-0' LENGTHS HDG
10	ROOF SHEETING	29 GA CORRUGATED SHEET METAL TUFF RIB
11	WALL SHEETING	29 GA CORRUGATED SHEET METAL DIAMOND RIB
12	INT. WALL SHEETING	N/A

DESIGN RESPONSIBILITY

CDN BUILDINGS ENGINEER IS THE DESIGN PROFESSIONAL OR ENGINEER OF RECORD FOR THE CONSTRUCTION PROJECT. CDN BUILDINGS IS NOT RESPONSIBLE FOR THE DESIGN OF ANY COMPONENT OF AN INTERFACE AND CONNECTION WITH THE STEEL BUILDINGS SYSTEM, UNLESS SUCH DESIGN RESPONSIBILITY IS SPECIFICALLY REQUIRED BY THE CONTRACT DOCUMENTS. CDN BUILDINGS IS ONLY RESPONSIBLE FOR ENSURING THAT THE COMPONENTS SUPPLIED BY IT ARE DESIGNED IN ACCORDANCE WITH THE APPLICABLE BUILDING CODES OR OTHER CRITERIA, ALL AS SPECIFIED BY THE OWNER, THE PROFESSIONAL ENGINEER AND/OR ARCHITECT OF RECORD RETAINED BY THE OWNER, OR THE DESIGN- BUILDER. THE DESIGNER (OF THE STRUCTURE) WHETHER DESIGN-BUILDER, ARCHITECT AND/OR PROFESSIONAL ENGINEER OF RECORD, IS RESPONSIBLE FOR SPECIFYING TO CDN BUILDINGS THE CODE AND STANDARDS TO GOVERN DESIGN, ALL DESIGN LOADS SUCH AS SNOW LOADS (INCLUDING COEFFICIENTS AND DRIFT CONDITIONS), WIND LOADS, COLLATERAL LOADS, SITE CONDITIONS FOR SEISMIC DESIGN, AND ANY OTHER SUPERIMPOSED LOADS WHICH THE STRUCTURE IS REQUIRED TO SUSTAIN. IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS HE/SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM ON THESE PLANS IN ANY WAY. IF ANY ITEM ON THESE PLANS IS ALTERED, THE ALERTING ENGINEER MUST AFFIX TO THE ITEM HIS/HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF SUCH ALTERNATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION. CDN BUILDINGS ASSUMES THAT ALL WINDOWS AND DOORS WILL BE DESIGNED TO WITHSTAND THE WIND LOADS SHOWN AND WILL REMAIN CLOSED DURING PERIOD OF SEVERE WINDS (THIS DOES NOT APPLY TO BUILDINGS DESIGNED AS CATEGORY 3).
FOR FURTHER CLARIFICATION OF DESIGN RESPONSIBILITY, REFER TO CSSBI B8 – 06 – BUILDINGS INCORPORATING STEEL BUILDING SYSTEMS: RESPONSIBILITIES OF PARTIES INVOLVED.

FOUNDATION DESIGN

CDN BUILDINGS IS RESPONSIBLE FOR THE DESIGN, MATERIALS, AND WORKMANSHIP OF THE FOUNDATION. ANCHOR BOLT PLANS ARE PREPARED BY CDN BUILDINGS ARE INTENDED TO SHOW ONLY LOCATION, DIAMETER, AND PROJECTION OF THE ANCHOR RODS REQUIRED TO ATTACH THE STEEL BUILDING SYSTEM TO THE FOUNDATION. IT IS THE RESPONSIBILITY OF THE END CUSTOMER AND/OR THEIR DESIGN PROFESSIONAL TO ENSURE THAT ADEQUATE PROVISIONS ARE MADE FOR SPECIFYING BOLT EMBEDMENT, BEARING ANGLES, TIE RODS AND/OR OTHER ASSOCIATED ITEMS EMBEDDED IN THE CONCRETE FOUNDATION, AS WELL AS FOUNDATION DESIGN FOR THE LOADS IMPOSED BY THE STEEL BUILDING SYSTEM, OTHER IMPOSED LOADS, AND THE BEARING CAPACITY OF THE SOIL AND OTHER CONDITIONS OF THE BUILDING SITE.
CDN BUILDINGS DOES NOT SPECIFY GROUT REQUIREMENTS – THE IS THE RESPONSIBILITY OF THE FOUNDATION DESIGNER. THE CHAIR PROVIDED WITHIN THE ANCHOR PLANS/DETAILS IS INTENDED TO DEMONSTRATE THAT GROUT SHALL BE TAKEN INTO ACCOUNT WHEN DETERMINING ANCHOR BOLT PROJECTION. IT DOES NOT CONSTITUTE THE SPECIFICATION OF GROUT BY THE CDN ENGINEER.

SERVICE ABILITY

UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS, CDN BUILDINGS USES INDUSTRY STANDARD DEFLECTION LIMITS AS SPECIFIED IN CSSI B15B – 15. IN GENERAL, WE DO NOT USE THE RECOMMENDED LIMIT SPECIFIED IN ANNEX D OF CSA S16, WHICH IS A NON – MANDATORY PART OF THIS STANDARD.

SITE INSPECTIONS

CDN BUILDINGS DOES PERFORM GENERAL REVIEW OF CONSTRUCTION (SITE INSPECTIONS) FOR COMPONENTS SUPPLIED BY IT. THIS RESPONSIBILITY IS EXPLICITLY EXCLUDED FROM CDN BUILDINGS SCOPE OF WORK, UNLESS SPECIFIED IN THE CONTRACT DOCUMENTS FOR AN AGREED FEE.

EXISTING BUILDINGS

CDN BUILDINGS DOES NOT INVESTIGATE THE INFLUENCE OF THE STEEL BUILDING SYSTEM ON EXISTING BUILDINGS OR STRUCTURES. THE END CUSTOMER AND/OR THEIR DESIGN PROFESSIONAL MUST ENSURE CONDITIONS AS A RESULT OF THE PRESENCE OF THE STEEL BUILDING SYSTEM.

INDEPENDENT / SELF – SUPPORTING COMPONENTS

MEZZANINES, BLOCK WALLS, OR ANY OTHER COMPONENTS BY OTHERS THAT ARE IDENTIFIED AS INDEPENDENT OR SELF -SUPPORTING, MUST BE DESIGNED BY A PROFESSIONAL ENGINEER. THE ENGINEER MUST ENSURE THAT PROPER ISOLATION FROM THE CDN BUILDING HAS BEEN PROVIDED TO AVOID STRUCTURAL DAMAGE DUE TO DIFFERENTIAL MOVEMENTS, OR INADVERRENTLY APPLYING LOADS TO THE CDN BUILDINGS STRUCTURE. CDN BUILDINGS ACCEPTS NO RESPONSIBILITY FOR THE DESIGN OF ANY INDEPENDENT/SELF – SUPPORTING COMPONENTS.

FIRE CODE COMPLIANCE

IT IS THE RESPONSIBILITY OF THE PROJECT DESIGN PROFESSIONAL AND BUILDER TO COMPLY WITH LOCAL FIRE CODE REGULATIONS INCLUDING CONSIDERATION OF, BUT NOT LIMITED TO, BUILDING USE AND OCCUPANCY, ALL BUILDING CONSTRUCTION MATERIALS, SEPARATION REQUIREMENTS, EGRESS REQUIREMENTS, FIRE PROTECTION SYSTEMS, ETC. THE BUILDER SHALL ADVISE CDN BUILDINGS OF ANY SPECIAL REQUIREMENTS TO BE FURNISHED BY CDN BUILDINGS.

PRELIMINARY DRAWINGS

CDN BUILDINGS ISSUES PRELIMINARY DRAWINGS MARKED AS "ISSUED FOR INFORMATION" FOR EACH PROJECT. INFORMATION PRESENTED ON PRELIMINARY DRAWINGS MAY DIFFER FROM DRAWINGS/DOCUMENTS PROVIDED BY OTHER FIRMS, AND ALSO FROM PREVIOUS CDN BUILDINGS DRAWINGS/DOCUMENTS. THE DEVIATIONS MAY BE DUE TO INTERPRETATION OF THE CONTRACT REQUIREMENTS, OR NECESSARY PROVISIONS FOR STRUCTURAL PERFORMANCE AND MANUFACTURING ABILITY. THE MOST RECENT SET OF DRAWINGS THAT IS SEALED BY A CDN BUILDINGS ENGINEER SHALL TAKE PRECEDENCE OVER ANY PREVIOUS DRAWINGS/DOCUMENTS. THE CUSTOMER SHALL PERFORM A THOROUGH REVIEW OF ALL ITEMS SHOWN IN EACH DRAWING SET RECEIVED, IN ORDER TO CONFIRM ADHERENCE TO THE CONTRACT REQUIREMENTS. APPROVAL IS REQUIRED IN ORDER TO PROCEED WITH MANUFACTURING. WHEN THE APPROVAL STAMP IS PRESENT, PLEASE SIGN AND DATE EACH DRAWING, AND CLEARLY INDICATE ANY CHANGES REQUIRED. FAILURE TO DO SO IN A TIMELY MANNER MAY RESULT IN PROJECT DELAYS. NOTE THAT CHANGES REQUESTED ON THE DRAWINGS ARE NOT BINDING UNLESS SUBSEQUENTLY ACKNOWLEDGED AND AGREED TO IN WRITING. APPROVAL OF CDN BUILDINGS DRAWINGS CONSTITUTES ACCEPTANCE OF OUR INTERPRETATION, AND FURTHER CONSTITUTES AGREEMENT THAT THE BUILDING AS SHOWN REPRESENTS THE TOTAL OF THE MATERIALS TO BE SUPPLIED. ANY CHANGE REQUESTS THAT OCCUR AFTER APPROVAL MAY RESULT IN ADDITIONAL COSTS AND DELAYS. BUILDER/CUSTOMER MUST SECURE ALL REQUIRE APPROVALS AND PERMITS FROM THE APPROPRIATE AGENCIES AS REQUIRED.

BOLT TIGHTENING

PROPER INSTALLATION AND INSPECTION OF ALL FASTENERS IS THE RESPONSIBILITY OF THE ERECTOR. ALL HIGH STRENGTH (ASTM A123 , GALV. GRADE 5) BOLTS AND NUTS MUST BE TIGHTENED BY THE "TURN – OF – NUT" METHOD AS SPECIFIED IN THE "INSTALLATION AND INSPECTION OF BOLTED JOINTS" CLAUSE OF CSA S16, INSPECTION OF HIGH STRENGTH BOLTED JOINTS BY OTHER THAN THE ERECTOR MUST BE SPECIFIED IN THE CONTRACT DOCUMENTS, AND THE ERECTOR IS RESPONSIBLE FOR ENSURING THAT INSTALLATION AND INSPECTION PROCEDURES ARE COMPATIBLE PRIOR TO THE START OF THE ERECTION.

TABLE B: NUT ROTATION FROM SNUG-TIGHT CONDITION

BOLT LENGTH**	TURN
UP TO AND INCLUDING 4 BOLT DIAMETERS	1/3
OVER 4 DIAMETERS AND NOT EXCEEDING 8 DIAMETERS OR 8 INCHES	1/2
EXCEEDING 8 DIAMETERS OR 8 INCHES	2/3

** BOLT LENGTH IS MEASURED FROM THE UNDERSIDE OF THE HEAD TO THE EXTREME END OF POINT

ERECTION – GENERAL

CDN BUILDINGS IS RESPONSIBLE FOR THE ERECTION OF THE STEEL BUILDING SYSTEM, THE SUPPLY OF ANY TOOLS OR EQUIPMENT, SUPERVISION FOR THE ERECTION OF THE STRUCTURE, OR ANY OTHER FIELD WORK. FIELD ERECTION OF A STEEL BUILDING, AS IN ALL CONSTRUCTION PROJECTS, INVOLVES HAZARDS TO PERSONS WITHIN THE AREA OF THE CONSTRUCTION AND RISK OF DAMAGE TO THE PROPERTY ITSELF. CDN BUILDINGS DOES NOT FURNISH A GENERAL ERECTION MANUAL, HOWEVER FIELD ERECTION PROCEDURES CAN VARY BECAUSE OF MANY ITEMS INCLUDING LOCAL CONDITIONS, EQUIPMENT AVAILABILITY, THE TYPE OF BUILDING BEING ERECTED AND THE EXPERTISE OF THE PARTICULAR ERECTOR. THE ERECTOR, BY ENTERING INTO A CONTRACT TO ERECT THE BUILDING, HOLD ITSELF OUT AS SKILLED IN THE ERECTION OF STEEL BUILDING SYSTEMS. AND IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, PROVINCIAL, AND FEDERAL CONSTRUCTION AND SAFETY REGULATIONS AS WELL AS ANY APPLICABLE REQUIREMENTS MUNICIPAL, PROVINCIAL, FEDERAL, AND INTERNATIONAL UNION RULES OR PRACTICES, THE ERECTION DRAWINGS FURNISHED BY CDN BUILDINGS ARE NOT INTENDED TO SPECIFY ANY PARTICULAR METHOD OF ERECTION TO BE FOLLOWED BY THE ERECTOR. THE ERECTOR IS ALSO RESPONSIBLE FOR SUPPLYING ANY SAFETY DEVICES SUCH AS FALL ARREST SYSTEMS, MAN–LIFTS, AND ANCHOR POINTS ETC. WHICH MAY BE REQUIRED TO SAFELY ERECT THE STEEL BUILDING SYSTEM. CDN BUILDINGS EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR ANY INJURY TO PERSONS IN THE COURSE OF ERECTION OR DAMAGE TO THE PRODUCT ITSELF. ONLY EXPERIENCED PERSONS WHO ARE SKILLED AND QUALIFIED IN THE ERECTION OF STEEL BUILDINGS SHOULD BE PERMITTED TO FIELD – ERECT A BUILDING DUE TO THE HAZARDS OF THIS CONSTRUCTION ACTIVITY. ALL ERECTION EQUIPMENT AND DETAILED ERECTING PROCEDURES WILL BE DETERMINED BY AND INDEPENDENT QUALIFIED ERECTIONAL ENGINEER RETAINED BY THE BUILDER AS REQUIRED.

ERECTION TOLERANCES

ERECTION TOLERANCES ARE THOSE SET FORTH IN "DESIGN OF STEEL STRUCTURES" (CSA S16 LATEST EDITION)

TEMPORARY BRACING DURING CONSTRUCTION

THE ERECTOR SHALL FURNISH TEMPORARY GUYS AND BRACING WHERE NEEDED FOR SQUARING, PLUMBING, AND SECURING THE STRUCTURAL FRAMING AGAINST LOADS, SUCH AS WIND LOADS ACTING ON THE EXPOSED FRAMING, AS WELL AS LOADS DUE TO ERECTION EQUIPMENT AND OPERATION. THESE CONSTRUCTION LOADS CAN BE SIGNIFICANTLY HIGHER THAN LOADS WHICH WILL BE APPLIED ONCE THE BUILDING IS COMPLETED ERECTED, AND ACCORDINGLY, BRACING FURNISHED BY CDN BUILDINGS FOR THE STEEL BUILDING SYSTEM CANNOT BE ASSUMED TO BE ADEQUATE DURING ERECTION. COLUMN BASE PLATES ARE TYPICALLY "PIN" CONNECTIONS, AND IT IS THEREFORE EXTREMELY DANGEROUS TO LEAVE ANY COLUMN AS "FREE STANDING" (NO LATERAL SUPPORT AT THE TOP) FOR ANY LENGTH OF TIME, SPECIAL CARE MUST BE TAKEN WHEN COLUMNS ARE GROUTED, AS THEY TEND TO BE UNSTABLE UNTIL THE GROUT IS IN PLACE. TEMPORARY SUPPORTS SUCH AS TEMPORARY GUYS, BRACING, FALSEWORK, CRIBBLING OR OTHER ELEMENTS REQUIRE FOR THE ERECTIONS OPERATION SHALL BE DETERMINED AND FURNISHED AND INSTALLED BY THE ERECTOR.

FABRICATION/DRAWING ERRORS

THE BUILDER/CUSTOMER IS RESPONSIBLE FOR CONTACTING CDN BUILDINGS MANAGEMENT TEAM TO ADVISE CDN BUILDINGS OF FABRICATION/DRAWING PROBLEMS AND CORRESPONDING FIELD CORRECTION COST ESTIMATES. CDN BUILDINGS WILL THEN BE RESPONSIBLE FOR PROVIDING THE BUILDER WITH WRITTEN APPROVAL TO PROCEED WITH APPROPRIATE FIELD CORRECTIONS. THIS WILL BE DONE IN A TIMELY MANNER. IF THE BUILDER PROCEEDS WITH CORRECTIVE WORK WITHOUT CDN BUILDINGS APPROVAL, THEY ARE DOING SO AT THEIR OWN RISK AND COST. CDN BUILDINGS WILL ONLY BE RESPONSIBLE FOR CLAIMS WHERE THE BUILDER/CUSTOMER DOCUMENTS THE PROBLEM, IT'S CORRECTION, AND REASONABLE COSTS FOR THE REPAIR AND SUBMITS SAME FOR PAYMENT WITHIN 15 DAYS OF THE OCCURRENCE.

DRAWING DISCREPANCIES

IN THE CASE OF DISCREPANCIES BETWEEN CDN BUILDINGS DRAWINGS AND DETAILS VERSUS THE PLANS FOR OTHER TRADES, THE CDN BUILDINGS PLANS GOVERN (CISC CODE OF STANDARD PRACTICE)

CORRECTION OF ERRORS AND REPAIRS

THE CORRECTION OF MINOR MISALIGNMENTS BY THE USE OF DRIFT PINS TO DRAW THE COMPONENTS INTO LINE, SHIMMING, MODERATE AMOUNTS OF REAMING, CHIPPING, WELDING, OR CUTTING AND THE REPLACEMENT OF MINOR SHORTAGES OF MATERIAL ARE A NORMAL PART OF ERECTION AND ARE NOT SUBJECT TO CLAIM. (CISC CODE OF STANDARD PRACTICE)

FIELD WELDING

ALL FIELD WELDING SHALL BE DONE AT THE DIRECTION OF A DESIGN PROFESSIONAL AND DONE IN ACCORDANCE WITH CWB REQUIREMENTS BY WELDERS QUALIFIED TO PERFORM THE APPLICABLE WELDING PROCEDURE. USE MINIMUM 70ksi ELECTRODES. FIELD INSPECTION IS NOT BY CDN BUILDINGS.

DELIVERIES AND SHORTAGES

A. UNLESS OTHERWISE SPECIFIED, TERMS SHALL BE F.O.B. CDN BUILDINGS POINT OF MANUFACTURE. IF TRANSPORTATION CHARGES ARE INCORPORATED IN THE PRICE QUOTED, SUCH CHARGES ARE FREIGHT PREPAID UNLESS OTHERWISE SPECIFIED.
B. DELIVERY SHALL BE DEEMED TO OCCUR WHEN THE GOODS ARE SHIPPED FROM THE POINT OF MANUFACTURE.
C. CDN BUILDINGS IS AUTHORIZED TO SHIP INSTALLMENTS. IF FOR ANY REASON THE DELIVERY IS DELAYED BY THE PURCHASER, STORAGE OR DEMURRAGE COSTS WILL BE BORNE BY THE PURCHASER.
D. DELIVERY DATES ARE APPROXIMATE ONLY, AND ANY ESTIMATED DELIVERY SCHEDULE, IF STATED, SHALL BE DETERMINED FROM THE DATE CDN BUILDINGS RECEIVED COMPLETE AND SATISFACTORY INFORMATION NECESSARY TO MANUFACTURE THE GOODS. CDN BUILDINGS SHALL NOT, HOWEVER, BE LIABLE FOR ANY DELAY IN DELIVERY CAUSED BY CONDITIONS BEYOND CDN BUILDINGS REASONABLE CONTROL. IN ADDITION, THERE MAY BE DELAYS IN DELIVERY OF GOODS NOT NORMALLY CARRIED BY CDN BUILDINGS. ANY SUCH CAUSES OF DELAY EVEN THOUGH EXISTING ON THE DATE OF ORDER OR ON THE DATE OF STARTING OF MANUFACTURE SHALL EXTEND THE TIME OF CDN BUILDINGS PERFORMANCE BY THE LENGTH OF DELAYS OCCASIONED THEREBY, INCLUDING DELAYS REASONABLY INCIDENT TO THE RESUMPTION OF NORMAL PROCEDURES.
E. UNDER NO CIRCUMSTANCES SHALL CDN BUILDINGS BE LIABLE FOR ANY INDIRECT OF CONSEQUENTIAL DAMAGES WHATSOEVER.
F. CDN BUILDINGS WILL ENDEAVOR TO DELIVER THE GOODS ON THE REQUIRED DELIVERY DATE. THE CDN BUILDINGS TRUCK IS NOT CONSIDERED LATE IF DELIVERIES ARE WITHIN ONE HOUR OF THE SCHEDULED DELIVERY DATE. IF THE SHIPMENT IS BY CONTRACT CARRIER (FOB DESTINATION) IT IS THE RESPONSIBILITY OF THE CUSTOMER TO FILE CLAIMS WITH THE CARRIER. CDN BUILDINGS CANNOT ASSUME AND LIABILITY FOR THE CLAIM.
G. IN THE EVENT THAT ANY SERVICES ARE TO BE PERFORMED BY CDN BUILDINGS SHALL BE DELAYED BY MORE THAN THIRTY (30) DAYS ON ACCOUNT FACTORS BEYOND CDN BUILDINGS CONTROL, THEN UPON NOTICE FROM CDN BUILDINGS, PURCHASER SHALL PAY CDN BUILDINGS THE COST OF ALL WORK, SERVICES AND MATERIALS TO THE DATE OF SUCH NOTICE.
H. THE PURCHASER SHALL BE RESPONSIBLE TO INSPECT ALL GOODS RECEIVED PURSUANT HERETO. IF THE PURCHASER IS OF THE VIEW THAT PART OF THE GOODS ARE DAMAGED PREVENTING USE OF SAME, SUCH GOODS SHALL BE NOTED AS DAMAGED AND THE CDN BUILDINGS PROJECT MANAGEMENT TEAM SHALL BE NOTIFIED IMMEDIATELY TO DETERMINE WHAT RECTIFICATION IN CDN BUILDINGS SOLE ABSOLUTE DISCRETION IS NECESSARY. CDN BUILDINGS DOES NOT ACCEPT CLAIMS FOR DAMAGE AFTER LOADING AT CDN BUILDINGS PLANT OR CAUSED DURING TRANSIT, UNLOADING OR HANDLING AT THE JOBSITE. FURTHER, CDN BUILDINGS SHALL NOT ACCEPT CLAIMS FOR VIABLE SHORTAGES UNLESS CDN BUILDINGS IS NOTIFIED WITH IN 48 HOURS OF TAKING DELIVERY AND ONE COPY OF THE PACKING LIST, WITH SHORTAGES PROPERLY NOTED, IS RETURNED TO CDN BUILDINGS WITHIN THE SAID 48 HOURS. CDN BUILDINGS SHALL NOT ACCEPT CLAIMS FOR SHORTAGES THAT ARE NOT VISIBLE UNLESS CDN BUILDINGS WITHIN FIFTEEN (15) DAYS OF TAKING THE DELIVERY AND ONE COPY OF THE PACKING LIST, WITH SHORTAGES PROPERLY NOTED, IS RETURNED TO CDN BUILDINGS WITHIN THE SAID FIFTEEN (15) DAYS. CDN BUILDINGS SHALL NOT BE RESPONSIBLE FOR ANY COST, EXPENSE, OR DAMAGE OF ANY KIND ARISING FROM THE USE OD DAMAGED OR OTHERWISE DEFECTIVE GOODS. CDN BUILDINGS WILL NOT ACCEPT THE COST OD EQUIPMENT (RENTAL OR DEPRECIATION), SMALL TOOLS, SUPERVISION, OVERHEAD OR PROFIT SUBJECT TO ANY CLAIM. ANY CLAIM MUST BE APPROVED BY THE CDN BUILDINGS PROJECT MANAGEMENT TEAM.
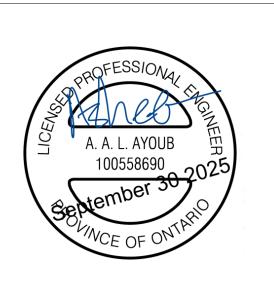
INVOICE PAYMENT

BY ACCEPTANCE OF THE MATERIALS OR SERVICES, THE BUILDER AND/OR CUSTOMER AGREES TO CDN BUILDINGS TERMS & CONDITIONS. AT NO TIME IS IT ACCEPTABLE TO DEDUCT A BACK CHARGE OR SHORTAGE FROM AN INVOICE. EACH CLAIM WILL BE ADJUDICATED ON ITS ON MERIT AND SETTLED ACCORDINGLY.

REVISION TABLE

NO.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2024/07/23
2	ISSUED FOR PERMITS	2024/12/19
3	ISSUED FOR PERMITS	2025/03/21
4	AS PER COMMENTS	2025/06/16
5	AS PER COMMENTS	2025/09/30

KOUTNY TONY

LUSCOMBE DRIVE,
SIMCOE,ONTARIO

GENERAL NOTES

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	BK
CHECKED BY	AA

A0.01

SCALE	3/8" = 1'-0"

LOT INFO

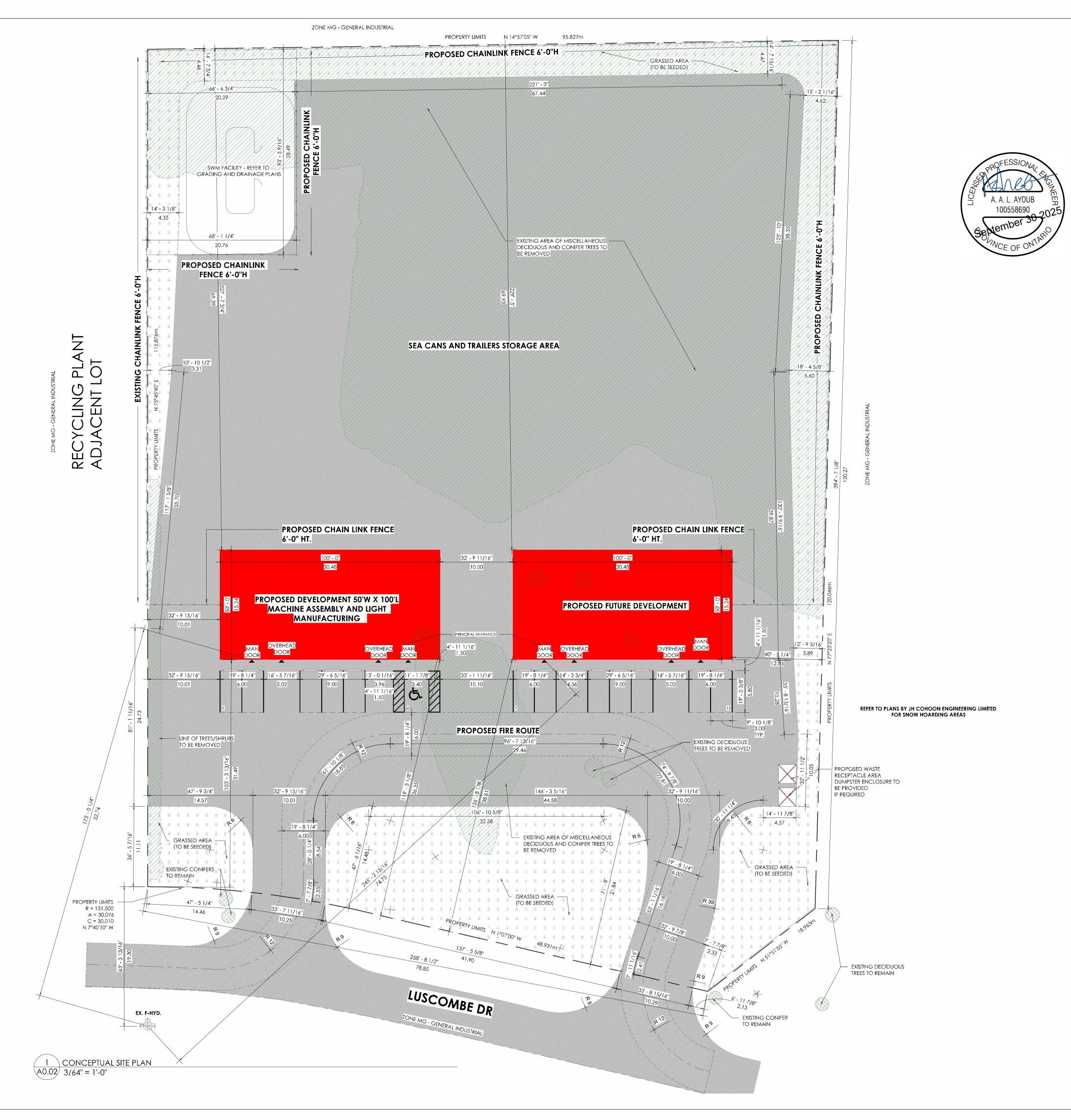**LEGAL DESCRIPTION:** WDM CON. 14, PT. LOT 4
RP37R11237, PART 1
LUSCOMBE DRIVE

TOWNSHIP/CITY: SIMCOE / NORFOLK COUNTY
ZONING: GENERAL INDUSTRIAL ZONE(MG)
ROLL #: 40302503825
BUILDING USE: MACHINE ASSEMBLY AND LIGHT MANUFACTURING

ZONING BY-LAW NO. 0225-2007 - PART 8

	PROVISIONS (m)	PROPOSED (m)
FRONT YARD SETBACK	30M	31.49M
REAR YARD SETBACK	9M	69.39M
MINIMUM INTERIOR SIDE YARD SETBACK	3M	10.01
MINIMUM EXTERIOR SIDE YARD SETBACK	6M	N/A
MAXIMUM HEIGHT	9.5M	7.06M
MAXIMUM COVERAGE - PHASE-1	T.B.C	3.92%
MAXIMUM COVERAGE - ALL PHASES	T.B.C	7.84%
MIN. LANDSCAPE COVERAGE	T.B.C	19.7 %
PARKING SPACES	12 PARKING SPACES + 1 TYPE A ACCESSIBLE PARKING SPACE	13 PARKING SPACES + 1 TYPE A ACCESSIBLE PARKING SPACE

LOT AREA = 127,484.99FT²/ 11,843.743 M²
EXISTING STRUCTURE = 0 FT²/ M²
PROPOSED BUILDING = (PHASE 1) 5000 FT²/ 464.5 M²
PROPOSED BUILDING = (ALL PHASES) 10,000 FT²/ 929.03 M²

ZONE MG - GENERAL INDUSTRIAL

PROPERTY LIMITS   N 14°57'05" W   95.827m

PROPOSED CHAINLINK FENCE 6'-0"H

GRASSED AREA
(TO BE SEEDED)

SWM FACILITY - REFER TO
GRADING AND DRAINAGE PLANS

PROPOSED CHAINLINK FENCE 6'-0"H

EXISTING AREA OF MISCELLANEOUS
DECIDUOUS AND CONIFER TREES TO
BE REMOVED

PROPOSED CHAINLINK FENCE 6'-0"H

PROPOSED CHAINLINK FENCE 6'-0"H

RECYCLING PLANT
ADJACENT LOT

ZONE MG - GENERAL INDUSTRIAL

EXISTING CHAINLINK FENCE 6'-0"H

SEA CANS AND TRAILERS STORAGE AREA

PROPOSED CHAIN LINK FENCE
6'-0" HT.

PROPOSED CHAIN LINK FENCE
6'-0" HT.

PROPOSED DEVELOPMENT 50'W X 100'L
MACHINE ASSEMBLY AND LIGHT
MANUFACTURING

PROPOSED FUTURE DEVELOPMENT

MAN DOOR   OVERHEAD DOOR   OVERHEAD DOOR   MAN DOOR   PRINCIPAL ENTRANCE   MAN DOOR   OVERHEAD DOOR   OVERHEAD DOOR   MAN DOOR

PROPOSED FIRE ROUTE

LINE OF TREES/SHRUBS
TO BE REMOVED

EXISTING DECIDUOUS
TREES TO BE REMOVED

PROPOSED WASTE
RECEPTACLE AREA
DUMPSTER ENCLOSURE TO
BE PROVIDED
IF REQUIRED

REFER TO PLANS BY JH COHOON ENGINEERING LIMITED
FOR SNOW HOARDING AREAS

GRASSED AREA
(TO BE SEEDED)

EXISTING CONIFERS
TO REMAIN

EXISTING AREA OF MISCELLANEOUS
DECIDUOUS AND CONIFER TREES TO
BE REMOVED

GRASSED AREA
(TO BE SEEDED)

GRASSED AREA
(TO BE SEEDED)

PROPERTY LIMITS
R = 131.500
A = 30.076
C = 30.010
N 7°40'10" W

PROPERTY LIMITS   N 1°07'00" W   48.931m

EXISTING DECIDUOUS
TREES TO REMAIN

PROPERTY LIMITS   N 51°51'55" W   18.992m

EX. F-HYD.

EXISTING CONIFER
TO REMAIN

LUSCOMBE DR

ZONE MG - GENERAL INDUSTRIAL

1 / A0.02   CONCEPTUAL SITE PLAN   3/64" = 1'-0"

TRUE NORTH

PROJECT NORTH

LICENSED PROFESSIONAL ENGINEER
A. A. L. AYOUB
100558690
September 30 2025
PROVINCE OF ONTARIO

REVISION TABLE

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5	AS PER COMMENTS	2025/09/30

KOUTNY TONY

LUSCOMBE DRIVE,
SIMCOE,ONTARIO

SITE PLAN

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	WR
CHECKED BY	AA

A0.02

SCALE   As indicated

CDN BUILDINGS

3-523 James Street
Delhi, ON
N4B 2C2

Office: 519 582 8222
Fax: 519 582 2098
Website: http://www.cdnbuildings.com

LICENSED PROFESSIONAL ENGINEER
A. A. L. AYOUB
100558690
September 30, 2025
PROVINCE OF ONTARIO

1 FRONT VIEW
A0.03

2 REAR VIEW
A0.03

KOUTNY TONY

LUSCOMBE DRIVE,
SIMCOE, ONTARIO

ISOMETRIC MODELS

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	BK
CHECKED BY	AA

A0.03

SCALE	

PRINTED ON: 9/30/2025 3:07:15 PM

Door Schedule

Description	Type	Type Mark
COMMERCIAL STEEL MAN DOOR W/ PANIC BARS	36" x 80"	D1
G-5000 INSULATED OVERHEAD DOOR W/ CHAIN FALL OPENER	12'W x 12'H	D2
INTERIOR WASHROOM DOOR W/ PRIVACY LOCK	36" x 80" (1)	D3
INTERIOR OFFICE DOOR W/ LOCKSET	36" x 80" (2)	D4
	38" x 80" (1)	D5

Window Schedule

Description	Type	Type Mark
INSULATED VINYL WINDOW	48" x 36"	W1
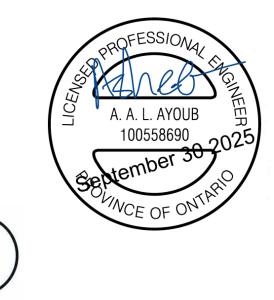
BUILDING CLASSIFICATION :- **3.2.2.71. GROUP F, DIVISION, UP TO 2 STOREYS**
ROOF R VALUE REQUIRED :- R19 + 11 ci
WALL R VALUE REQUIRED :- R13 + 6.5 ci

LICENSED PROFESSIONAL ENGINEER
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ONTARIO BUILDING CODE DATA MATRIX PART-3

					BUILDING CODE REFERENCE
3.00	BUILDING CODE VERSION: O. REG 332/12		LAST AMENDMENT: O. REG. 89/23		
3.01	PROJECT TYPE	CATEGORY:	NEW CONSTRUCTION		[A] 1.2.2.
		DESCRIPTION:	NEW STEEL-FRAMED SHOP/WAREHOUSE		
3.02	MAJOR OCCUPANCY CLASSIFICATION	OCCUPANCY: GROUP-F, DIVISION-2	USE: SHOP/WAREHOUSE W/ ACCESSORY OFFICE		3.1.2.
3.03	SUPERIMPOSED MAJOR OCCUPANCY	YES/NO:	NO		3.2.2.7.
		DESCRIPTION:	N/A		
3.04	BUILDING AREA (m²)	DESCRIPTION: ENVELOPE	EXISTING: N/A	NEW: 480.026	TOTAL: 480.026	[A] 1.4.1.2.
3.05	GROSS AREA (m²)	DESCRIPTION: GROUND FLOOR	EXISTING: N/A	NEW: 453.577	TOTAL: 453.577	[A] 1.4.1.2.
3.06	MEZZANINE AREA (m²)	DESCRIPTION: NOT APPLICABLE	EXISTING:	NEW:	TOTAL:	3.2.1.1.
3.07	BUILDING HEIGHT	STOREYS ABOVE GRADE:	1			[A] 1.4.1.2. & 3.2.1.1.
		HEIGHT ABOVE GRADE:	5.71m			
		STOREYS BELOW GRADE:	0			
3.08	HIGH BUILDING	NO				3.2.6.
3.09	NUMBER OF STREETS/ FIREFIGHTER ACCESS	STREET(S):	1			3.2.2.10 & 3.2.5.
3.10	BUILDING CLASSIFICATION	3.2.2.71	GROUP = F / DIVISION = 2			3.2.2.20 -83.
3.11	SPRINKLER SYSTEM	NOT REQUIRED				3.2.1.5 & 3.2.4.17.-18., 3.2.4.8. TO 3.2.4.10. & 3.2.5.13.
3.12	STANDPIPE SYSTEM	NOT REQUIRED				3.2.9.
3.13	FIRE ALARM SYSTEM	REQUIRED?:	NO			3.2.4.
		TYPE:				
3.14	WATER SUPPLY/ SERVICE IS ADEQUATE	YES				3.2.5.7.
3.15	CONSTRUCTION TYPE	RESTRICTION:	COMBUSTIBLE PERMITTED			3.2.2.20.-83. & 3.2.1.4.
		ACTUAL:	NON-COMBUSTIBLE			
		HEAVY TIMBER:	NO			
3.16	IMPORTANCE CATEGORY	NORMAL				4.1.2.1.(3) & T.4.1.2.1.B
3.17	SEISMIC HAZARD INDEX	IE Fa Sa (0.2) =	<=0.35			4.1.2.1.(5) & 4.1.8.18.(1)
3.18	OCCUPANT LOAD	AREA: ALL	OCC. TYPE F-2	BASED ON: FIXTURES	OCC. LOAD: 18	POST LIMIT: NO	4.1.2.1.(3) & 4.1.8.18.(1)
3.19	BARRIER FREE DESIGN	BARRIER FREE?:	YES			3.8. & 3.1.8.2.
		ENTRANCES:	1			
3.20	HAZARDOUS SUBSTANCES	NO				3.3.1.2. & 3.3.1.19.
3.21	REQUIRED FIRE RESISTANCE RATINGS	HORIZ. ASSEMBLY:	RATING:	SUPPORTING ASSEMBLY FRR	N/C IN LIEU OF FRR	3.2.2.20-83., 3.2.1.2., 3.2.1.4., 3.2.2.15.
		FLOORS	0.75H	0.75H	NO	
3.22	SPATIAL SEPARATION	EBF / AREA	L.D.(m)	L/H OR H/L:	%OP'G (PERMITTED)	FRR	3.2.3.
		N 130.06m²	69.64	7:1	100%	0	
		S 130.06m²	32.60	7:1	100%	0	
		E 86.07m²	5.0	3.5:1	25%	0	
		W 86.07m²	9.90	3.5:1	69%	0	
3.23	PLUMBING FIXTURE REQUIREMENTS	RATIO:	MALE:FEMALE = 50:50 EXCEPT NOTED OTHERWISE			3.7.4., 3.8.2.3.
		AREA: ALL	OCC. LOAD: 18	OBC REF: 3.7.4.9	WC's REQUIRED: 2	WC's ACTUAL: 2	

WALL TYPE SCHEDULE

W1
- 29 Ga. DIAMOND RIB STEEL SHEETING (VERTICAL) EXTERIOR STEEL SHEETING
- 5" C-GIRTS @ 36" C/C
- 1"x4" STRAPPING @ 36" C/C
- 2" RIGID INSULATION (R-6.3 MINIMUM)
- AIR BARRIER
- 5/8" T&G PLYWOOD SHT'G
- 5" SQ. HSS POSTS
- 4" FIBREGLASS BATT INSULATION (R-13)
- VAPOUR BARRIER
- 29 Ga. INTERIOR STEEL SHEETING

W2
- 1/2" GYPSUM WALL BOARD
- 3 5/8" METAL STUDS @ 16" C/C
- 1/2" GYPSUM WALL BOARD

W3
- 1/2" GYPSUM WALL BOARD
- 6" METAL STUDS @ 16" C/C
- 1/2" GYPSUM WALL BOARD

Floor Plan Labels

PROP. U.T.R.
9.099 m²

SHOP/WAREHOUSE
413.798 m²

POTENTIAL OFFICE SPACE
13.147 m²

PROP. WASHROOM
4.386 m²

POTENTIAL OFFICE SPACE
13.147 m²

PROVISION FOR FUTURE
1830mm X 810mm ADULT CHANGE TABLE
750mm X 750mm L-SHAPE GRAB BAR @ 750mm A.F.F.
TOILET PAPER DISPENSER
EMERGENCY CALL BUTTON
600mm L. GRAB BAR @ 150mm ABOVE T/O W/C TANK
900mm X 1500mm W/C TRANSFER SPACE

DOOR OPERATOR BUTTON
DOOR LOCK
920mm x 1370mm LAVATORY APPROACH
SOAP DISPENSER - MAX. 1100mm A.F.F.
SEMI-RECESSED TRASH RECEPTACLE/ PAPER TOWEL DISPENSER - MAX. 1100mm A.F.F.

TYPICAL FOR AREAS SHOWN GREY: PROVIDE ROUGH IN ONLY. PARTITIONS AND DOORS/INTERIOR FITOUTS NOT PER THIS CONTRACT.

TRAVEL DISTANCE 84'-0"
TRAVEL DISTANCE 82'-7"

1 FP - GROUND FLOOR PLAN
A1.01 3/16" = 1'-0"

Project Information

KOUTNY TONY

LUSCOMBE DRIVE, SIMCOE, ONTARIO

FLOOR PLAN

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	BK
CHECKED BY	AA

A1.01

SCALE — As indicated

LICENSED PROFESSIONAL ENGINEER
A. A. L. AYOUB
100558690
PROVINCE OF ONTARIO
September 30 2025

100' - 0"
30.48

RIDGE PROFILE

4:12

4:12

29 GA CORRUGATED SHEET METAL
ROOF SHEETING (VERTICAL)
TUFF RIB TYP

EAVES HEIGHT
14' - 0"

29 GA HEAVY EAVESTROUGH PROFILE W/
DOWNSPOUT APPROX. EVERY 30'
14 GA HEAVY EAVES PROFILE TYP BOTH SIDES

EXTERIOR LIGHTS (#3)

14' - 0"
4.27

29 GA CORRUGATED SHEET METAL
WALL SHEETING (VERTICAL)
DIAMOND RIB TYP

FOR WALL ASSEMBLY DETAILS SEE
ARCHITECTURAL DETAILS

T/O FLR FIN
0"

1 NORTH ELEVATION - COVERINGS
A2.01   1/4" = 1'-0"

REVISION TABLE

NO.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2024/07/23
2	ISSUED FOR PERMITS	2024/12/19
3	ISSUED FOR PERMITS	2025/03/21
4	AS PER COMMENTS	2025/06/16
5	AS PER COMMENTS	2025/09/30

100' - 0"
30.48

RIDGE PROFILE

4:12

4:12

29 GA CORRUGATED SHEET METAL
ROOF SHEETING (VERTICAL)
TUFF RIB TYP

EAVES HEIGHT

29 GA HEAVY EAVESTROUGH PROFILE W/
DOWNSPOUT APPROX. EVERY 30'
14 GA HEAVY EAVES PROFILE TYP BOTH SIDES

EXTERIOR LIGHTS (#3)

14' - 0"
4.27

12'W X 12'H G-5000 INSULATED O.H
DOOW W/ CHAIN FALL OPENER

29 GA CORRUGATED SHEET METAL
WALL SHEETING (VERTICAL)
DIAMOND RIB TYP

FOR WALL ASSEMBLY DETAILS SEE
ARCHITECTURAL DETAILS

48"W X 36"H INSULATED VINYL WINDOW

36"W X 80"H COMMERCIAL STEEL MAN DOOR
W/ PANIC BARS

T/O FLR FIN
0"

2 SOUTH ELEVATION - COVERINGS
A2.01   1/4" = 1'-0"

ELEVATION LEGEND

	SHEET METAL
	POLY CARBONATE
	STEEL
	CONCRETE/GRAVEL

KOUTNY TONY

LUSCOMBE DRIVE,
SIMCOE, ONTARIO

ELEVATION

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	BK
CHECKED BY	AA

A2.01

SCALE	As indicated

LICENSED PROFESSIONAL ENGINEER
A. A. L. AYOUB
100558690
September 30 2025
PROVINCE OF ONTARIO

EAST ELEVATION - COVERINGS

RIDGE PROFILE

29 GA CORRUGATED SHEET METAL
ROOF SHEETING (VERTICAL)
TUFF RIB TYP

29 GA HEAVY EAVESTROUGH PROFILE W/
DOWNSPOUT APPROX. EVERY 30'

14 GA HEAVY EAVES PROFILE TYP BOTH SIDES

EXTERIOR LIGHTS (#1)

29 GA CORRUGATED SHEET METAL
WALL SHEETING (VERTICAL)
DIAMOND RIB TYP

FOR WALL ASSEMBLY DETAILS SEE ARCHITECTURAL DETAILS

ENGINEERED CONCRETE SLAB ON GRADE
SEE SHEET FOUNDATION PLAN

EAVES HEIGHT
14' - 0"

T/O FLR FIN.
0"

50' - 0"
15.24

10' - 0" 10' - 0" 10' - 0" 10' - 0" 10' - 0"
3.05   3.05   3.05   3.05   3.05

22' - 8 3/4"
6.93

14' - 0"
4.27

51' - 1 1/4"
15.58

1 / A2.02 EAST ELEVATION - COVERINGS
1/4" = 1'-0"

WEST ELEVATION - COVERINGS

RIDGE PROFILE

29 GA CORRUGATED SHEET METAL
ROOF SHEETING (VERTICAL)
TUFF RIB TYP

29 GA HEAVY EAVESTROUGH PROFILE W/
DOWNSPOUT APPROX. EVERY 30'

14 GA HEAVY EAVES PROFILE TYP BOTH SIDES

EXTERIOR LIGHTS (#1)

29 GA CORRUGATED SHEET METAL
WALL SHEETING (VERTICAL)
DIAMOND RIB TYP

FOR WALL ASSEMBLY DETAILS SEE ARCHITECTURAL DETAILS

ENGINEERED CONCRETE SLAB ON GRADE
SEE SHEET FOUNDATION PLAN

EAVES HEIGHT
4' - 0"

T/O FLR FIN.
0"

50' - 0"
15.24

10' - 0" 10' - 0" 10' - 0" 10' - 0" 10' - 0"
3.05   3.05   3.05   3.05   3.05

14' - 0"
4.27

2 / A2.02 WEST ELEVATION - COVERINGS
1/4" = 1'-0"
AA

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ELEVATION LEGEND

	SHEET METAL
	POLY CARBONATE
	STEEL
	CONCRETE/GRAVEL

KOUTNY TONY

LUSCOMBE DRIVE,
SIMCOE, ONTARIO

ELEVATION

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	BK
CHECKED BY	AA

A2.02

SCALE	As indicated
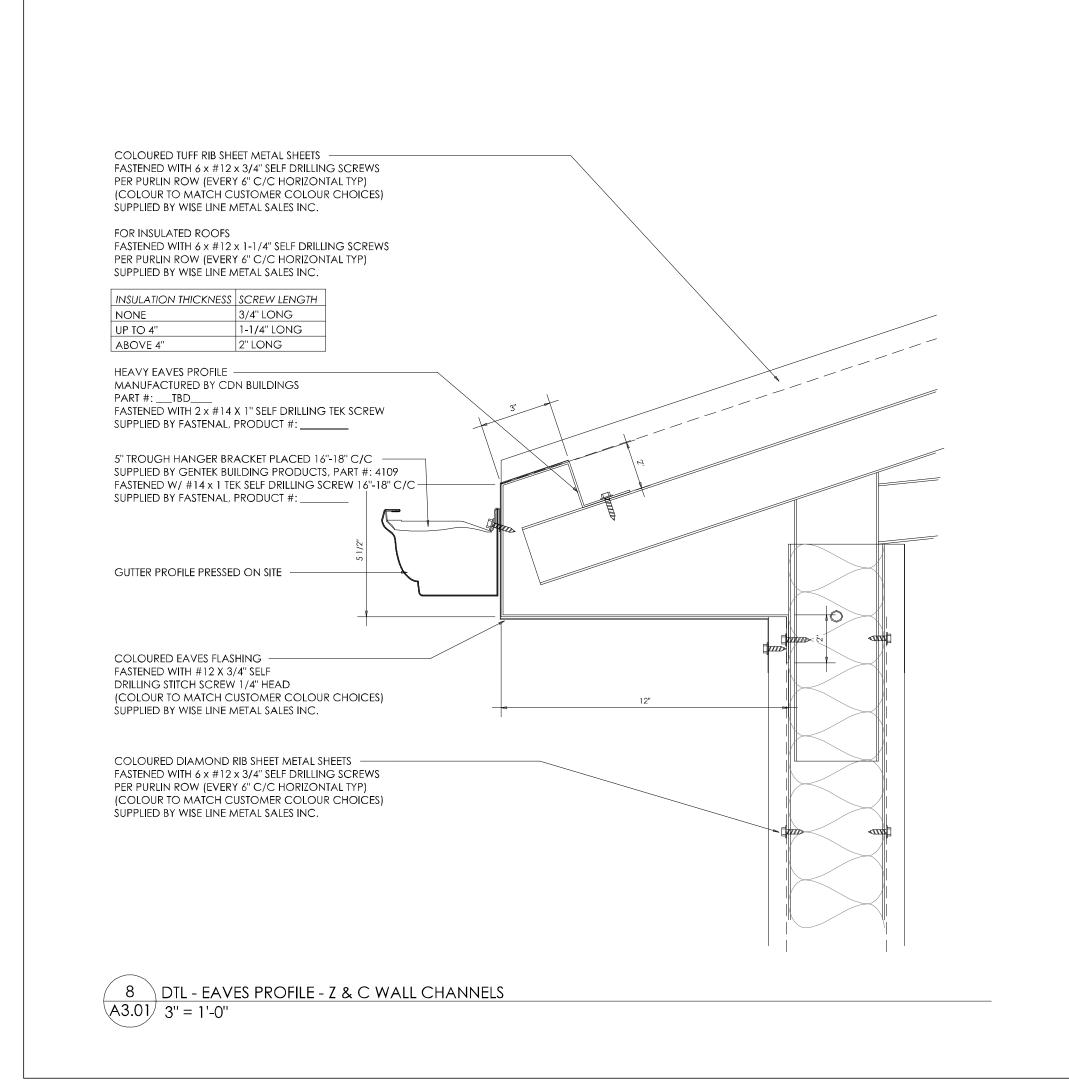
LICENSED PROFESSIONAL ENGINEER
A. A. L. AYOUB
100558690
PROVINCE OF ONTARIO
September 30 2025

Detail 1 — INTERIOR EAVES W/DOUBLE SIDED SHEATHING
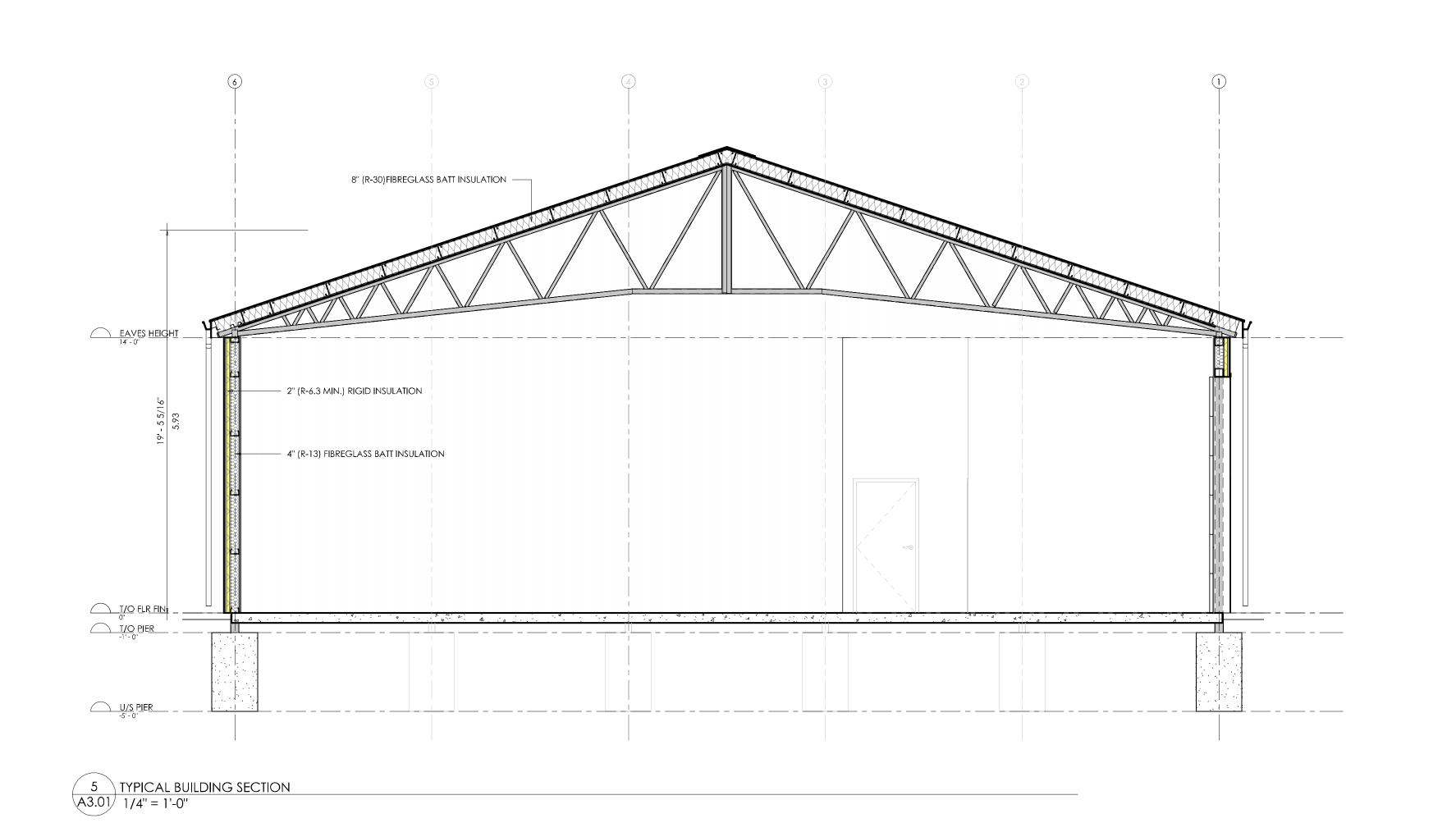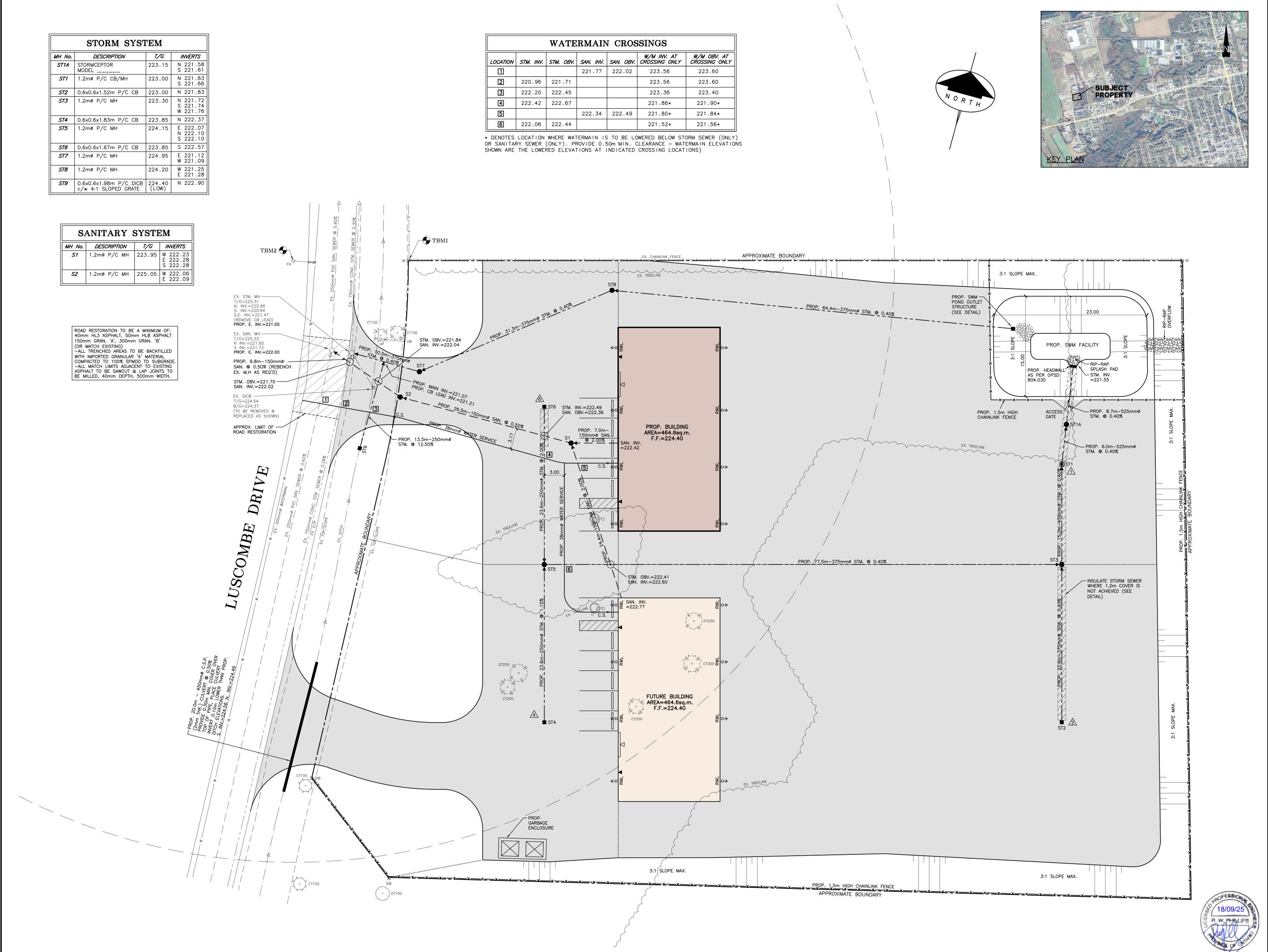
- 29ga CORNER FLASHING
- (2)#14-1/2" SELF TAPPING TEK SCREW
- #14x1-1/2" SELF TAPPING TEK SCREWS
- HAT BRACKET
- 2" RIGID INSUL.
- 1"x4" STRAPPING @ 36"C/C
- 29ga DIAMOND RIB SHEATHING
- 5/8" T&G PLYWOOD SHEATHING
- 5" C-GIRTS @ 36" C/C
- 5" SQ. HSS POST PER POST PLAN
- 26ga DIAMOND TUFF RIB INTERIOR SHEATHING
- WALL SHEATHING
- 2" HSS INFILL FRAMING (TYP)

1 INTERIOR EAVES W/DOUBLE SIDED SHEATHING
A3.01   1 1/2" = 1'-0"

Detail 2 — DOUBLE WALL @ CORNER

2 DOUBLE WALL @ CORNER
A3.01   1 1/2" = 1'-0"

Detail 3 — INTERIOR EAVES W/DOUBLE SIDED SHEATHING

- 29ga CORRUGATED SHEET METAL ROOF SHEATHING (VERTICAL) TUFF RIB TYPE
- 8" ROOF Z-PURLIN (TYP)
- 8" FIBREGLASS INSULATION BATTS (MIN. R-30)
- 4 1/2"HSS TRUSS STUB INSERT
- VAPOUR BARRIER
- 29ga CORRUGATED SHEET METAL SHEATHING C/W DIAMOND RIB PROFILE
- 2 1/2" SQ. HSS TOP CHORD
- 14ga INTERIOR EAVES PROFILE C/W #14x1" SELF TAPPING TEK SCREWS
- 2 1/2" SQ. HSS BOTTOM CHORD
- 14ga HEAVY EAVES PROFILE
- 29ga EAVES FLASHING
- 5" SQ. HSS MAIN/GABLE END POST
- 2" RIGID INSULATION (MIN. R-6.3)
- 1"X4" STRAPPING @ 36" C/C
- #14x1" SELF TAPPING TEK SCREWS @ 12" O.C. (TYP)
- 29ga CORRUGATED SHEET METAL SHEATHING C/W DIAMOND RIB PROFILE (VERTICAL)
- 1/2"Ø HEX BOLT
- 4" R-13 INSULATION BLANKET
- 5/8" T&G PLYWOOD SHEATHING
- 5" C-CHANNEL WALL PURLIN @ 36" O.C.
- 29ga CORRUGATED SHEET METAL SHEATHING C/W DIAMOND RIB PROFILE (VERTICAL)
- VAPOUR BARRIER
- EXTERIOR / INTERIOR

3 INTERIOR EAVES W/DOUBLE SIDED SHEATHING
A3.01   1 1/2" = 1'-0"

Detail 4 — DOUBLE SIDED WALL

- EXTERIOR / INTERIOR
- 5/8" T&G PLYWOOD SHEATHING
- 5" SQ. HSS MAIN/GABLE END POST
- 4" R-13 INSULATION BLANKET
- #14x1" SELF TAPPING TEK SCREWS @ 12" O.C.
- 29ga CORRUGATED SHEET METAL SHEATHING C/W DIAMOND RIB PROFILE (VERTICAL)
- 2" RIGID INSUL. (MIN. R-6.3)
- 1"x4" STRAPPING @ 36" C/C
- 6" ENGINEERED CONCRETE SLAB
- AIR BARRIER
- VAPOUR BARRIER
- #14x1" SELF TAPPING TEK SCREWS @ 12" O.C.
- 29ga CORRUGATED SHEET METAL SHEATHING C/W DIAMOND RIB PROFILE (VERTICAL)
- 5"C-CHANNEL WALL PURLIN @ 36" O.C.
- 3"
- 0.08

4 DOUBLE SIDED WALL
A3.01   1 1/2" = 1'-0"

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Detail 8 — DTL - EAVES PROFILE - Z & C WALL CHANNELS

- COLOURED TUFF RIB SHEET METAL SHEETS FASTENED WITH 6 x #12 x 3/4" SELF DRILLING SCREWS PER PURLIN ROW (EVERY 6" C/C HORIZONTAL TYP) (COLOUR TO MATCH CUSTOMER COLOUR CHOICES) SUPPLIED BY WISE LINE METAL SALES INC.

- FOR INSULATED ROOFS FASTENED WITH 6 x #12 x 1-1/4" SELF DRILLING SCREWS PER PURLIN ROW (EVERY 6" C/C HORIZONTAL TYP) SUPPLIED BY WISE LINE METAL SALES INC.

INSULATION THICKNESS	SCREW LENGTH
NONE	3/4" LONG
UP TO 4"	1-1/4" LONG
ABOVE 4"	2" LONG

- HEAVY EAVES PROFILE MANUFACTURED BY CDN BUILDINGS PART #: ___TBD___ FASTENED WITH 2 x #14 X 1" SELF DRILLING TEK SCREW SUPPLIED BY FASTENAL, PRODUCT #: _____

- 5" TROUGH HANGER BRACKET PLACED 16"-18" C/C SUPPLIED BY GENTEK BUILDING PRODUCTS. PART #: 4109 FASTENED W/ #14 x 1 TEK DRILLING SCREW 16"-18" C/C SUPPLIED BY FASTENAL, PRODUCT #: _____

- GUTTER PROFILE PRESSED ON SITE

- COLOURED EAVES FLASHING FASTENED WITH #12 X 3/4" SELF DRILLING STITCH SCREW 1/4" HEAD (COLOUR TO MATCH CUSTOMER COLOUR CHOICES) SUPPLIED BY WISE LINE METAL SALES INC.

- COLOURED DIAMOND RIB SHEET METAL SHEETS FASTENED WITH 6 x #12 x 3/4" SELF DRILLING SCREWS PER PURLIN ROW (EVERY 6" C/C HORIZONTAL TYP) (COLOUR TO MATCH CUSTOMER COLOUR CHOICES) SUPPLIED BY WISE LINE METAL SALES INC.

- 3"
- 5 1/2"
- 12"

8 DTL - EAVES PROFILE - Z & C WALL CHANNELS
A3.01   3" = 1'-0"

Detail 5 — TYPICAL BUILDING SECTION

- 8" (R-30)FIBREGLASS BATT INSULATION
- 2" (R-6.3 MIN.) RIGID INSULATION
- 4" (R-13) FIBREGLASS BATT INSULATION
- EAVES HEIGHT 14'-0"
- 19' - 5 5/16" 5.93
- T/O FLR FNSH
- T/O PIER -1'-0"
- U/S PIER -5'-0"
- ⑥ ⑤ ④ ③ ② ①

5 TYPICAL BUILDING SECTION
A3.01   1/4" = 1'-0"

KOUTNY TONY

LUSCOMBE DRIVE,
SIMCOE, ONTARIO

DETAILS

PROJECT NUMBER	24-1022
DATE	2024/07/02
DRAWN BY	WR
CHECKED BY	AA

A3.01

SCALE	As indicated

STORM SYSTEM

MH No.	DESCRIPTION	T/G	INVERTS
ST1A	STORMCEPTOR MODEL _____	223.15	N 221.58 / S 221.61
ST1	1.2mø P/C CB/MH	223.00	N 221.63 / S 221.66
ST2	0.6x0.6x1.52m P/C CB	223.00	N 221.83
ST3	1.2mø P/C MH	223.30	N 221.72 / S 221.74 / W 221.76
ST4	0.6x0.6x1.83m P/C CB	223.85	N 222.37
ST5	1.2mø P/C MH	224.15	E 222.07 / N 222.10 / S 222.10
ST6	0.6x0.6x1.67m P/C CB	223.85	S 222.57
ST7	1.2mø P/C MH	224.95	E 221.12 / W 221.09
ST8	1.2mø P/C MH	224.20	W 221.25 / E 221.28
ST9	0.6x0.6x1.98m P/C DICB c/w 4:1 SLOPED GRATE	224.40 (LOW)	N 222.90

SANITARY SYSTEM

MH No.	DESCRIPTION	T/G	INVERTS
S1	1.2mø P/C MH	223.95	W 222.23 / E 222.28 / S 222.28
S2	1.2mø P/C MH	225.05	W 222.06 / E 222.09

WATERMAIN CROSSINGS

LOCATION	STM. INV.	STM. OBV.	SAN. INV.	SAN. OBV.	W/M INV. AT CROSSING ONLY	W/M OBV. AT CROSSING ONLY
1			221.77	222.02	223.56	223.60
2	220.96	221.71			223.56	223.60
3	222.20	222.45			223.36	223.40
4	222.42	222.67			221.86*	221.90*
5			222.34	222.49	221.80*	221.84*
6	222.06	222.44			221.52*	221.56*

* DENOTES LOCATION WHERE WATERMAIN IS TO BE LOWERED BELOW STORM SEWER (ONLY) OR SANITARY SEWER (ONLY). PROVIDE 0.50m MIN. CLEARANCE — WATERMAIN ELEVATIONS SHOWN ARE THE LOWERED ELEVATIONS AT INDICATED CROSSING LOCATIONS)

ROAD RESTORATION TO BE A MINIMUM OF:
40mm HL3 ASPHALT, 50mm HL8 ASPHALT 150mm GRAN. 'A', 300mm GRAN. 'B' (OR MATCH EXISTING)
-ALL TRENCHED AREAS TO BE BACKFILLED WITH IMPORTED GRANULAR 'A' MATERIAL COMPACTED TO 100% SPMDD TO SUBGRADE.
-ALL MATCH LIMITS ADJACENT TO EXISTING ASPHALT TO BE SAWCUT & LAP JOINTS TO BE MILLED, 40mm DEPTH, 500mm WIDTH.

LEGEND:

Symbol	Description
○ S1	EXISTING SANITARY MANHOLE
○ ST1	EXISTING STORM MANHOLE
□ CB	EXISTING CATCHBASIN
✧ FH	EXISTING FIRE HYDRANT
▷◁ V&B	EXISTING VALVE & BOX
• WB	EXISTING WATER BOX
● S1	PROPOSED SANITARY MANHOLE
— — —	PROPOSED SANITARY SERVICE
———————	PROPOSED STORM SERVICE
● ST1	PROPOSED STORM MANHOLE
◉ ST1	PROPOSED CATCHBASIN MANHOLE
■ CB	PROPOSED CATCHBASIN
—CS—	PROPOSED WATER SERVICE & CURBSTOP
RWL ○→	PROPOSED RAIN WATER LEADER

SUBJECT PROPERTY

KEY PLAN

NORTH

LUSCOMBE DRIVE

PROP. BUILDING AREA=464.6sq.m. F.F.=224.40

FUTURE BUILDING AREA=464.6sq.m. F.F.=224.40

PROP. SWM FACILITY

PROP. SWM POND OUTLET STRUCTURE (SEE DETAIL)

PROP. HEADWALL AS PER OPSD 804.030 STM. INV.=221.55

PROP. GARBAGE ENCLOSURE

3:1 SLOPE MAX.

INSULATE STORM SEWER WHERE 1.2m COVER IS NOT ACHIEVED (SEE DETAIL)

T.B.M. No. 1 ELEV. = 225.25m (GEO)
TOP OF IRON BAR @ NORTHWEST CORNER OF PROPERTY AS SHOWN (FROM JoeTOPO SURVEY)

T.B.M. No. 2 ELEV. = 226.10m (GEO)
TOP NUT OF FIRE HYDRANT WEST SIDE OF LUSCOMBE DRIVE, AS SHOWN (TAKEN BY S. KIPP JAN. 7, 2025)

| 1 | AS PER COUNTY COMMENTS | 08/01/25 | K.P.B. |
| NO. | REVISION | DATE (MM/DD/YY) | BY |

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS

440 HARDY ROAD , UNIT #1 , BRANTFORD — ONTARIO , N3T 5L8
TEL. (519) 753-2656 FAX. (519) 753-4263 www.cohooneng.com

PROJECT:
PROPOSED MANUFACTURING BUILDING
LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT:
TONY KOUNTY

SERVICING PLAN

DESIGN: R.W.P.	SCALE:	1:250
DRAWN: S.L.M./K.P.B.	JOB No:	17233
CHECKED: R.W.P.		
SHEET: 3 of 4	DWG. No:	17233-3
DATE: MAR. 20/25		

18/09/25

SILTATION & EROSION CONTROL NOTES:

1. THE SILTATION & EROSION CONTROL (SEC) MEASURES ILLUSTRATED ON THIS PLAN ARE CONSIDERED TO BE THE MINIMUM REQUIREMENT. SITE CONDITIONS MAY REQUIRE ADDITIONAL MEASURES WHICH WILL BE IDENTIFIED BY THE ENGINEER DURING CONSTRUCTION.

2. ALL SEC MEASURES ARE TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

3. OWNER/CONTRACTOR TO MAINTAIN EROSION CONTROL MEASURES THROUGHOUT SITE UNTIL A COMPLETE GRASS/VEGETATION COVER IS ACHIEVED.

4. ONLY AT THE DIRECTION OF THE ENGINEER ARE THE SEC MEASURES TO BE REMOVED.

5. SITE WORKS ARE TO BE STAGED IN SUCH A MANNER THAT EROSION WILL BE MINIMIZED.

6. CLEARING AND GRUBBING OF THE SITE SHOULD BE KEPT TO A MINIMUM AND VEGETATION REMOVED ONLY IN ADVANCE OF IMMEDIATE CONSTRUCTION.

7. STOCKPILES OF EARTH OR TOPSOIL ARE TO BE LOCATED AND PROTECTED TO MINIMIZE ENVIRONMENTAL INTERFERENCE. EROSION CONTROL FENCING IS TO BE INSTALLED AROUND THE BASE OF ALL STOCKPILES.

8. THE OWNER IS RESPONSIBLE TO ENSURE THE MUNICIPAL ROADWAYS ARE CLEANED OF ALL SEDIMENTS FROM VEHICULAR TRACKING ETC. TO AND FROM THE SITE, AT THE END OF EACH WORKDAY.

9. ALL EXISTING AND PROPOSED CATCHBASINS ON THE SUBJECT PROPERTY, PLUS ANY CATCHBASINS WITHIN THE INFLUENCE OF RUNOFF FROM THE SITE, ARE TO BE PROTECTED WITH FILTER CLOTH OR APPROVED EQUIVALENT.

10. INSPECT SEDIMENT CONTROL MEASURES ON A WEEKLY BASIS, AFTER RAINFALL EVENTS, AFTER SIGNIFICANT SNOWMELT EVENTS, AND DURING EXTENDED RAIN OR SNOWMELT PERIODS. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.

KEY PLAN

SUBJECT PROPERTY

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND:

- EXISTING ELEVATIONS
- PROPOSED ELEVATIONS
- PROPOSED SWALE ELEVATIONS
- PROPOSED DITCH ELEVATIONS
- PROPOSED SWALE
- GENERAL DRAINAGE
- DENOTES MANDOOR LOCATIONS
- DENOTES OVERHEAD DOOR LOCATIONS
- PROPOSED RAIN WATER LEADER LOCATION
- PROPOSED PRE-ASSEMBLED SILTATION CONTROL FENCING
- SILT SACK AS SHOWN
- EX. TREES TO REMAIN
- EX. TREES TO BE REMOVED
- OVERLAND FLOW ROUTE
- LIMIT OF S.W.M. POND (100 Yr. EVENT) MAX. POND ELEVATION AS NOTED

NOTES:

1. ALL ELEVATIONS SHOWN ARE METRIC.

2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)

3. TOPOGRAPHIC SURVEY PROVIDED BY JoeTOPO SURVEYS AND CADD INC. DATED NOV. 14, 2024.

LUSCOMBE DRIVE

POND No. 6 MAX. ELEV.=224.15

PROP. BUILDING AREA=464.6sq.m. F.F.=224.40

FUTURE BUILDING AREA=464.6sq.m. F.F.=224.40

POND No. 4 MAX. ELEV.=224.15

POND No. 1 MAX. ELEV.=223.20

POND No. 2 MAX. ELEV.=223.30

PROP. SWM FACILITY

MAX. 100Yr ELEV.=223.07

RIP-RAP OVERFLOW

RIP-RAP SPLASH PAD

PROP. 1.5m HIGH CHAINLINK FENCE

ACCESS GATE

PROVIDE SILT FENCE AROUND PERIMETER OF SITE (SEE DETAIL)

3:1 SLOPE MAX.

EX. CHAINLINK FENCE

APPROXIMATE BOUNDARY

PROP. GARBAGE ENCLOSURE

T.B.M. No. 1 ELEV. = 225.25m (GEO)
TOP OF IRON BAR @ NORTHWEST CORNER OF PROPERTY AS SHOWN (FROM JoeTOPO SURVEY)

T.B.M. No. 2 ELEV. = 226.10m (GEO)
TOP NUT OF FIRE HYDRANT WEST SIDE OF LUSCOMBE DRIVE, AS SHOWN (TAKEN BY S. KIPP JAN. 7, 2025)

NO.	REVISION	DATE (MM/DD/YY)	BY
1	AS PER COUNTY COMMENTS	08/01/25	K.P.B.

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PROJECT:

PROPOSED MANUFACTURING BUILDING
LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT:

TONY KOUNTY

GRADING AND SILTATION & EROSION CONTROL PLAN

DESIGN: R.W.P.	SCALE: 1:250		
DRAWN: S.L.M./K.P.B.	JOB No: 17233		
CHECKED: R.W.P.			
SHEET: 2 of 4	DWG. No: 17233—2		
DATE: MAR. 20/25			

18/09/25

SITE STATISTICS

ITEM	PROPOSAL	ZONING BYLAW REQUIREMENTS	COMPLIANCE ✓ MEETS REQUIREMENTS X REZONING REQUIRED
ZONING CATEGORY	MG	MG	✓
LOT AREA (sq. m.)	11,541	1,855 MIN.	✓
LOT FRONTAGE (m)	92.52±	30.00 MIN.	✓
GROUND FLOOR AREA (sq. m.) – PROPOSED	464.5	N/A	✓
LOT COVERAGE	4.0%	N/A	✓
STREET SETBACK (m)	31.71	6.00 MIN.	✓
REAR YARD (m)	69.36	9.00 MIN.	✓
SIDE YARD (m)	10.00	3.00 MIN.	✓
NUMBER OF PARKING SPACES	6	6 *	✓
NUMBER OF ACCESSIBLE PARKING SPACES	1	1 (TYPE 'A')	✓
NUMBER OF LOADING SPACES	–	–	
PARKING STALL DIMENSIONS (m)	3.00 x 5.80	3.00 x 5.80	✓
ACCESSIBLE PARKING STALL DIMENSIONS (m)	4.90 x 5.50 3.90 x 5.50	3.4(+1.5)x 5.80 (TYPE 'A') 2.4(+1.5)x 5.80 (TYPE 'B')	✓
SHIPPING CONTAINERS	–	10.0% MAX. LOT AREA	–
OUTDOOR STORAGE	–	PROHIBITED IN FRONT/EXT. YARDS	–
BUILDING HEIGHT (m)	7.06	–	

* CALCULATION IS BASED ON (INDUSTRIAL) 1 PARKING SPACE FOR EVERY 90 sq.m. OF FLOOR AREA.

** ITEM REQUIRES A VARIANCE

FIRE ROUTE
FIRE ROUTE SIGN DETAIL
N.T.S.

Disabled Parking Permit Rb-93
BY PERMIT ONLY

Sign No. & Cut Image Ref.	Blank	Special Notes
Rb-93 (9300 x 9450)	B-7	Must comply with HTA and Regulations. (For Bilingual version, see Rb-93 (B).

Sign Element	Colour	Min. Refl	Font
Background	White	Type I	Series "C"
Border boxed / Outer	Black / White	None / Type I	
Text	Black	None	
Symbol	Black / Red / Blue	None / Type I / Type I	

BARRIER FREE PARKING SIGN DETAIL
N.T.S.

NORTH

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND:
- ▲ DENOTES MANDOOR LOCATIONS
- △ DENOTES OVERHEAD DOOR LOCATIONS
- AP DENOTES ACCESSIBLE PARKING SIGN
- FR DENOTES FIRE ROUTE SIGN
- EX. TREES TO REMAIN
- EX. TREES TO BE REMOVED

SUBJECT PROPERTY
KEY PLAN

NOTES:
1. ALL ELEVATIONS SHOWN ARE METRIC.
2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)

'MG'

LUSCOMBE DRIVE

GRASS

PROP. BUILDING AREA=464.6sq.m. F.F.=224.40

FUTURE BUILDING AREA=464.6sq.m. F.F.=224.40

PROP. SWM FACILITY

PROP. SEA CANS AND TRAILER STORAGE AREA

H.D. ASPHALT

PROP. 1.5m HIGH CHAINLINK FENCE

ACCESS GATE

PROP. GARBAGE ENCLOSURE

SNOW STORAGE

SNOW STORAGE

3:1 SLOPE MAX.

APPROXIMATE BOUNDARY

FIRE ROUTE

1	AS PER COUNTY COMMENTS	08/01/25	K.P.B.
NO.	REVISION	DATE (MM/DD/YY)	BY

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS

440 HARDY ROAD , UNIT #1 , BRANTFORD – ONTARIO , N3T 5L8
TEL. (519) 753–2656 FAX. (519) 753–4263 www.cohooneng.com

PROJECT:
PROPOSED MANUFACTURING BUILDING LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT:
TONY KOUNTY

SITE PLAN

DESIGN:	R.W.P.	SCALE:	1:250
DRAWN:	S.L.M./K.P.B.	JOB No:	17233
CHECKED:	R.W.P.		
SHEET:	1 of 4	DWG. No:	17233–1
DATE:	MAR. 20/25		

18/09/25

ROADWORKS:

1. ROADWAYS & RELATED WORKS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.

2. CATCH BASIN CONNECTIONS TO BE PVC PIPE CSA B182.4, SDR 35 OR 'ULTRA RIB'. SINGLE CATCH BASIN LEADS TO BE MIN. 250mm DIA. DOUBLE CATCH BASIN LEADS TO BE MIN. 300mm DIA. REAR LOT CATCHBASIN LEADS AND DITCH INLET LEADS TO BE CSA A257.1 EXTRA STRENGTH CL3 CONC. 300mm DIA. AT 1.0% MIN.

3. SINGLE CATCH BASINS AS PER OPSD 705.010 FRAME AND COVER AS PER OPSD 400.110.

4. FINAL ROADWAY CROSSFALL TO BE 2.0%.

5. VALVES, MANHOLES AND CATCH BASINS SHALL BE PLACED AT ASPHALT BINDER COURSE (HL4) ELEVATION AS DIRECTED BY THE ENGINEER.

6. AT SAG POINTS, CATCH BASIN ADJUSTMENT AND PAVING TO BE PLACED IN SUCH MANNER THAT WILL NOT OBSTRUCT DRAINAGE.

7. FINAL ASPHALT COURSE (HL3) SHALL BE PLACED IN ACCORDANCE WITH APPROVED COUNTY OF NORFOLK STANDARDS FOR TIMING, AS DIRECTED BY THE ENGINEER AND AS PER THE REQUIREMENTS STIPULATED IN THE DEVELOPMENT AGREEMENT.

8. FOR MANHOLE AND CATCH BASIN TOP ADJUSTMENTS, ALL PERMANENT ADJUSTMENTS ARE TO BE POURED IN PLACE OR APPROVED EQUIVALENT (e.g. MODULOC).

9. ALL BEDDING AND BACKFILL MATERIAL, ROAD SUB-GRADES AND GRANULAR ROAD BASES SHALL BE COMPACTED TO MIN 100% SPD UNLESS OTHERWISE SPECIFIED.

10. SILTATION CONTROL BARRIERS SHALL BE PLACED AS DETAILED ON THE SILTATION AND EROSION CONTROL PLAN.

11. ADDITIONAL SILT CONTROL LOCATIONS MAY BE REQUIRED AS DETERMINED BY THE COUNTY AND/OR THE ENGINEER.

GENERAL NOTES:

1. CONSTRUCTION OF SEWERS, WATERMAINS AND RELATED APPURTENANCES SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT STANDARD DRAWINGS OF THE COUNTY OF NORFOLK, AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD). THE COUNTY OF NORFOLK DRAWINGS SHALL TAKE PRECEDENCE OVER THE OPSD DRAWINGS.

2. INFORMATION REGARDING ANY EXISTING SERVICES AND/OR UTILITIES SHOWN ON THE APPROVED SET OF CONSTRUCTION DRAWINGS IS FURNISHED AS THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL INTERPRET THIS INFORMATION AS THEY SEE FIT WITH THE UNDERSTANDING THAT THE OWNER AND HIS AGENTS DISCLAIM ALL RESPONSIBILITY FOR ITS ACCURACY AND/OR SUFFICIENCY.

3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION AND HE SHALL REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.

4. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.

5. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR CONSTRUCTION.

6. FOR ALL SEWERS AND WATERMAIN IN FILL SECTIONS, THE COMPACTION SHALL BE VERIFIED PRIOR TO LAYING OF PIPE.

7. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE COUNTY OF NORFOLK OR THE ENGINEER.

8. NO BLASTING WILL BE PERMITTED.

9. ALL EXCAVATIONS TO BE BACKFILLED WITH SELECT NATIVE MATERIAL, APPROVED BY THE ENGINEER, TO 95% S.P.D.

10. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING (UNTIL ROAD CONSTRUCTION IS FINISHED) SILT CONTROL DEVICES AS SHOWN ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER.

11. TREE PROTECTION PROCEDURES TO BE IMPLEMENTED IN ACCORDANCE WITH COUNTY OF NORFOLK STANDARDS.

12. ALL WORKS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT & ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS AND STANDARDS PRESCRIBED BY THE COUNTY.

13. ALL BOULEVARD AREAS TO BE RESTORED WITH #1 NURSERY SOD ON A MINIMUM 100mm OF SELECT TOPSOIL.

14. ALL TRENCH BACKFILL UNDER EXISTING ROADWAYS SHALL BE COMPACTED IN MINIMUM 230mm LIFTS TO 98% STANDARD PROCTOR DENSITY. A GEOTECHNICAL ENGINEER'S REPRESENTATIVE SHALL BE ON SITE DURING THE WORK TO VERIFY THE COMPACTION OF EACH LIFT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS OF RE-TESTING.

15. AN ENGINEER IS REQUIRED TO BE ONSITE FOR INSPECTION OF ALL UNDERGROUND SERVICES.

16. DRIVEWAYS MUST HAVE MINIMUM 1.0m CLEARANCE FROM CATCHBASINS, VALVES, HYDRANTS STREETLIGHT POLES, TRANSFORMERS, CANADA POST COMMUNITY MAILBOX LOCATIONS ETC.

WATERMAINS:

1. WATERMAINS AND RELATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.

2. WATERMAINS TO BE INSTALLED WITH A MINIMUM DEPTH OF COVER OF 1.70m BELOW FINISHED GRADE.

3. WATERMAINS TO BE INSTALLED IN ACCORDANCE WITH OPSD 802.010 TYPE 2. TRENCH BEDDING TO BE GRANULAR 'A' UNLESS OTHERWISE NOTED.

4. WATERMAINS TO BE PVC DR-18 IN ACCORDANCE WITH AWWA C900 & CSA B137.3. THE PIPE SHALL BE SHIPPED TO THE SITE WITH THE ENDS FACTORY CAPPED IF APPLICABLE.

5. FOR PVC WATERMAIN DEFLECTION:
   - MAXIMUM ALLOWABLE DEFLECTION OF 1 DEGREE PER JOINT SHALL NOT BE EXCEEDED.
   - EACH JOINT SHALL BE DEFLECTED AN EQUAL AMOUNT.

6. ALL WATER MAINS TO BE SWABBED, TESTED, DISINFECTED AND FLUSHED UNDER THE SUPER- VISION OF THE ENGINEER TO THE SATISFACTION OF THE COUNTY OF NORFOLK PRIOR TO CONNECTION TO THE EXISTING MUNICIPAL SYSTEM. REFER TO OPSS 701.07.25, AWWA C651 & COUNTY OF NORFOLK GENERAL WATERMAIN DISINFECTION PROCEDURES.

7. A REDUCED PRESSURE DOUBLE BACKFLOW PREVENTER IS REQUIRED ON THE TEMPORARY SUPPLY LINES USED FOR FILLING AND FLUSHING/SWABBING OF WATERMAINS AND TO BE TESTED AND CERTIFIED ON SITE.

8. UPON COMPLETION OF INSTALLATION, THE CONTRACTOR SHALL PERFORM A PRESSURE TEST ON THE WATERMAINS AS PER OPSS 701.07.24 AND COUNTY OF NORFOLK SPECIFICATIONS. WATERMAIN IS TO BE TESTED UNDER THE SUPERVISION OF THE ENGINEER PRIOR TO CONNECTION TO EXISTING WATERMAINS USING TEMPORARY CAPS OR PLUGS IF APPLICABLE.

9. PIPE CLOSURES WHERE REQUIRED, ARE TO BE SUPPLIED BY THE CONTRACTOR. THE CONTRACTOR SHALL ALSO SUPPLY AND INSTALL ALL ADAPTOR PIECES IN ORDER TO CONNECT EXISTING WATERMAINS.

10. ALL WATER SERVICE CONNECTIONS 38mm DIA. ASTM B88 TYPE 'K' SOFT COPPER AS PER OPSD 1104.01 & COUNTY OF NORFOLK ENGINEERING STANDARDS, WITH SAND BEDDING.

11. NO WORK ON WATER SERVICES CAN TAKE PLACE WITHOUT SUPERVISION OF A LICENSED NORFOLK COUNTY WATER OPERATOR ON-SITE.

SANITARY & STORM SEWERS:

1. SANITARY & STORM SEWERS & RELATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.

2. COVER AND BEDDING MATERIAL FOR CONCRETE PIPE AS PER OPSD 802.030 CLASS 'B' BEDDING SHALL BE GRANULAR 'A' MATERIAL UNLESS OTHERWISE INDICATED.

3. COVER AND BEDDING MATERIAL FOR PVC PIPE AS PER OPSD 802.010 TYPE 2 TRENCH BEDDING SHALL BE GRANULAR 'A' MATERIAL UNLESS OTHERWISE INDICATED.

4. PVC PIPE WILL REQUIRE SPECIAL CONSTRUCTION PROCEDURES FOR LEAKAGE AND TESTING, PIPE DEFLECTION, ETC.

5. ALL SEWERS TO BE FLUSHED & VIDEOED PRIOR TO THE SUBMISSION OF THE FIRST INTERIM COMPLETION CERTIFICATE AND PRIOR TO THE FINAL COMPLETION CERTIFICATE.

6. ALTERNATE MATERIALS MAY BE ACCEPTABLE, PROVIDED APPROVAL HAS FIRST BEEN OBTAINED FROM THE COUNTY OF NORFOLK AND ENGINEER IN WRITING.

7. ALL STORM MANHOLES AND CATCHBASINS TO BE PRECAST CONCRETE STRUCTURES MANUFACTURED IN PRE QUALIFIED PLANTS IN ACCORDANCE WITH THE LATEST APPLICABLE ONTARIO PROVINCIAL STANDARD (OPS) DRAWINGS AND SPECIFICATIONS.

8. ALL SEWER INSTALLATIONS TO CONFORM WITH OPSD 802.031 TYPE 3 SOIL.

9. ALL MANHOLE FRAMES AND COVERS TO CONFORM WITH OPSD 401.010 TYPE 'A' CLOSED COVER.

10. MANHOLES SHALL BE SUPPLIED TO THE SITE PRE-BENCHED UNLESS OTHERWISE NOTED.

11. PRIVATE SANITARY & STORM DRAINS TO BE LOCATED AS PER THE TYPICAL LOT SERVICING DRAWING.

12. PRIVATE SANITARY DRAINS TO 150mm DIA PVC DR28 PIPE.

13. A 38x89mm x 2.0m LONG MARKER IS TO BE PLACED FROM THE CAPPED LATERAL AND EXTEND 1.0m ABOVE GROUND AND PAINTED GREEN FOR SANITARY AND WHITE FOR STORM.

14. BEDDING FOR PRIVATE SANITARY & STORM DRAINS AS PER OPSD 1006.02 TYPE 2 TRENCH WITH GRANULAR 'A' BEDDING AND COVER MATERIAL.

15. MINIMUM FALL FOR PRIVATE SANITARY & STORM DRAINS TO BE 2.0%.

16. ALL APPLICABLE PERMITS ARE TO BE APPLIED FOR PRIOR TO THE INSTALLATION OF ANY SERVICES.

17. ALL SANITARY SEWER LATERAL CONNECTIONS SHALL BE INSTALLED USING PREFABRICATED TEES. THE USE OF SERVICE SADDLES MUST BE APPROVED BY NORFOLK COUNTY ENVIRONMENTAL SERVICES DIVISION. ALL CONNECTIONS SHALL CONFORM TO CURRENT OPSD 1006.010 AND OPSS 410.

18. NO DEFLECTIONS OF SANITARY LATERALS ALLOWED FROM MAIN TO PROPERTY LINE. NEW CONNECTIONS MUST BE 3.0m FROM PROPERTY LINE BARS OR AS APPROVED BY THE MANAGER OF ENVIRONMENTAL SERVICES. AFTER THE PROPERTY LINE ONLY 22.5° FITTINGS ARE ALLOWED OR 1.2m, 45° SWEEPS. CLEANOUTS ARE REQUIRED EVERY 30.5m AND PRIVATE MANHOLES EVERY 91.3m.

19. SPATIAL SEPARATION FROM WATER SERVICE CONNECTIONS OF NOT LESS THAN 2.44m MEASURED HORIZONTALLY FROM UNDISTURBED OR COMPACTED EARTH OR AS APPROVED BY THE MANAGER OF ENVIRONMENTAL SERVICES.

C.B. ORIFICE PLATE SIZING

ORIFICE PLATE CONFIGURATION NUMBER	DIAMETER OF ORIFICE PLATE OPENING
1	175mm
2	175mm
3	100mm
4	85mm

HEAVY DUTY ASPHALT DESIGN
N.T.S.

- 50mm MIN. DEPTH HL3
- 75mm MIN. DEPTH HL4
- 150mm MIN. DEPTH GRAN. 'A'
- 300mm MIN. DEPTH GRAN. 'B'
- FIN. GRADE
- SUBGRADE

MUD MAT DETAIL
N.T.S.

- 50mm⌀ CLEAR STONE
- 450mm DEEP (SEE PLAN FOR SIZE)
- FILTER FABRIC BELOW (OVERLAP JOINTS)
- 450

TYP. PIPE INSULATION DETAIL
N.T.S.

- 1200
- ASPHALT
- GRANULAR 'A'
- GRANULAR 'B'
- APPROVED NATIVE BACKFILL
- 50mm SM RIGID INSULATION WHERE SPECIFIED
- LOW DENSITY CONCRETE
- CLASS 'B' FILL
- 1/3 PIPE DIAMETER -150mm MIN. -300mm MAX.
- 600mm MIN.
- UNDISTURBED GROUND

FLOW CONTROL DEVICE ORIFICE PLATE
N.T.S.

- M.H. (or C.B.) CONC. WALL
- 5mm THICK GALV. STEEL PLATE
- OUTLET PIPE
- 100mm
- O.D. + 100mm
- O.D. + 100mm
- (4)-HILTI KB 10x90 ANCHOR BOLTS STAINLESS STEEL WELDED TO PLATE
- OUTLET PIPE
- WELD ALL AROUND
- ORIFICE OPENING – AS SPECIFIED

SWM POND OUTLET STRUCTURE DETAIL
SCALE: 1:30

- TOP OF POND ELEV.=223.40
- 768 W x 1465 L GRATE AS PER OPSD 403.010
- 600x1200 P/C CONC. DITCH INLET STRUCTURE AS PER OPSD 705.040 (TYPE B)
- PROP. 375mm⌀ OUTLET PIPE
- 3:1 SLOPE
- CAP
- 3:1 SLOPED GRATE ELEV. (LOW)=222.50
- TOP OF HICKENBOTTOM
- PROP. 300mm⌀ PERFORATED HICKENBOTTOM FASTENED TO OUTLET STRUCTURE & BACKFILLED WITH 50mm CLEAR STONE
- PROP. 300mm⌀ PERFORATED HICKENBOTTOM ELEV.=222.50
- 3:1 SLOPE
- INV.=221.55
- FLOW
- PROP. 180mm DIA. ORIFICE PLATE (SEE DETAIL)
- INV.=221.55
- 50mm⌀ CLEAR STONE TO POND BOTTOM
- INV.=221.55
- ELBOW
- POND BOTTOM ELEV.=221.55
- 0.60 SUMP
- BTM. ELEV.=220.95

HEAVY-DUTY SILT FENCE BARRIER
OPSD 219.130

- PERSPECTIVE VIEW
- PLAN
- SECTION A-A
- JOINT DETAIL
- Area under construction
- End run
- Barrier main run
- Area under protection
- Direction of flow
- 2m max. Typ.
- Main run 100m max.
- Control measure support
- Geotextile
- Stake
- 300mm min of geotextile in trench
- Trench shall be backfilled and compacted
- Original ground
- NOTE: A All dimensions are in millimetres unless otherwise shown.
- ONTARIO PROVINCIAL STANDARD DRAWING Nov 2015 Rev 2

SILT SACK DETAIL
N.T.S.

- 2 EACH DUMP STRAPS
- EXPANSION RESTRAINT (1/4" NYLON ROPE 2" FLAT WASHERS)
- INSTALLATION DETAIL
- BAG DETAIL
- DUMP STRAP
- DUMP STRAP
- SILT SACK

SECTION 'A-A'
SCALE: 1:100

- PROP. CHAIN LINK FENCE
- 1.00
- 15.00
- 1.00
- PROP. CHAIN LINK FENCE
- PROPERTY LINE
- 223.40
- MAX. 100Yr. ELEV.=223.07
- 223.40
- 3:1 SLOPE
- PROP. S.W.M. FACILITY
- 3:1 SLOPE
- 221.55
- EX. GRND.

SECTION 'B-B'
SCALE: 1:100

- PROP. CHAIN LINK FENCE
- 1.00
- 23.00
- 1.00
- PROP. CHAIN LINK FENCE
- PROPERTY LINE
- 223.40
- MAX. 100Yr. ELEV.=223.07
- 223.25
- 3:1 SLOPE
- PROP. S.W.M. FACILITY
- 3:1 SLOPE
- 221.55
- EX. GRND.

NO.	REVISION	DATE (MM/DD/YY)	BY
1	AS PER COUNTY COMMENTS	08/01/25	K.P.B.

PROJECT:
PROPOSED MANUFACTURING BUILDING LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT:
TONY KOUNTY

NOTES & DETAILS

DESIGN:	R.W.P.	SCALE:	AS SHOWN
DRAWN:	S.L.M./K.P.B.	JOB No:	17233
CHECKED:	R.W.P.		
SHEET:	4 of 4	DWG. No:	17233-4
DATE:	MAR. 20/25		

18/09/25

APPRAISAL REPORT

PROPERTY:

Luscombe Drive,

Simcoe, Ontario

PREPARED FOR:

Authorized Client and User

CDNbuildings

ATTENTION:

Bill Dendekker

EFFECTIVE DATE OF APPRAISAL:

July 1, 2025

PREPARED BY:

R. A. (SANDY) MOIR, P. APP., AACI, H. B. COMM.

MOIR LUFT REAL ESTATE

APPRAISAL SERVICE LTD.

34178 Bush Line,

R.R. #2 Pt. Stanley, Ontario

N5L 1J2

EXECUTIVE SUMMARY

DATE OF REPORT:	July 7, 2025
DATE OF INSPECTION:	July 1, 2025
EFFECTIVE DATE OF VALUATION:	July 1, 2025
ROLL NUMBER:	403-025-03825-0000
REGISTERED OWNERS:	2712300 Ontario Inc.
MUNICIPAL ADDRESS:	Luscombe Drive, Simcoe, Ontario
AREA OF SUBJECT PROPERTY:	290.35' X Irr. – 2.87 acres (Tax Notice)
OFFICIAL PLAN:	`Protected Industrial`
ZONING:	"General Industrial Zone - (MG)"
EXISTING USE:	Vacant Industrial Land
HIGHEST AND BEST USE:	Vacant Industrial Land
EXPOSURE TIME:	49 to 240 days

MARKET VALUE ESTIMATE

One approach to value was used in the valuation of the subject as a vacant parcel of industrial land. This approach utilized market data to support the resulting value estimate or range. This approach represents the most reasonable current market value estimate, for the subject property, as of the effective date of valuation.

ESTIMATE OF THE CURRENT MARKET VALUE BY THE:

COST APPROACH TO VALUE: Not Applicable

INCOME APPROACH TO VALUE: Not Applicable

DIRECT COMPARISON APPROACH: $861,000.00

FINAL ESTIMATE OF THE CURRENT MARKET VALUE: $861,000.00

The foregoing opinion of value is subject to the limiting conditions appearing in the following report.

The estimated market value is based on `Fee Simple` rights and does not include consideration of any extraordinary financing, rental or income guarantees, special tax considerations or any other typical benefit which may influence the ordinary market value of the property, unless the effects of such considerations have been specifically described and measures in this report.

EFFECTIVE DATE OF APPRAISAL

The principal of change is an important consideration in any appraisal assignment. Change is a constant process with economic factors, land use patterns, development trends, etc. occurring all the time. Therefore, an estimate of the Market Value must be effective as of a specific date or dates.

This appraisal is effective as of **July 1, 2025**.

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TABLE OF CONTENTS (CONTINUED)

ADDENDUM

Official Plan

Permitted Uses (2 Pages)

Zoning Map

Site Map

Comparable Location Map

Direct Comparison Chart

Photographs (3 Pages)

Moir Luft Real Estate Appraisal Services Ltd.

July 7, 2025

Authorized Client and User
CDNbuildings

RE: Luscombe Drive,
Simcoe, Ontario

Pursuant to the request, an examination of the above-mentioned property, a vacant parcel of industrial land, was completed on July 1, 2025.

The purpose of the appraisal is to estimate the Current Market Value, of the subject property, in the Fee Simple, as of July 1, 2025.

This report is a `Narrative Appraisal Report` in accordance with the Canadian Uniform Standards of Professional Appraisal Practice (CUSPAP).

After a thorough analysis of all information available at this time, it is my opinion that the Current Market Value, of the subject property, as of July 1, 2025, is:

---EIGHT HUNDRED AND SIXTY-ONE THOUSAND DOLLARS---
($861,000.00)

The foregoing opinions of value are subject to the limiting conditions appearing in the following report.

Respectfully submitted
MOIR LUFT
REAL ESTATE APPRAISAL SERVICES LTD.

Ron A (Sandy) moir

R. A. (SANDY) MOIR, P. App., AACI, H.B. Comm

Date Signed: July 11, 2025

1.   This report has been prepared at the request of the Authorized Client and User - CDNbuildings, for the Purpose of providing an estimate of the Current Market Value, for Luscombe Drive, Simcoe, Ontario. The Intended Use of the report is to assist in internal matters and **NOT FOR LENDING PURPOSES**. It is not reasonable for any person other than to whom this report is addressed to rely upon this appraisal without first obtaining written authorization from the client and the author of this report. This report has been prepared on the assumption that no other person will rely on it for any other purpose and all liability to all such persons is denied.

2.   This report has been prepared at the request of, and for the exclusive (and confidential) use of, the recipient as named herein and for the specific purpose and function as stated herein. All copyright is reserved to the author and this report is considered confidential by the author and the client. Possession of this report, or a copy thereof, does not carry with it the right to reproduction or publication in any manner, in whole or in part, nor may it be disclosed, quoted from or referred to in any manner, in whole or in part, without the prior written consent and approval of the author as to the purpose, form and content of any such disclosure, quotation or reference. Without limiting the generality of the foregoing, neither all nor any part of the contents of this report shall be disseminated or otherwise conveyed to the public in any manner whatsoever or through any media whatsoever or disclosed, quoted from or referred to in any report, financial statement, prospectus, or offering memorandum of the client, or in any documents filed with any governmental agency without the prior written consent and approval of the author as to the purpose, form and content of such dissemination, disclosure, quotation or reference.

3.   The estimated market value of the real estate which is the object of this appraisal pertains to the value of the freehold estate in the real property, based on vacant possession. The property rights appraised herein exclude mineral rights, if any.

4.   The estimate of value contained in this report is founded upon a thorough and diligent examination and analysis of information gathered and obtained from numerous sources. Certain information has been accepted at face value; especially if there was no reason to doubt its accuracy. Other empirical data required interpretive analysis pursuant to the objective of this mandate. For these reasons, the analyses, opinions and conclusions contained in this report are subject to the following assumptions and limiting conditions:

5.   The property has been valued on the basis that title to the real estate herein appraised is good and marketable.

6.   The author of this report cannot accept responsibility for legal matters, questions of survey, opinions of title, hidden or unapparent conditions of the property, toxic wastes or contaminated materials, soil or sub-soil conditions, environmental, engineering or other technical matters which might render this property more or less valuable than as stated herein. If it came to our attention as the result of our investigation and analysis that certain problems may exist, a cautionary note has been entered in the body of this report.

7.   The legal description of the property and the area of the site was obtained from plans provided by the client. Further, the plans and sketches contained in this report are included solely to aid the recipient in visualizing the location of the property, the configuration and boundaries of the site and the relative position of the improvements on the said lands.

8.   The property has been valued on the basis that the real estate is free and clear of all value influencing encumbrances, encroachments, restrictions or covenants except as may be noted in this report and that there are no pledges, charges liens or special assessments outstanding against the properties combined other than as stated and described herein.

9.   The property has been valued on the basis that there are no outstanding liabilities except as expressly noted herein, pursuant to any agreement with a municipal or other government authority, pursuant to any contract or agreement pertaining to the ownership and operation of the real estate or pursuant to any lease or agreement to lease, which may affect the stated value or saleability or the subject properties combined or any portion thereof.

10.   The property has been valued on the basis that the real estate complies in all material respects with any restrictive covenants affecting the site and has been built and is occupied and being operated, in all material respects, in full compliance with all requirements of law, including all zoning, land use classification, building, planning, fire and health by-laws, rules, regulations, orders and codes of all federal, provincial, regional and municipal governmental authorities having jurisdiction with respect thereto. (It is recognized there may be work orders or other notices of violation of law outstanding with respect to the real estate and that there may be certain requirements of law preventing occupancy of the real estate as described in this report. However, such possible circumstances have not been accounted for in the appraisal process.)

11.   Investigations have been undertaken in respect of matters which require the use of land. However, no inquiries have been placed with the fire department, the building inspector, the health department or any other government regulatory agency, unless such investigations are expressly represented to have been made in this report. The subject property - Hypothetical – As If Complete must comply with such regulations and, if it does not comply, its non-compliance may affect the market value of this property. To be certain of such compliance, further investigations may be necessary.

12.   The property has been valued on the basis that there is no action, suit, proceeding or investigation pending or threatened against the real estate or affecting the titular owners of the property, at law or in equity of before or by any federal, provincial or municipal department, commission, board, bureau, agency or instrumentality which may adversely influence the value of the real estate herein appraised.

13.   The data and statistical information contained herein was gathered from reliable sources and are believed to be correct. However, this data is not guaranteed for accuracy, even though every attempt has been made to verify the authenticity of this information as much as possible.

14.   Should the author of this report be required to give testimony or appear in court or at any administrative proceeding relating to this appraisal, prior arrangements shall be made therefore, including provisions for additional compensation to permit adequate time for preparation and for any other of these assumptions and limiting conditions is an attempt to limit the use that might be made of this report should it properly become evidence in a judicial proceeding. In such a case, it is acknowledged that it is the judicial body which will decide the use of this report which best serves the administration of justice.

15.   Because market conditions, including economic, social and political factors, change rapidly and, on occasion, without notice or warning, the estimate of market value expressed herein, as of the effective date of this appraisal, cannot necessarily be relied upon as of any other date without subsequent advice of the author of this report.

16.   The distribution of value between land, buildings and other improvements applies only in regard to the purpose and function of this appraisal, as outlined in the body of this report.

17.   The value expressed herein is in Canadian dollars.

18.   This report is only valid if it bears the original signature(s) of the author(s).

Extraordinary Assumption

Values contained in this appraisal are based on market conditions as at the time of this report. This appraisal does not provide a prediction of future values. In the event of market instability and/or disruption, values may change rapidly and such potential future events have been NOT been considered in this report. As this appraisal does not and cannot consider any changes to the property appraised or market conditions after the effective date, readers are cautioned in relying on the appraisal after the effective date noted herein.

The value derive in this report is based on the subject site being used for a purpose that meets the current "Permitted Uses', as set out in the zoning bylaws for Norfolk County.

Hypothetical Condition

None

Each appraisal assignment is unique, depending upon the type and size of the property being appraised, the complexity and significance of the appraisal problem, and the intended function of the appraisal.

The appraisal that is the focus of this engagement has been discussed and defined with the client ordering the appraisal. The specific tasks and items necessary in completing this assignment included the following:

Assembly and analysis of relevant information pertaining to the property being appraised, including acquisition or listing particulars within the last three years prior to the date of this appraisal.

A final estimate of value by the relevant approach or approaches to value. An inspection of the subject properties combined and surrounding area.

Assembly and analyses of pertinent economic and market data. Inclusion of all appropriate photographs, maps and sketches. Reconciliation of the collected data into an estimate of market value as at the effective date of the appraisal.

Nothing in this report is intended as legal opinion as to the state of title. This report is prepared on the premise that the improvements do not encroach onto adjacent lands. The appraisal assumes that title is good and marketable.

I am not qualified in technical or professional matters related to improvements like legal surveys, engineering reports, the sizing and adequacy of the mechanical systems and components such as the heating, plumbing and electrical systems. No inspections were made with regards to termites. I am not qualified to inspect or identify if the subject property has a problem with rodents, small animals or insect infestation. If you have a concern with any of these mentioned items it is up to you to obtain the proper inspectors to help identify any of these problem areas.

Audits and Technical Investigations: I did not complete technical investigations such as: Inspections or engineering review of the structure, roof or mechanical systems. If there is an on-site oil tank, I have assumed that this tank is insured against leakage or spillage. Technical review of the utility servicing. Investigations into the bearing, percolation or other qualities of the soils. An environmental review, an archaeological survey or an environmental review of the property. Audits of financial and legal arrangement reported by the owner concerning any of the leases. The inspection is not to confirm building code compliance. These items are beyond the expertise of the appraiser.

Verification of Third-Party Information: The time and cost to confirm third party information can exceed a reasonable appraisal budget. Consequently, the analysis set out in this report relied on written and verbal information from primary and heresy sources, some of which we did not confirm. Except as described herein, I did not verify client-supplied information, which I have assumed to be correct. The new privacy laws limit the information that real estate agents can reveal to us.

Building size for the subject improvement was obtained from one of the following sources. A builder's floor plan, management office, listing information, regional tax office, and municipal offices or from measurements made during the inspection. Building sizes for the comparables is obtained from the same sources noted above or by using a formula that adds up the above grade room sizes from a listing and then multiplying by a factor based on the age of the building to obtain an approximate square footage.

Zoning Information: The zoning information in this report is provided for convenience only without any assumption for liability. Zoning doesn't remain constant. By-laws are amended and at times interim controlling by-laws are passed for a specified period. An attempt is made in most cases to verify zoning. Due to time constraints, it is sometimes not possible to wait for a return call from a zoning officer. It is up to you to satisfy yourself as to the specific zoning of the property. This appraisal assumes that the subject properties cannot be subdivided.

Comparable Sale Data: The sources of our data included Land Registry/Land Titles records, builder sales, local Multiple Listing Services & listing details, of comparable properties that were concluded to provide evidence of market value for the subject property. The comparable sales evidence relied on in this appraisal are believed to be from reliable sources. All of the comparable MLS listings were examined. It is not possible to inspect and research them fully. A concerted effort is made to verify the accuracy of the information contained within this report. The value conclusions are subject to the accuracy of said data.

The information used in this report was gathered from a personal inspection, which were completed on July 1, 2025 and from survey/tax notice provided by the client. During this inspection the subject site was photographed.

This report is considered to be a `Narrative Appraisal Report` in accordance with CUSPAP. The Highest and Best Use of the subject, has been considered - `As Is`.

All information used in this report is considered accurate and reliable and all normal measures, to ensure the accuracy of this information, have been undertaken.

DEFINITION OF REASONABLE EXPOSURE TIME

The estimated length of time the property being appraised would have been offered on the market prior to the `Hypothetical` sale at Current Market Value, as of the effective date of valuation. This is a retrospective estimate based upon an analysis of past events of a competitive and open market - comparable sales.

The fact that exposure time is always presumed to occur prior to the effective date of valuation is substantiated by related facts in the appraisal process; supply/demand, as of the effective date of valuation, the use of current cost information, analysis of historical sales data (after the property had been exposed and the sale has been completed) and the analysis of future income streams, estimated from the effective date of valuation.

ESTIMATE OF EXPOSURE TIME

EXPOSURE TIME

The comparable sales used in Direct Comparison Approach had exposure times of between 49 - 240 days.

Based on a current market value of $861,000.00, research of market trends for competing properties indicates an exposure time (prior to the effective date) of 49 - 240 days; however, 4 of the 5 sales had exposure times of 166 days or less.

The "Purpose of the Appraisal" is to estimate the Current Market Value, of the subject property, a vacant parcel of industrial land, as of July 1, 2025, the date of valuation. The "Intended Use" is to assist in internal matter, only and **NOT FOR FINANCING PURPOSES.**

"Market Value" is defined by The Canadian Uniform Standards of Professional Appraisal Practice (CUSPAP) as:

> *"The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair and typical sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus."*

Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1.   *buyer and seller are typically motivated*;
2.   *both parties are well informed or well advised, and acting in what they consider their best interests;*
3.   *a reasonable time is allowed for exposure in the open market;*
4.   *payment is made in terms of cash in Canadian dollars or in terms of financial arrangements comparable thereto;*
5.   *the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale."*

PROPERTY RIGHTS APPRAISED

The property rights being appraised are those of the `Fee Simple`, which is defined as:

> *"An absolute fee; a fee without limitations to any particular class of heirs or restrictions, but subject to the limitations of eminent domain, escheat, police powers and taxation"*

This does not necessarily imply that the subject or the comparable properties are free and clear of any encumbrances such as mortgages, liens, easements or rights-of-way.

According to the Tax Notice, the subject property is registered in the name of:

2712300 Ontario Inc.

IDENTIFICATION AND LEGAL DESCRIPTION

According to the Tax Notice, the subject property is known municipally as:

Luscombe Drive,
Simcoe, Ontario

According to the Tax Notice, the subject property is known legally as:

WDM Con. 14, Pt. Lot 4;
R.P. 37R-11237, Part 1;
in the County of Norfolk,
(a single-tier Municipality)
Province of Ontario

ASSESSMENT AND TAXES

Assessment: $147,000.00 (2024)

Taxes: $ 3,554.20   (2024)

OFFICIAL PLAN

The Official Plan is defined in The Planning Act as follows:

"A document approved by the Minister of Municipal Affairs and Housing containing objectives and policies established primarily to provide guidance for the physical development of a municipality while having regard to relevant social, economic and environmental matter,"

The Official Plan consists of the texts and maps describing such objectives and policies approved by the Ministry of Housing from time to time as provided in the Planning Act. The purpose of the Official Plan is to provide a formally adopted text of public policies and standards as guidelines for the future development of the community. It is a projection of anticipated growth and planning needs.

The Official Plan does not directly regulate the use of private lands and therefore must be supported by Zoning By-laws. The by-laws implement the policies established by the Official Plan guidelines. Requirements change from time to time and it is often necessary for the municipality to reassess the relevance of their plan to the supply and demand situation. There are, therefore, provisions for amendments to the Official Plan where reasonable grounds exist.

The Official Plan designates this area as `Protected Industrial`.

A zoning by-law is a precise document used by a municipality to regulate the use of land. It states exactly what land uses are currently permitted in a community and provide detailed information such as;

    a)   where building or structures may be located

    b)   types of uses and dwellings permitted

    c)   standards for lot size, parking requirements, building heights, side yard dimensions and setback from street

The subject property, is located in an area designated "General Industrial Zone - (MG)". The `Permitted Uses` and `Minimum Requirements`, for the County of Norfolk, can be found in the addendum.

As the subject property is currently vacant, it is assumed the it is in conformity with the 'Permitted Uses' and `Minimum Requirements`, as set out in the zoning by-laws for the County of Norfolk.

RECENT SALES HISTORY

According to, MLS and the owner, there have been no changes in ownership within the prior 36 months.

According to MLS, there are no known current agreements for sale, options, listings or marketing of the subject property, within the last 12 months.

The subject property is located on the east side of Luscombe Drive, one lot south of Grigg Drive, near the west boundary of the Town of Simcoe, in County of Norfolk.

The immediate surround area is an industrial park, composed of improved properties and vacant land sites. The improved properties range from small size service operations to larger industrial plants to mini-storage facilities.

West of the improved properties, on the west side of Luscombe Drive, the land use changes to agricultural; but the area also includes residential developments at the corner of Queensway West and Luscombe and across Queensway West, further south.

To the east of Luscombe, along Queensway, land use also begins to change to more commercial in nature and then residential on the side streets.

Luscombe Drive is a two-way, paved, north-south roadway with open ditches and gravel shoulders, that extends from Queensway West (A.K.A. Highway #3), past the subject, ending one block north of Grigg Drive.

Grigg Drive is an east-west, paved road that extends from Luscombe Drive, for one block, ending at Park Road. Queensway West (A.K.A. Highway #3), is a major roadway, which extends from Windsor to Fort Erie and it experiences high volumes of commercial, commuter, tourist and local traffic.

Approximately 3-4 blocks east of Luscombe, Queensway West, intersects with Norfolk Street North (A.K.A. Highway #24), which is a major north-south route that eventually interests with Highway #403 and the City of Brantford.

Overall, the subject has a good location, for a future industrial use, because of the excellent surrounding road systems; Highways #3 and #24, which provide quick and direct access to other major highways – Highways #401 and #403; as well as many large urban areas.

There were no adverse influences noted at the time of inspection that would affect the marketability of the subject.

According to the information provided by the client, the subject site is a slightly irregular-shaped parcel of land with a frontage on Luscombe Drive of 290.35' and a total site area of 2.87 acres (Municipal Tax Notice).

The site is vacant and heavily covered by natural vegetation; so, the topography was difficult to ascertain, but it appears to be rolling and not completely level.

The site is contiguous to an improved industrial operation and from the block plan provided by the client, the subject's south boundary, will be defined by a proposed roadway, leading eastward and providing access to several other vacant sites, including one that backs to the subject (See Site Sketch).

As the site is currently, it is not serviced; however, when eventual development begins, it is assumed that services will be connected to the site.

The appraiser assumes that the subject property currently conforms to the zoning bylaws and regulations. There were no negative features noted at the time of this report. The subject is a suburban property, bordering on both industrial and vacant land parcels.

There are no apparent adverse soil conditions and no local indicators of potential contamination; however, the subject is contiguous to an industrial operation. With that being said this report **DOES NOT** warrant that the property is Free and Clear of any adverse soil conditions or contamination and if any are found then the appraiser has the right to re-evaluate the current market value estimate derived at in this report.

MUNICIPAL SERVICES, ROADS AND UTILITIES

It is assumed that the subject site will be fully serviced when developed and current all services are at the lot line, but not installed.

Currently the subject property can be accessed from Luscombe Drive, only, which is a two-way paved roadway with open ditches and gravel shoulders and no streetlights.

The subject property is vacant land; so, there is no building description.

The principle of "Highest and Best Use" is fundamental to the concept of value. It could be defined as:

"that particular legal land use, which at the date of appraisal, is most likely to produce, the greatest net return (money and/or amenities) over a given period of time (the foreseeable future)."

The Highest and Best Use analysis provides a focus for the choice of an appropriate valuation methodology. If a property's current use is its highest and best use, then its most probable selling price would be based on its existing use. Should the use of either the land alone, `As If Vacant`, or an alternative use of the land and improvement, `As Improved`, be deemed as the highest and best use, then the market value of the subject will likely be based on this alternative.

Is in analyzing the "Highest and Best Use" of the subject property, both for the site `As If Vacant` and `As Improved`, the following main factors have been considered:

1. Official Plan
2. Zoning By-Laws
3. Locational Features
4. Lot size, shape, frontage and flankage
5. Municipal and private services available
6. Easements
7. Availability and cost of financing
8. Building and Site Improvements
9. Present Use
10. Condition of buildings (depreciation evident)
11. Type of operation to which the buildings are suited, adaptability to alternative use
12. Income Producing levels
13. Parking availability
14. Investment potential

15.   Competition is in the area
16.   Real Estate Market Trends
17.   Demand

After a thorough inspection of the subject property and analysis of the foregoing factors, it is my opinion that the "Highest and Best Use" of the subject property, `As If Vacant and Unimproved` and 'As Improved' is some form of industrial use.

APPROACHES TO VALUE

Is in estimating the market value of an improved property, there may be three important factors:

I)   The current cost of replacing a property, including the cost of the land `As If Vacant`, less the accrued depreciation from all sources.

ii)   The value indicated by market activity including recent sales of comparable properties and the availability of similar facilities offered for sale.

iii) The value that the property's actual or potential net income would support based on a market capitalization of that income stream.

The result of the above considerations is three basic approaches to value:

I)   The Cost Approach

ii)   The Direct Comparison Approach

iii) The Income Approach

If all three approaches are applicable, then the result is three value estimates. These three resulting estimates are then analysed and reconciled to arrive at a final estimate of value for a property.

The subject property is a vacant parcel of industrial land; so, only the Direct Comparison Approach is relevant.

An extensive search was undertaken to locate similar types of properties, for the Direct Comparison. Not all components could be verified from the market, but the resulting analyses are considered to be reasonable and realistic.

1.   Estimate the Value of the Subject Site as if Vacant and Unimproved

The land value estimate is determined by analyzing recent sales of similar parcels in the area. This Approach is referred to as the Direct Comparison Approach to Value, and is the preferred approach to valuing a site because it reflects typical buyer and seller reactions is in the market place. Through a process of adjustments for differences between the comparable sale and the subject property, each comparable sale becomes a basis for indicating the value of the site being appraised. The adjustments considered include but are not limited to; time, location, content and general utility. The time adjustment compensates for changing market conditions between the sale dates of the comparables and the effective date of valuation. The location adjustment compensates for factors such as access, proximity to major markets, land use patterns and exposure. A site content adjustment is often required since larger tracts of land tend to trade at a lesser rate per unit than small parcels. The general utility adjustment considers factors such as topography and plottage of the site and the effect these factors may have on the utility and/or potential site.

2.   Estimate the Replacement Cost New of All Improvements

The Replacement Cost New estimate has been prepared using the Boeckh Building Valuation Manuals. This manual includes a wide variety of materials and figures connected with the building trades such as charts, specifications, depreciation tables and definitions.

3.   Estimate the Accrued Depreciation from All Causes

Accrued Depreciation "is a measure of the loss is in utility experienced by the improvement is in its present condition as compared to the utility of the same improvement as though new and representing the highest and best use of the site." Accrued Depreciation is broken down into three classifications:

        1.   Physical Depreciation
        2.   Functional Obsolescence
        3.   Economic Obsolescence

1.   Physical depreciation refers to a loss is in value due to wear and tear, lack of regular maintenance and normal aging of the improvements, service systems and structural components.

2.   Functional Obsolescence refers to a loss is in value due to an over or under improvement of the site, poor floor plan layout, outdated building materials, construction techniques and service systems.

3.   Economic Obsolescence refers to a loss value due to an external source such as lack of conformity of land use is in an area or proximity to a noxious use.

4.   Deduct the Estimated Accrued Depreciation from the Estimated Replacement Cost New to determine the Depreciated Replacement Cost of the Building Improvement.

5.   Combine the Depreciated Replacement Cost Estimated and the Land Value Estimate as if Vacant to determine the final estimate of Market Value for the subject property by the Cost Approach to Value.

As the subject is a vacant parcel of industrial land and because of the purpose of this report, the Cost Approach is not a Relevant Approach to Value.

The Income Approach involves an analysis of the actual or the estimated potential income of a property which is then converted into an estimate of market value by a capitalization process. The process provides an indication of the present worth of a future income stream. The rate at which the net income is capitalized is relative to the quality, quantity and durability of that income stream. Returns for a property are divided into two categories. First, there is the annual net income stream generated by the property and second, there is the residual value of the property, at the end of the investment cycle.

An investment cycle is the period of time that an investor is willing to commit capital. Generally, the investment cycle is related to the expected remaining productive life of a property and the term needed for the investor to meet objectives. Some factors that affect the determination of an investment cycle are location, market trends, the age and/or condition of the improvements, the cost of money, alternative investment vehicles and the tax implications of the property and/or the investor.

The probability of a property increasing is in value over the investment cycle is an important consideration when estimating a capitalization rate. If there is no probability of a property increasing is in value, then the income stream must be responsible for providing the full return of the investment. This situation will result is in a high capitalization rate, when other investment vehicles offer real growth potential. If an investment is expected to decrease is in value over the length of the investment, then the income stream is not only expected to provide a full return on the investment, it is also required to recapture the depreciation of the asset. Again, the capitalization rate will be higher because it includes both a return on and a return of the investment. If there is a probability of the property appreciating is in value then the capitalization rate will be low because the growth or gain is in value will allow all or part of the investments return to be achieved and there is no depreciation that needs to be recaptured.

1.   Estimate the Annual Potential Gross Income

The Potential Gross Annual Income is an estimate of the total possible income if the property was fully and continuously rented for a full year at current market rents with no rental loss.

2.   Deduct an Allowance for Vacancy and Bad Debts

Vacancy and Bad Debt Allowance may result from vacancy during remodelling, tenant turnover, or non-payment of rents by a tenant. This amount is calculated as a percentage of the gross income.

3.   Effective Gross Income

The Effective Gross Income equals the Potential Gross Annual Income minus the Vacancy Bad Debt Allowance.

4.   Estimate and Deduct the Annual Operating Expenses

The Operating Expenses are only those expenses directly related to the operation of the building. These expenses are divided into three classifications.

       1. Fixed Expenses
       2. Variable Expenses
       3. Reserves for Maintenance and Replacement

4. (Continued)

> 1.   Fixed Expenses include items that are not influenced by tenancy such as realty taxes and insurance premiums.

> 2.   Variable Expenses include items that vary with tenancy such as utilities, management fees, heating and cooling.

> 3.   Reserves for Maintenance and Replacement include items such as roof repairs, exterior plumbing, structural work, heating and plumbing equipment. This category also includes an allotment for items is in the structure and equipment with shorter economic or useful life expectancies such as stoves, refrigerators, machinery and equipment, carpets and specific building components.

5.   Establish the Net Operating Income

> This is the income remaining after deducting operating expenses from the Effective Gross Income, but before Debt Service (mortgage payments or Depreciation (Capital Cost Allowance).

6.   Capitalize the Net Operating Income into an Indication of Market Value by the Income Approach

> The overall Capitalization Rate used is derived by dividing the Net Operating Income by the total sale price. The rate included a return on monies invested and return of monies invested is in the wasting asset, which is the building only.

As the subject is a vacant parcel of industrial land and because of the purpose of this report, the Income Approach is not a Relevant Approach to Value

DIRECT COMPARISON APPROACH TO VALUE

The Direct Comparison Approach to Value is based upon locating recent sales of similar properties that have sold within a reasonable length of time of the effective date of the appraisal. These comparable sales are then adjusted is in plus or minus percentages is in respect to the subject property to compensate for differences between the two. After completing the adjustments an indication of value for the subject property is determined.

Adjustments generally considered include time (date of sale versus date of appraisal to compensate for changing market conditions), location (proximity to downtown business core), access and egress, traffic flow levels, availability of municipal and community services, conformity and abutting land usage, economic outlook for the area, zoning by-laws, general condition of building (quality of materials, and workmanship, levels of maintenance exhibited, accrued depreciation evident, style, age, size, gross income), site sizes and shapes, availability of parking, landscaping, Real Estate trends (supply and demand), and any motivational factors affecting the sales. After a thorough analysis of the foregoing factors an estimate of Market Value for the subject property is determined.

This Approach is most reliable when there is adequate Market data available, for both comparison purposes, but also to for adjustment purposes.

Five comparable sales and one current listing, for the subject property – vacant industrial land, were considered relevant and have been included in this analysis. The sales all occurred between September and November 2024; while the listing is current and has been on the market for 90+ days. These comparables are considered the best and most recent comparables for the subject property, available at this time.

The sales are all located in urban areas of varying sizes and are all considered to be superior in location, except the listing with considered similar/comparable.

The comparables sold for between $425,000 and $2,500,000, with site areas between 1.00 and 6.04 acres. The comparables' site areas encompass the subject and they sold on a price per acre from $175,000 to $777,778.

Comparable #3 is the third most recent sale and the most similar in site area, but it is far superior in location and zoning, includes a quality leased residence and also get income from a Bell tower lease. Because of the afore-mentioned reasons, this sale is far superior to the subject, per acre.

Comparable #4 is the second oldest sale. This sale is larger in site area, but it is immediately ready for development and because of its proximity to the new VW battery plant, far outweigh the larger site area, making this sale superior to the subject, per acre.

Comparable #1 is the most recent sale and it is larger in site area. This sale has a similar development time and is considered to be overall inferior in location. The larger site area and overall inferior location, makes this inferior to the subject property, per acre.

Comparable #5 is the oldest sale and is considered to be comparable in location. This sale is smaller in site area, superior in development time and is improved with paved parking and a fenced compound.

The smaller site area, superior development time and current site improvements, makes this sale superior to the subject property, per acre.

Comparable #1 is considered to be inferior to the subject property, per acre and Comparable #5 is considered to be superior to the subject, per acre. These two comparable set a range of between $201,471 and $425,000, per acre; which is a relatively wide range.

Because of the subject's location, site area, site readiness (development lag time), and zoning, a current market value estimate, for the subject property, near the mid-point of this value range, is considered reasonable.

After making reasonable adjustments, it is my opinion that the current market value of the subject property, as of July 1, 2025, is;

---THREE HUNDRED THOUSAND DOLLARS PER ACRE---
($300,000.00 per acre)

Therefore;

2.87 acres X $300,000.00 per acre = $861,000.00

---EIGHT HUNDRED AND SIXTY-ONE THOUSAND DOLLARS---

($861,000.00)

COST APPROACH TO VALUE: Not Applicable

INCOME APPROACH TO VALUE: Not Applicable

DIRECT COMPARISON APPROACH: $861,000.00

The Cost Approach to Value is best for newer buildings, where estimates for replacement cost and depreciation are easier to determine, and where vacant land values can be obtained. As the subject is a vacant parcel of industrial land and for the purpose of this report, the Cost Approach is not a Relevant Approach to Value.

The Income Approach to Value is best when recent, reliable and accurate figures can be obtained for income and expenses. As the subject is a vacant parcel of industrial land and for the purpose of this report, the Income Approach is not a Relevant Approach to Value.

The Direct Comparison Approach is best when a reasonable number of similar properties, that have recently sold, can be found. The comparables that were used are considered to be average to above-average.   This approach to value is the only relevant approach and will be used as the basis for the final Current Market Value estimate for the subject property.

Therefore, after making reasonable adjustments, it is my opinion that the final estimate of the Current Market Value, of the subject property, as of July 1, 2025, is;

---EIGHT HUNDRED AND SIXTY-ONE THOUSAND DOLLARS---
($861,000.00)

I hereby certify:

1.   that I personally inspected the subject property on July 1, 2025
2.   that I have no present financial or contemplated financial interests is in the property appraised
3.   that I have no personal interest or bias with respect to the subject matter of this appraisal report or the parties involved
4.   to the best of my knowledge and belief the statements of fact contained is in the appraisal report, upon which the analysis, opinions and conclusions expressed herein are based, are true and correct, subject to the stated underlying assumptions and limiting conditions
5.   that no pertinent or important facts relevant to the value of the property appraised have been withheld from this report
6.   this appraisal report sets forth all the limiting conditions (imposed by the terms of my assignment or by the undersigned) affecting the analysis, opinions and conclusions is in this report
7.   that the compensation for rendering my opinion of value as outlined in this appraisal report is not contingent upon the final estimate of value
8.   that my analyses, opinions and conclusions were developed, and that this report has been prepared is in conformity with the Canadian Uniform Standards of Professional Appraisal Practice
9.   that no one provided significant professional assistance to the person(s) signing this report.
10.   it was my opinion that the estimated Current Market Value of the subject property, as if free and clear of any mortgage financing, and based on all cash transactions, as of July 1, 2025, being the date of valuation, is;

---EIGHT HUNDRED AND SIXTY-ONE THOUSAND DOLLARS---
($861,000.00)

Respectfully submitted
MOIR LUFT REAL ESTATE
APPRAISAL SERVICE LTD.

Ron A (Sandy) moir

R. A. (SANDY) MOIR, AACI, P. App., H.B. Comm

Date Signed: ___July 11, 2025_____

ROSS A. (SANDY) MOIR, P. App., AACI, H.B. COMM.
Moir Luft Real Estate Appraisals Services Ltd.
37148 Bush Line, R.R. #2 Pt. Stanley, Ontario N5L 1J2
Telephone: (519) 769-1234
E-mail: mlappraisals@hotmail.com

PROFESSIONAL AFFILIATIONS:

Member of the Appraisal Institute of Canada since 1991
Member of the Ontario Expropriation Association since 2011

EDUCATION:

UNIVERSITY - Graduated from the University of Guelph in May 1989 with an Honour Bachelor of Commerce degree.

- Curriculum included courses in Economics, Accounting, Finance, Building Design, Data Entry and Cost Evaluation.

A.I.C. COURSES - Have successfully completed all of the three appraisal specific courses. The first course dealt with residential and income properties using mainly the Direct Sales Approach to Value. The second course dealt more with the use and understanding of the Income Approach to Value. The third course dealt with a more in depth analysis of the Income Approach to Value.

BACKGROUND:

CITY PLANNING - Worked as a student planner for the St. Thomas Elgin County Planning Office from May 1981 - September 1981.

JUNIOR APPRAISER - Have worked as a Junior Appraiser for the firm of J.V. Luft & Associates from September 1990 to December 2001.

QUALIFIED FEE APPRAISER - December 5, 2001 – Present

GENERAL EXPERIENCE:

Experience Includes: Real Estate appraisals for Expropriation, Valuation Day, Legal Separations, Mortgage purposes, Assessment Appeals, Fire Insurance, Estates and Market Value appraisals for general purposes.

Appraisal Assignments Include: Residential properties, single-family dwellings and multi-family dwellings, condominium reserve fund studies, agricultural operations including; farms and hobby farms, vacant land, subdivisions of varying sizes, industrial and commercial properties including; hotels, motels, restaurants, bars, golf courses, aggregate operations, recreational properties, marinas, municipal buildings, institutional uses and railways. Properties are generally located in Midwestern and Southwestern Ontario.

Appraisals Have Been Performed For;

Law Firms	Ministry of Transportation Ontario
Individual Property Owners	Churches
Finance Companies	Ministry of Defence
All Chartered Banks	Local Builders and Developers
Smaller Lending Institutions	Many Towns and Municipalities in Southwestern Ontario
Insurance Companies	Department of Public Works
Ontario Hydro	City of St. Thomas
Chartered Accountants	Local Townships
Local and Out of Town Business and Industries	Conservation Authorities
	Condominium Corporations
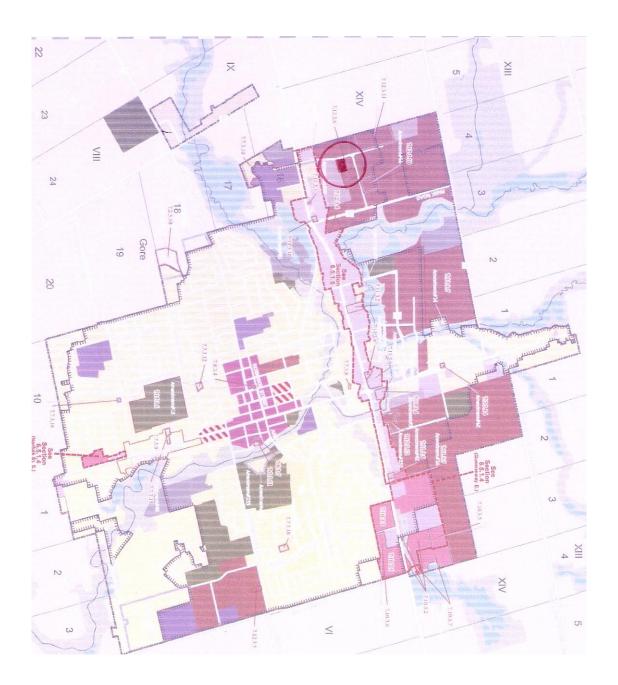
ADDENDUM

7.0 Industrial *Zones*

7.1 General Industrial *Zone* (MG)

7.1.1 *Permitted* Uses

In an MG *Zone*, no land, *building* or *structure* shall be used except in accordance with the following types of uses:

a) ambulance service
b) *animal hospital*
c) *auction centre*
d) bus terminal
e) call centre
f) *Cannabis Production and Processing*, subject to General Provisions 3.21 [25-Z-2018]
g) construction shop
h) *contractor's yard*
i) crematorium
j) fire hall
k) food processing, excluding abattoir
l) general material manufacturing
m) graphics and design
n) industrial supply
o) material processing, excluding asphalt plant, cement works and concrete batching
p) *merchandise service shop*
q) *office, industrial,* accessory to a *permitted* use
r) personal and health services for employees, accessory to an industry on the same *lot*
s) research and development facility
t) retail sales accessory to an industry on the same *lot*
u) storage
v) taxi terminal
w) telecommunications and data processing
x) trade school
y) transportation
z) *vehicle* services and repair, including *automobile body shop* and *industrial garage*
aa) *wholesale outlet.*

7.1.2 High Requirement for Municipal Public Water and Sanitary Sewage Treatment

Notwithstanding Subsection 7.1.1, uses with a high requirement for municipal treatment in either strength or quantity of waste, or a high volume requirement of municipal water shall not be *permitted.*

7.1.3 Exemption for Certain Industries with a High Requirement for Municipal Sewage Treatment

Any manufacturing or processing plant *existing* at the date of passing of this By-Law which has a high requirement of municipal sewage treatment in either strength or quantity of wastes or a high volume requirement of municipal water shall be allowed to enlarge or expand provided the enlargement or expansion does not constitute a significantly higher level of municipal sewage treatment or water requirements.

7.1.4 *Zone* Provisions

In an MG *Zone*, no *building* or *structure* shall be *erected* or *altered* except in accordance with the following provisions:

a)	minimum *lot area*:	1,855 square metres
b)	minimum *lot frontage*:	30 metres
c)	minimum *front yard*:	6 metres
d)	minimum *exterior side yard*:	6 metres
e)	minimum *interior side yard*:	3 metres
	i) abutting a residential *Zone*	20 metres
f)	minimum *rear yard*:	9 metres
g)	maximum *building height*:	subject to a 45 degree *angular plane* measured from the edge of any residential, commercial or institutional *Zoned* lots
h)	*outdoor storage*:	prohibited in any *front yard* or any *required exterior side yard*

7.1.5 Retail Sales Accessory to an Industry

Retail sales accessory to an industry shall be *permitted* up to 15 percent of the floor area of an industry to a maximum of 150 square metres of *usable floor area* provided the retail sales area is separated from the principal industrial or warehouse use by solid partition walls.

7.1.6 Additional *Zone* Provisions for Crematoriums [6-Z-2018]

Notwithstanding certain *Zone* provisions in Subsection 7.1.4, the following additional provisions shall apply to a crematorium:

a)	minimum *lot area*:	2 hectares
b)	minimum *setback* to any residential *zone*, school, community centre or *place of recreation*:	200 metres

Schedule A-23

Simcoe
(North West)

0 50 100 200 300 400 500
Meters

Comparable Sale 1
White Street
Aylmer, ON N5H 3G3
54.03 kilometers SW

Comparable Sale 2
1 Innovation Way
Tillsonburg, ON N4G 2R7
33.77 kilometers SW

Comparable Sale 3
3050 Dingman Drive
London, ON N6E 3W8
71.75 kilometers NW

Subject
Luscombe Drive
Simcoe, ON N3Y 4J9

Comparable Sale 4
10 Highbury Avenue S, Lot 1
St. Thomas, ON N5P 4J4
66.88 kilometers SW

Comparable Sale 6
33 Park Road
Simcoe, ON N3Y 4J9
0.72 kilometers SE

Comparable Sale 5
99 townline Road
Tillsonburg, ON N4G 5Y2
30.89 kilometers NW

DIRECT COMPARISON CHART - SALES

COMP.	LOCATION	DATE OF SALE	SELLING PRICE	SITE AREA	S. P PER ACRE	COMMENTS
1.	White Street, Blk. 2 Aylmer	11/15/24	$1,027,500	5.10 acs.	$201,471	- larger lot in a newly developing industrial park area in Aylmer - inferior location, services at the lot line, similar development time - corner lot, 122-day exposure time
2.	1 Innovation Way Tillsonburg	10/28/24	$1,057,000	6.04 acs.	$175,000	- larger lot in a newly developing industrial park area in Tillsonburg - similar location, shovel ready, quicker development time, corner lot - sold privately, 49-day exposure time
3.	3050 Dingman Drive London	10/22/24	$1,680,000	2.16 acs.	$777,778	- slightly smaller site area, fully serviced, site includes an existing residence - far superior location, site includes bell tower also bringing in rental income - zoning is commercial and is next to large commercial operations - 97-day exposure time, single frontage
4.	10 Highbury Avenue South Lot 1 St. Thomas	10/21/24	$2,500,000	5.00 acs.	$500,000	- larger lot in a well-established industrial area, full services at the lot line - immediate development, across the road from the new VW battery factory - far superior location, adjacent to an improved site and vacant lots - single frontage, 240-day exposure time
5.	99 Townline Road Tillsonburg	09/04/24	$425,000	1.00 acs.	$425,000	- smaller lot in an older, established industrial area in Tillsonburg - similar location, full services at the lot line, similar development time - existing paved and fenced parking area, adjacent to existing improved sites - 166-day exposure time, single frontage
6.	33 Park Road Simcoe	Active Listing	Asking Price $524,900	0.80 acs.	Asking Price $656,125	- much smaller lot, located one block to the east of the subject - overall similar/comparable location, established industrial area - full services at the lot line, superior development time, cleared site - adjacent to existing improved sites, has been on the market for 90 days+

SUBJECT PHOTOGRAPHS

APPROXIMATE NORTH BOUNDARY OF THE SUBJECT SITE - LOOKING EAST

SUBJECT SITE - LOOKING SOUTHEAST

SUBJECT PHOTOGRAPHS

LUSCOMBE DRIVE - LOOKING SOUTH

APPROXIMATE SOUTH BOUNDARY OF THE SUBJECT SITE - LOOKING EAST

SUBJECT PHOTOGRAPHS

SUBJECT SITE - LOOKING NORTHEAST

LUSCOMBE DRIVE - LOOKING NORTH

FUNCTIONAL SERVICING REPORT
PROPOSED MANUFACTURING BUILDING
SIMCOE, ONTARIO

Norfolk County

Prepared By:

J.H. Cohoon Engineering Limited
440 Hardy Road, Unit 1
Brantford, Ontario
N3T 5L8
Phone (519) 753-2656
Fax (519) 753-4263

Job: 17233   **September 2025**

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233

September 2025

INTRODUCTION

The following Functional Servicing Report was prepared by J.H. Cohoon Engineering Limited for Tony Kounty in support of planning applications relating to the site located on Luscombe Drive in the Town of Simcoe, Ontario in Norfolk County. This report was prepared to demonstrate the servicing scheme for the proposed industrial development that is to occur on the subject lands.

The development approach is to develop the site in a single-phase two phase development located on the east side of the Luscombe Drive in the Town of Simcoe. The development consists of two 464.6 sq.m. industrial buildings to be constructed in two phases.
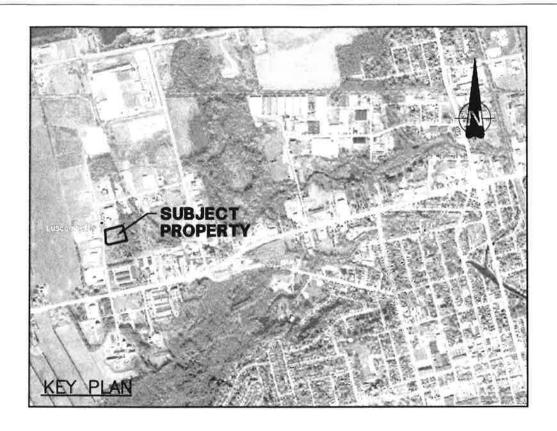
The site is located on the east side of Luscombe Drive north of the intersection of Luscombe Drive and Highway 3 within the Town of Simcoe, in Norfolk County. The overall subdivision area is 1.154 Ha in size

The objective of this report is to document the servicing strategy to be utilized for the site in a proposed initial development. The proposal is to have full municipal services will be installed within the development and with connections to the existing municipal system in the existing municipal road allowance as applicable. The owner will assume full responsibility for the installation and maintenance of the services on the property.

PROPOSED DEVELOPMENT CONCEPT

The proposed development is to be constructed on the east side of Luscombe Drive in the Town of Simcoe, Ontario. As indicated the parcel of land is some 1.154 hectares in size. A key map illustrating the site location is provided in Figure 1.

The anticipated development is intended to be a two phase industrial development consisting of two 464.6 sq.m. industrial buildings (constructed in two phases) on the property. The development is illustrated on the plans prepared by J H Cohoon Engineering Limited being drawings which have been included within Appendix 'A' of this report

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233

September 2025

Site Location – Key Plan
Figure No. 1

SANITARY SEWERS & APPURTENANCES

Design Flows

This site is proposed to be constructed on full services extending from the existing municipal services located in front and adjacent to the site.

The proposed servicing plans are shown generally on the engineering plans included within Appendix 'A' of this report.

The design of the system(s) was carried out in accordance with the requirements of the Ontario Building Code including / based upon the following assumptions for the design of the system

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233

September 2025

Industrial Component

      2 – 464.6 sq.m. industrial buildings
      Anticipated occupant load is 5 persons per building
      The average daily flow the average daily flow is based upon 75 litres per person per day\

2 x 5 x 75	=	750 litres per day
	=	0.0087 litres per second
Total Average Design Flow	=	0.0087 litres per second.

Within the Norfolk County Design Criteria, the anticipated sewage flows are to be based upon 55 cu.m. / hectare / day. In this case, that would correspond to 63.47 cu.m. per day which is substantial on the basis of the proposed development. In this case, we have estimated the occupant load for the building at 5 per building which is a reasonable estimate of the sanitary effluent from this site.

On the basis of the Harmon Peaking Factor for the industrial, and a total population for this site being 10 persons, the peaking factor of 3.532 (between 2 and 5.0) was applied resulting in a peak design flow for this building being 0.031 litres per second.

This was calculated on the basis of the following

$$Me = 0.80 * (1 + (14 / (4 + Pe^{0.5})))$$

Where the equivalent population is in the order of 10 persons or Pe=0.01 which results in a peaking factor of 3.532

With the consideration of Infiltration on this site as follows:

Site Area	= 1.154 hectares +/-
Infiltration Rate	= 0.28 litres per second per hectare
Infiltration Allowance	
	= 0.3231 litres per second

Summary of Results

Average Flow Rate (including Infiltration)	=	0.332 litres per sec
Peak Flow Rate (including infiltration)	=	0.354 litres per sec

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233

September 2025

WATER SERVICING AND FIRE PROTECTION

The provision of water to the proposed buildings will be provided through the provision of water services to the subject lands in accordance with the requirements of the Ontario Building Code.

We note that the site is also serviced with on site municipal water and local fire hydrants.

The domestic demand for would be similar to the sanitary sewer effluent calculations detailed in the Section on Sanitary Sewer Design flows and would be as follows:

2 – 464.6 sq.m. Industrial Bldg.	Average Daily Flow Rate (Litres per second)	Peak Daily Flow Rate (Litres per second)
	0.0087	0.0158

As noted in the Norfolk County design criteria, a peaking factor of 2.25 was used for the calculation of the peak flow rate.

The proposed fire protection to this development will be handled by the existing fire hydrants adjacent to the property.

Utilizing the requirements of the Fire Underwriters Survey 2020, the following outlines the water demand for the overall building area of the subject building.

The analysis was carried out on a typical building on this site to determine the maximum fire demand for each of the buildings on the site.

This largest building in this development would be a 464.6 sq.m. industrial facility (1 story). Therefore, in this case, a building area of 464.6 sq.m. is being considered in the calculations.

Utilizing the Fire Underwriters Survey Document, our estimation of the required fire demand is as follows:

Estimate of Fire Flow Required $= 220 * C * SQRT(A)$
Where C $=$ Coefficient related to type of Construction

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233

September 2025

Ordinary Construction

= 1.5

A = Total Area of the Building (As outlined above) 464.6sq. m.

= 220 x 1.5 * SQRT (142.2)
= 7,113.01 litres per m
Rounded
= 7,000 litres per min

Modifications
Occupancy = Normal Hazard Occupancy
= -15%
= -1050 litres per min

Net Fire Demand = 5,950 litres per min

Further Modifications
System = Automatic Sprinkler
0%
No Reduction

Spatial Exposure (Estimated)
North >30 m   + 0%
East   >30 m   + 0%
West   Street   + 0%
South 10.0 m   + 15%
Total   + 15%
                        Increase
                        892.5 litres per min

Total Fire Demand   6,842.5 litres per min
                        Or 114.0 litres per sec.

STORM SEWERS & APPURTENANCES

Storm Sewers / Storm water Management

The site is intended to be serviced through the existing storm sewer system located on Luscombe Drive in the Town of Simcoe, Ontario adjacent to the site. The site is intended to provide its own stormwater management controls on the property to reduce the impact of the site on the existing drainage system. The

overflow from this site will be directed into the existing storm sewer that is located adjacent to the property within the Luscombe Drive right-of-way.

Pre-development Condition

The site presently drains in an easterly direction towards the rear of the property onto the abutting neighbour's lands. The site is with municipal storm sewers which are to be designed to handle the 5-year storm event. The overall stormwater management system is to be consistent with the current policies of Norfolk County whereas the proposed development is required to reduce the runoff in the post development flows to below the pre-development rates for all storm events up to and including the 100-year event.

The analysis is carried out utilizing the Norfolk County rainfall IDF curves shall be based on the following local rainfall data for Norfolk County:

$$i = \frac{a}{(t + b)c} \quad \text{mm/hr}$$

Storm Event	A	B	C
5	583.017	3.007	0.703
10	670.324	3.007	0.698
25	721.533	2.253	0.679
50	766.038	1.898	0.668
100	801.041	1.501	0.657

The following table outlines the pre-development runoff for the site.

Pre-Development Runoff Results

Design Storm	Pre-Development Runoff Rate (cms)
5-year storm	0.074
10-year storm	0.117
25-year storm	0.180
50-year storm	0.224
100-year storm	0.267

The flows outlined above were calculated utilizing the MIDUSS Stormwater Simulation Program (Ver 2). The computer results are included within the Appendix 'B' of this report.

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

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September 2025

Post-Development Condition

With the development of the lots, and the associated paved areas, an increase in the runoff will occur on this site. The results are detailed in the Appendix 'C' of this report. The same IDF curves were utilized in the analysis as the pre-development condition.

Post-Development Runoff Results

Design Storm	Pre-Development Runoff Rate (cms)	Post Development Runoff Rate (cms)	
		W/O SWM	W/Swm
5-year storm	0.074	0.251	0.065
10-year storm	0.117	0.299	0.103
25-year storm	0.180	0.360	0.135
50-year storm	0.224	0.406	0.182
100-year storm	0.267	0.448	0.225

The flows were calculated utilizing the MIDUSS Stormwater Simulation Program (Ver 2). The computer results are included within the Appendix 'B' of this report.

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233

September 2025

GRADING

Road grades will be established for the proposed development and are illustrated on the plans appended to the report. Minimum (0.50%) and maximum (6.0%) grades have been used in accordance with Norfolk County design criteria.

UTILITIES

Coordination of these services will be required with Union Gas, the hydro utility, Bell, and the local cable tv provider (if available)

CONCLUSIONS

The preceding sections of this report outline the servicing and grading requirements for the proposed industrial development on this site. Based on the work completed to date, it may be concluded that the proposed development may be developed with full municipal services.

Report Prepared By:

J.H. COHOON ENGINEERING LIMITED

R.W. Phillips, P.Eng.

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233
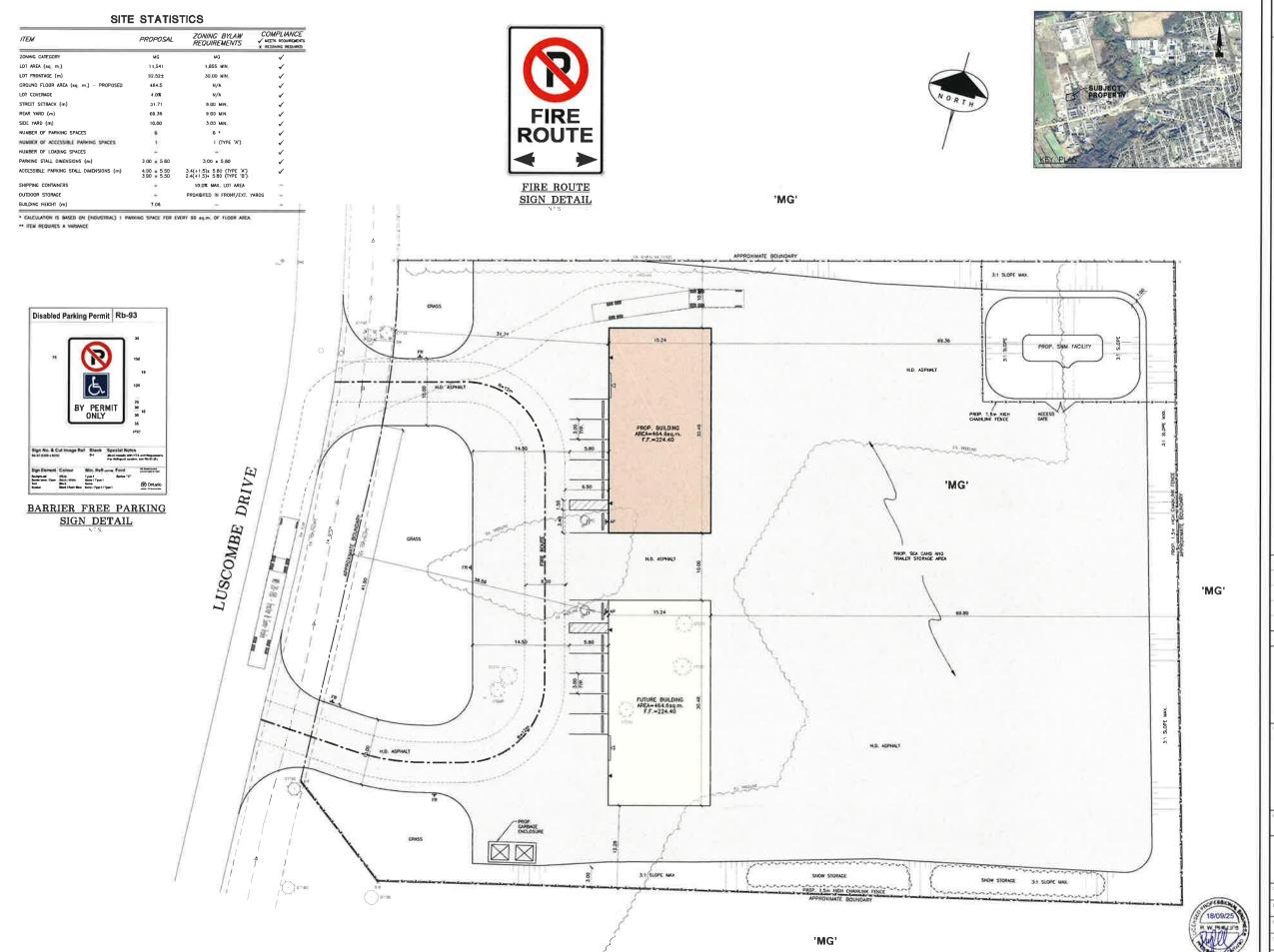
September 2025

Appendix 'A'
Proposed Industrial Development Engineering Plans
as prepared by J H Cohoon Engineering Limited

SITE STATISTICS

ITEM	PROPOSAL	ZONING BYLAW REQUIREMENTS	COMPLIANCE ✓ MEETS REQUIREMENTS ✗ REZONING REQUIRED
ZONING CATEGORY	MG	MG	✓
LOT AREA (sq. m.)	11,541	1,855 MIN.	✓
LOT FRONTAGE (m)	92.52±	30.00 MIN.	✓
GROUND FLOOR AREA (sq. m.) – PROPOSED	484.5	N/A	✓
LOT COVERAGE	4.0%	N/A	✓
STREET SETBACK (m)	31.71	6.00 MIN.	✓
REAR YARD (m)	69.36	9.00 MIN.	✓
SIDE YARD (m)	10.00	3.00 MIN.	✓
NUMBER OF PARKING SPACES	8	6 *	✓
NUMBER OF ACCESSIBLE PARKING SPACES	1	1 (TYPE 'A')	✓
NUMBER OF LOADING SPACES	–	–	–
PARKING STALL DIMENSIONS (m)	3.00 x 5.80	3.00 x 5.80	✓
ACCESSIBLE PARKING STALL DIMENSIONS (m)	4.90 x 5.50 (TYPE 'A') 3.80 x 5.50 (TYPE 'B')	3.4(+1.5)x 5.80 (TYPE 'A') 2.4(+1.5)x 5.80 (TYPE 'B')	✓
SHIPPING CONTAINERS	–	10.0% MAX. LOT AREA	–
OUTDOOR STORAGE	–	PROHIBITED IN FRONT/EXT. YARDS	–
BUILDING HEIGHT (m)	7.06	–	–

* CALCULATION IS BASED ON (INDUSTRIAL) 1 PARKING SPACE FOR EVERY 90 sq.m. OF FLOOR AREA.

** ITEM REQUIRES A VARIANCE

FIRE ROUTE
SIGN DETAIL
N.T.S.

BARRIER FREE PARKING
SIGN DETAIL
N.T.S.

NORTH

LEGEND:
- ▲ DENOTES MANDOOR LOCATIONS
- △ DENOTES OVERHEAD DOOR LOCATIONS
- AP DENOTES ACCESSIBLE PARKING SIGN
- FR DENOTES FIRE ROUTE SIGN
- EX. TREES TO REMAIN
- EX. TREES TO BE REMOVED

KEY PLAN
SUBJECT PROPERTY

NOTES:
1. ALL ELEVATIONS SHOWN ARE METRIC.
2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)

LUSCOMBE DRIVE

'MG'

PROP. BUILDING
AREA=464.8sq.m.
F.F.=224.40

FUTURE BUILDING
AREA=464.6sq.m.
F.F.=224.40

PROP. SWM FACILITY

PROP. SEA CANS AND TRAILER STORAGE AREA

PROP. GARBAGE ENCLOSURE

H.D. ASPHALT

GRASS

SNOW STORAGE

PROP. 1.5m HIGH CHAINLINK FENCE

3:1 SLOPE MAX.

| 1 | AS PER COUNTY COMMENTS | 08/01/25 | K.P.B. |
| NO. | REVISION | DATE (MM/DD/YY) | BY |

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS

440 HARDY ROAD , UNIT #1 , BRANTFORD — ONTARIO , N3T 5L8
TEL. (519) 753-2856 FAX. (519) 753-4283 www.cohoneng.com

PROJECT
PROPOSED
MANUFACTURING BUILDING
LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT
TONY KOUNTY

SITE PLAN

DESIGN	R.W.P.	SCALE	1:250
DRAWN	S.L.M./K.P.B.	JOB No.	17233
CHECKED	R.W.P.		
SHEET	1 of 4	DWG. No.	17233-1
DATE	MAR. 20/25		

Disabled Parking Permit | Rb-93

18/09/25

SILTATION & EROSION CONTROL NOTES:

1. THE SILTATION & EROSION CONTROL (SEC) MEASURES ILLUSTRATED ON THIS PLAN ARE CONSIDERED TO BE THE MINIMUM REQUIREMENT. SITE CONDITIONS MAY REQUIRE ADDITIONAL MEASURES WHICH WILL BE IDENTIFIED BY THE ENGINEER DURING CONSTRUCTION.

2. ALL SEC MEASURES ARE TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

3. OWNER/CONTRACTOR TO MAINTAIN EROSION CONTROL MEASURES THROUGHOUT SITE UNTIL A COMPLETE GRASS/VEGETATION COVER IS ACHIEVED.

4. ONLY AT THE DIRECTION OF THE ENGINEER ARE THE SEC MEASURES TO BE REMOVED.

5. SITE WORKS ARE TO BE STAGED IN SUCH A MANNER THAT EROSION WILL BE MINIMIZED.

6. CLEARING AND GRUBBING OF THE SITE SHOULD BE KEPT TO A MINIMUM AND VEGETATION REMOVED ONLY IN ADVANCE OF IMMEDIATE CONSTRUCTION.

7. STOCKPILES OF EARTH OR TOPSOIL ARE TO BE LOCATED AND PROTECTED TO MINIMIZE ENVIRONMENTAL INTERFERENCE. EROSION CONTROL FENCING IS TO BE INSTALLED AROUND THE BASE OF ALL STOCKPILES.

8. THE OWNER IS RESPONSIBLE TO ENSURE THE MUNICIPAL ROADWAYS ARE CLEANED OF ALL SEDIMENTS FROM VEHICULAR TRACKING ETC. TO AND FROM THE SITE, AT THE END OF EACH WORKDAY.

9. ALL EXISTING AND PROPOSED CATCHBASINS ON THE SUBJECT PROPERTY, PLUS ANY CATCHBASINS WITHIN THE INFLUENCE OF RUNOFF FROM THE SITE, ARE TO BE PROTECTED WITH FILTER CLOTH OR APPROVED EQUIVALENT.

10. INSPECT SEDIMENT CONTROL MEASURES ON A WEEKLY BASIS, AFTER RAINFALL EVENTS, AFTER SIGNIFICANT SNOWMELT EVENTS, AND DURING EXTENDED RAIN OR SNOWMELT PERIODS. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.

NORTH

KEY PLAN

SUBJECT PROPERTY

LEGEND:

- EXISTING ELEVATIONS
- PROPOSED ELEVATIONS
- PROPOSED SWALE ELEVATIONS
- PROPOSED DITCH ELEVATIONS
- PROPOSED SWALE
- GENERAL DRAINAGE
- DENOTES MANHOLE LOCATIONS
- DENOTES OVERHEAD DOOR LOCATIONS
- RWL PROPOSED RAIN WATER LEADER LOCATION
- PROPOSED PRE-ASSEMBLED SILTATION CONTROL FENCING
- SILT SACK IN CATCHBASIN
- EX. TREES TO REMAIN
- EX. TREES TO BE REMOVED
- OVERLAND FLOW ROUTE
- LIMIT OF S.W.M. POND (100 Yr. EVENT) MAX POND ELEVATION AS NOTED

NOTES:

1. ALL ELEVATIONS SHOWN ARE METRIC
2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)
3. TOPOGRAPHIC SURVEY PROVIDED BY JoeTOPO SURVEYS AND CADD INC. DATED NOV. 14, 2024.

LUSCOMBE DRIVE

PROP. BUILDING
AREA=464.8sq.m.
F.F.=224.40

FUTURE BUILDING
AREA=464.6sq.m.
F.F.=224.40

PROP. SWM FACILITY

POND No. 6 MAX. ELEV.=224.15
POND No. 1 MAX. ELEV.=223.20
POND No. 4 MAX. ELEV.=224.15
POND No. 2 MAX. ELEV.=223.30

PROP. GARBAGE ENCLOSURE

PROP. 1.5m HIGH CHAINLINK FENCE

PROVIDE SILT FENCE AROUND PERIMETER OF SITE (SEE DETAIL)

3:1 SLOPE MAX.

APPROXIMATE BOUNDARY

T.B.M. No. 1 ELEV. = 225.25m   (GEO)
TOP OF IRON BAR @ NORTH-WEST CORNER OF PROPERTY AS SHOWN (PROV. JoeTOPO SURVEY)

T.B.M. No. 2 ELEV. = 226.10m   (GEO)
TOP NUT OF FIRE HYDRANT WEST SIDE OF LUSCOMBE DRIVE, AS SHOWN (TAKEN ON 5 JAN. 7, 2025)

1	AS PER COUNTY COMMENTS	08/01/25	K.P.B.
NO	REVISION	(MM/DD/YY)	BY

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS

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PROJECT:
PROPOSED
MANUFACTURING BUILDING
LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT:
TONY KOUNTY

GRADING AND
SILTATION & EROSION
CONTROL PLAN

DESIGN: R.W.P.	SCALE: 1:250	
DRAWN: S.L.M./K.P.B.	JOB No. 17233	
CHECKED: R.W.P.		
SHEET: 2 of 4	DWG. No. 17233-2	
DATE: MAR. 20/25		

18/09/25

STORM SYSTEM

MH No.	DESCRIPTION	T/G	INVERTS
ST1A	STORMCEPTOR MODEL ___	223.15	N 221.58 S 221.61
ST1	1.2m⌀ P/C CB/MH	223.00	N 221.63 S 221.65
ST2	0.6x0.6x1.52m P/C CB	223.00	N 221.83
ST3	1.2m⌀ P/C MH	223.30	N 221.72 S 221.74 W 221.76
ST4	0.6x0.6x1.83m P/C CB	223.85	N 222.37
ST5	1.2m⌀ P/C MH	224.15	N 222.07 S 222.10 E 222.10 S 222.10
ST6	0.6x0.6x1.67m P/C CB	223.85	S 222.57
ST7	1.2m⌀ P/C MH	224.95	E 221.12 W 221.09
ST8	1.2m⌀ P/C MH	224.20	W 221.25 E 221.28
ST9	0.6x0.6x1.98m P/C DICB c/w 4:1 SLOPED GRATE	224.40 (LOW)	N 222.90

SANITARY SYSTEM

MH No.	DESCRIPTION	T/G	INVERTS
S1	1.2m⌀ P/C MH	223.95	W 222.23 E 222.28 S 222.28
S2	1.2m⌀ P/C MH	225.05	W 222.06 E 222.09

WATERMAIN CROSSINGS

LOCATION	STM. INV.	STM. OBV.	SAN. INV.	SAN. OBV.	W/M INV. AT CROSSING ONLY	W/M OBV. AT CROSSING ONLY
1			221.77	222.02	223.56	223.60
2	220.96	221.71			223.56	223.60
3	222.20	222.45			223.36	223.40
4	222.42	222.67			221.86*	221.90*
5			222.34	222.49	221.80*	221.84*
6	222.06	222.44			221.52*	221.56*

* DENOTES LOCATION WHERE WATERMAIN IS TO BE LOWERED BELOW STORM SEWER (ONLY) OR SANITARY SEWER (ONLY). PROVIDE 0.50m MIN. CLEARANCE — WATERMAIN ELEVATIONS SHOWN ARE THE LOWERED ELEVATIONS AT INDICATED CROSSING LOCATIONS)

NORTH

SUBJECT PROPERTY

KEY PLAN

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITES AND STRUCTURES IS NOT GUARANTEED. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND:

Symbol	Description
○ Si	EXISTING SANITARY MANHOLE
○ STi	EXISTING STORM MANHOLE
□ CB	EXISTING CATCHBASIN
⌀	EXISTING FIRE HYDRANT
✕ WV	EXISTING VALVE & BOX
↔ WB	EXISTING WATER BOX
● Si	PROPOSED SANITARY MANHOLE
——	PROPOSED SANITARY SERVICE
——	PROPOSED STORM SERVICE
● STi	PROPOSED STORM MANHOLE
◉ STi	PROPOSED CATCHBASIN MANHOLE
■ CB	PROPOSED CATCHBASIN
—CS—	PROPOSED WATER SERVICE & CURBSTOP
RWL ◇→	PROPOSED RAIN WATER LEADER

ROAD RESTORATION TO BE A MINIMUM OF: 40mm HL3 ASPHALT, 50mm HLB ASPHALT 150mm GRAN. 'A', 300mm GRAN 'B' (OR MATCH EXISTING) —ALL TRENCHED AREAS TO BE BACKFILLED WITH IMPORTED GRANULAR 'A' MATERIAL COMPACTED TO 100% SPMDD TO SUBGRADE —ALL MATCH LIMITS ADJACENT TO EXISTING ASPHALT TO BE SAWCUT & LAP JOINTS TO BE MILLED, 40mm DEPTH, 500mm WIDTH

LUSCOMBE DRIVE

PROP. BUILDING AREA=464.6sq.m. F.F.=224.40

FUTURE BUILDING AREA=464.6sq.m. F.F.=224.40

PROP. SWM FACILITY

PROP. GARBAGE ENCLOSURE

T.B.M. No. 1 ELEV. = 225.25m (GEO)
TOP OF IRON BAR @ NORTH-WEST CORNER OF PROPERTY AS SHOWN (FROM ⌀TOPO SURVEY)

T.B.M. No. 2 ELEV. = 226.10m (GEO)
TOP SLIP OF FIRE HYDRANT WEST SIDE OF LUSCOMBE DRIVE AS SHOWN (TAKEN ⌀ S 4:29 JAN 7, 2025)

	AS PER COUNTY COMMENTS	08/01/25	K.P.B.
NO	REVISION	DATE (MM/DD/YY)	BY

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS

440 HARDY ROAD , UNIT #1 , BRANTFORD — ONTARIO , N3T 5L8
TEL. (519) 753–2856 FAX. (519) 753–4263 www.cohooneng.com

PROJECT:

PROPOSED MANUFACTURING BUILDING
LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT:

TONY KOUNTY

SERVICING PLAN

DESIGN:	R.W.P.	SCALE:	1:250
DRAWN:	S.L.M./K.P.B.	JOB No	17233
CHECKED:	R.W.P.		
SHEET:	3 of 4	DWG No.	17233-3
DATE	MAR. 20/25		

ROADWORKS:

1. ROADWAYS & RELATED WORKS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.

2. CATCH BASIN CONNECTIONS TO BE PVC PIPE CSA B182.4, SDR 35 OR 'ULTRA RIB'. SINGLE CATCH BASIN LEADS TO BE MIN. 250mm DIA. DOUBLE CATCH BASIN LEADS TO BE MIN. 300mm DIA. REAR LOT CATCHBASIN LEADS AND DITCH INLET LEADS TO BE CSA A257.1 EXTRA STRENGTH CL3 CONC. 300mm DIA. AT 1.0% MIN.

3. SINGLE CATCH BASINS AS PER OPSD 705.010 FRAME AND COVER AS PER OPSD 400.110.

4. FINAL ROADWAY CROSSFALL TO BE 2.0%

5. VALVES, MANHOLES AND CATCH BASINS SHALL BE PLACED AT ASPHALT BINDER COURSE (HL4) ELEVATION AS DIRECTED BY THE ENGINEER.

6. AT SAG POINTS, CATCH BASIN ADJUSTMENT AND PAVING TO BE PLACED IN SUCH MANNER THAT WILL NOT OBSTRUCT DRAINAGE.

7. FINAL ASPHALT COURSE (HL3) SHALL BE PLACED IN ACCORDANCE WITH APPROVED COUNTY OF NORFOLK STANDARDS FOR TIMING, AS DIRECTED BY THE ENGINEER AND AS PER THE REQUIREMENTS STIPULATED IN THE DEVELOPMENT AGREEMENT.

8. FOR MANHOLE AND CATCH BASIN TOP ADJUSTMENTS, ALL PERMANENT ADJUSTMENTS ARE TO BE POURED IN PLACE OR APPROVED EQUIVALENT (e.g. MODULOC).

9. ALL BEDDING AND BACKFILL MATERIAL, ROAD SUB-GRADES AND GRANULAR ROAD BASES SHALL BE COMPACTED TO MIN 100% SPD UNLESS OTHERWISE SPECIFIED.

10. SILTATION CONTROL BARRIERS SHALL BE PLACED AS DETAILED ON THE SILTATION AND EROSION CONTROL PLAN.

11. ADDITIONAL SILT CONTROL LOCATIONS MAY BE REQUIRED AS DETERMINED BY THE COUNTY AND/OR THE ENGINEER.

C.B. ORIFICE PLATE SIZING

ORIFICE PLATE CONFIGURATION NUMBER	DIAMETER OF ORIFICE PLATE OPENING
1	175mm
2	175mm
3	100mm
4	85mm

GENERAL NOTES:

1. CONSTRUCTION OF SEWERS, WATERMAINS AND RELATED APPURTENANCES SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT STANDARD DRAWINGS OF THE COUNTY OF NORFOLK, AND THE ONTARIO PROVINCIAL STANDARDS DRAWINGS (OPSD). THE COUNTY OF NORFOLK DRAWINGS SHALL TAKE PRECEDENCE OVER THE OPSD DRAWINGS.

2. INFORMATION REGARDING ANY EXISTING SERVICES AND/OR UTILITIES SHOWN ON THE APPROVED SET OF CONSTRUCTION DRAWINGS IS FURNISHED AS THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL INTERPRET THIS INFORMATION AS THEY SEE FIT WITH THE UNDERSTANDING THAT THE OWNER AND HIS AGENTS DISCLAIM ALL RESPONSIBILITY FOR ITS ACCURACY AND/OR SUFFICIENCY.

3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION AND HE SHALL REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.

4. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.

5. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR CONSTRUCTION.

6. FOR ALL SEWERS AND WATERMAIN IN FILL SECTIONS, THE COMPACTION SHALL BE VERIFIED PRIOR TO LAYING OF PIPE.

7. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE COUNTY OF NORFOLK OR THE ENGINEER.

8. NO BLASTING WILL BE PERMITTED.

9. ALL EXCAVATIONS TO BE BACKFILLED WITH SELECT NATIVE MATERIAL, APPROVED BY THE ENGINEER, TO 95% S.P.D.

10. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING (UNTIL ROAD CONSTRUCTION IS FINISHED) SILT CONTROL DEVICES AS SHOWN ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER.

11. TREE PROTECTION PROCEDURES TO BE IMPLEMENTED IN ACCORDANCE WITH COUNTY OF NORFOLK STANDARDS.

12. ALL WORKS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT & ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS AND STANDARDS PRESCRIBED BY THE COUNTY.

13. ALL BOULEVARD AREAS TO BE RESTORED WITH #1 NURSERY SOD ON A MINIMUM 100mm OF SELECT TOPSOIL.

14. ALL TRENCH BACKFILL UNDER EXISTING ROADWAYS SHALL BE COMPACTED IN MINIMUM 230mm LIFTS TO 98% STANDARD PROCTOR DENSITY. A GEOTECHNICAL ENGINEER'S REPRESENTATIVE SHALL BE ON SITE DURING THE WORK TO VERIFY THE COMPACTION OF EACH LIFT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS OF RE-TESTING.

15. AN ENGINEER IS REQUIRED TO BE ONSITE FOR INSPECTION OF ALL UNDERGROUND SERVICES.

16. DRIVEWAYS MUST HAVE MINIMUM 1.0m CLEARANCE FROM CATCHBASINS, VALVES, HYDRANTS, STREETLIGHT POLES, TRANSFORMERS, CANADA POST COMMUNITY MAILBOX LOCATIONS ETC.

WATERMAINS:

1. WATERMAINS AND RELATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.

2. WATERMAINS TO BE INSTALLED WITH A MINIMUM DEPTH OF COVER OF 1.70m BELOW FINISHED GRADE.

3. WATERMAINS TO BE INSTALLED IN ACCORDANCE WITH OPSD 802.010 TYPE 2 TRENCH BEDDING TO BE GRANULAR 'A' UNLESS OTHERWISE NOTED.

4. WATERMAINS TO BE PVC PIPE DR-18 IN ACCORDANCE WITH AWWA C900 & CSA B137.3. THE PIPE SHALL BE SHIPPED TO THE SITE WITH THE ENDS FACTORY CAPPED IF APPLICABLE.

5. FOR PVC WATERMAIN DEFLECTION:
   - MAXIMUM ALLOWABLE DEFLECTION OF 1 DEGREE PER JOINT SHALL NOT BE EXCEEDED.
   - EACH JOINT SHALL BE DEFLECTED AN EQUAL AMOUNT.

6. ALL WATER MAINS TO BE SWABBED, TESTED, DISINFECTED AND FLUSHED UNDER THE SUPER-VISION OF THE ENGINEER TO THE SATISFACTION OF THE COUNTY OF NORFOLK PRIOR TO CONNECTION TO THE EXISTING MUNICIPAL SYSTEM. REFER TO OPSS 701.07.25, AWWA C651 & COUNTY OF NORFOLK GENERAL WATERMAIN DISINFECTION PROCEDURES.

7. A REDUCED PRESSURE DOUBLE BACKFLOW PREVENTER IS REQUIRED ON THE TEMPORARY SUPPLY LINES USED FOR FILLING AND FLUSHING/SWABBING OF WATERMAINS AND TO BE TESTED AND CERTIFIED ON SITE.

8. UPON COMPLETION OF INSTALLATION, THE CONTRACTOR SHALL PERFORM A PRESSURE TEST ON THE WATERMAINS AS PER OPSS 701.07.24 AND COUNTY OF NORFOLK SPECIFICATIONS. WATERMAIN IS TO BE TESTED UNDER THE SUPERVISION OF THE ENGINEER PRIOR TO CONNECTION TO EXISTING WATERMAINS USING TEMPORARY CAPS OR PLUGS IF APPLICABLE.

9. PIPE CLOSURES WHERE REQUIRED, ARE TO BE SUPPLIED BY THE CONTRACTOR. THE CONTRACTOR SHALL ALSO SUPPLY AND INSTALL ALL ADAPTOR PIECES IN ORDER TO CONNECT EXISTING WATERMAINS.

10. ALL WATER SERVICE CONNECTIONS 38mm DIA. ASTM B88 TYPE 'K' SOFT COPPER AS PER OPSD 1104.01 & COUNTY OF NORFOLK ENGINEERING STANDARDS, WITH SAND BEDDING.

11. NO WORK ON WATER SERVICES CAN TAKE PLACE WITHOUT SUPERVISION OF A LICENSED NORFOLK COUNTY WATER OPERATOR ON-SITE.

SANITARY & STORM SEWERS:

1. SANITARY & STORM SEWERS & RELATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.

2. COVER AND BEDDING MATERIAL FOR CONCRETE PIPE AS PER OPSD 802.030 CLASS 'B' BEDDING SHALL BE GRANULAR 'A' MATERIAL UNLESS OTHERWISE INDICATED.

3. COVER AND BEDDING MATERIAL FOR PVC PIPE AS PER OPSD 802.010 TYPE 2 TRENCH BEDDING SHALL BE GRANULAR 'A' MATERIAL UNLESS OTHERWISE INDICATED.

4. PVC PIPE WILL REQUIRE SPECIAL CONSTRUCTION PROCEDURES FOR LEAKAGE AND TESTING, PIPE DEFLECTION, ETC.

5. ALL SEWERS TO BE FLUSHED & VIDEOED PRIOR TO THE SUBMISSION OF THE FIRST INTERIM COMPLETION CERTIFICATE AND PRIOR TO THE FINAL COMPLETION CERTIFICATE.

6. ALTERNATE MATERIALS MAY BE ACCEPTABLE, PROVIDED APPROVAL HAS FIRST BEEN OBTAINED FROM THE COUNTY OF NORFOLK AND ENGINEER IN WRITING.

7. ALL STORM MANHOLES AND CATCHBASINS TO BE PRECAST CONCRETE STRUCTURES MANUFACTURED IN PRE QUALIFIED PLANTS IN ACCORDANCE WITH THE LATEST APPLICABLE ONTARIO PROVINCIAL STANDARD (OPS) DRAWINGS AND SPECIFICATIONS.

8. ALL SEWER INSTALLATIONS TO CONFORM WITH OPSD 802.031 TYPE 3 SOIL.

9. ALL MANHOLE FRAMES AND COVERS TO CONFORM WITH OPSD 401.010 TYPE 'A' CLOSED COVER.

10. MANHOLES SHALL BE SUPPLIED TO THE SITE PRE-BENCHED UNLESS OTHERWISE NOTED.

11. PRIVATE SANITARY & STORM DRAINS TO BE LOCATED AS PER THE TYPICAL LOT SERVICING DRAWING.

12. PRIVATE SANITARY DRAINS TO 150mm⌀ PVC DR28 PIPE.

13. A 38x89mm x 2.0m LONG MARKER IS TO BE PLACED FROM THE CAPPED LATERAL AND EXTEND 1.0m ABOVE GROUND AND PAINTED GREEN FOR SANITARY AND WHITE FOR STORM.

14. BEDDING FOR PRIVATE SANITARY & STORM DRAINS AS PER OPSD 1006.02 TYPE 2 TRENCH WITH GRANULAR 'A' BEDDING AND COVER MATERIAL.

15. MINIMUM FALL FOR PRIVATE SANITARY & STORM DRAINS TO BE 2.0%

16. ALL APPLICABLE PERMITS TO BE APPLIED FOR PRIOR TO THE INSTALLATION OF ANY SERVICES.

17. ALL SANITARY SEWER LATERAL CONNECTIONS SHALL BE INSTALLED USING PREFABRICATED TEES. THE USE OF SERVICE SADDLES MUST BE APPROVED BY NORFOLK COUNTY ENVIRONMENTAL SERVICES DIVISION. ALL CONNECTIONS SHALL CONFORM TO CURRENT OPSD 1006.010 AND OPSS 410.

18. NO DEFLECTIONS OF SANITARY LATERALS ALLOWED FROM MAIN TO PROPERTY LINE. NEW CONNECTIONS MUST BE 3.0m FROM PROPERTY LINE BARS OR AS APPROVED BY THE MANAGER OF ENVIRONMENTAL SERVICES. AFTER THE PROPERTY LINE ONLY 22.5° FITTINGS ARE ALLOWED AT 1.2m, 45° SWEEPS. CLEANOUTS ARE REQUIRED EVERY 30.5m AND PRIVATE MANHOLES EVERY 91.3m.

19. SPATIAL SEPARATION FROM WATER SERVICE CONNECTIONS OF NOT LESS THAN 2.44m MEASURED HORIZONTALLY FROM UNDISTURBED OR COMPACTED EARTH OR AS APPROVED BY THE MANAGER OF ENVIRONMENTAL SERVICES.

FLOW CONTROL DEVICE ORIFICE PLATE
N.T.S.

SWM POND OUTLET STRUCTURE DETAIL
SCALE: 1:30

HEAVY DUTY ASPHALT DESIGN
N.T.S.

MUD MAT DETAIL
N.T.S.

TYP. PIPE INSULATION DETAIL
N.T.S.

PERSPECTIVE VIEW
PLAN
SECTION A-A
JOINT DETAIL

NOTE:
A. All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING   Nov 2015 | Rev 2

HEAVY-DUTY SILT FENCE BARRIER
OPSD 219.130

INSTALLATION DETAIL
BAG DETAIL
SILT SACK DETAIL
N.T.S.

SECTION 'A-A'
SCALE: 1:100

SECTION 'B-B'
SCALE: 1:100

1	AS PER COUNTY COMMENTS	08/01/25	K.P.B.
No.	REVISION	DATE (YY/DD/YY)	BY

PROJECT:

PROPOSED MANUFACTURING BUILDING
LUSCOMBE DRIVE, SIMCOE
NORFOLK COUNTY

CLIENT:

TONY KOUNTY

NOTES & DETAILS

DESIGN:	R.W.P.	SCALE:	AS SHOWN
DRAWN:	S.L.M./K.P.B.	JOB No.	17233
CHECKED:	R.W.P.		
SHEET:	4 of 4	DWG. No.	17233-4
DATE:	MAR. 20/25		

Proposed Industrial Development
Luscombe Drive
Simcoe, Ontario
Norfolk County

Project # 17233

September 2025

Appendix 'B'
MIDUSS Computer Simulation Results
Pre and Post Development Results

LEGEND

▦ ▦ ▦ ▦ STORM DRAINAGE BOUNDARY

⬡ **1** / **0.53** / **35.0**
- ← STORM DRAINAGE NUMBER
- ← STORM AREA IN HECTARES
- ← % IMPERVIOUS

➡ DRAINAGE ARROWS

LUSCOMBE DRIVE

⬡ **101** / **1.154** / **0.0%**

PRE DEVELOPMENT
STORM DRAINAGE AREAS

PROPOSED MANUFACTURING BUILDING
LUSCOMBE DRIVE — NORFOLK COUNTY

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

CLIENT: TONY KOUNTY

JOB: 17233

SCALE: 1:500

```
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"              MIDUSS created                     February-07-10"
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"              Job folder:                         C:\swm\17233"
"              Output filename:                        pre5.out"
"  ·           Licensee name:                               Bob"
"              Company                                          "
"              Date & Time last used:        12/07/2024 at 8:40:42 AM"
"  31          TIME PARAMETERS"
"       10.000    Time Step"
"      180.000    Max. Storm length"
"     1500.000    Max. Hydrograph"
"  32          STORM Chicago storm"
"         1    Chicago storm"
"      583.017   Coefficient A"
"        3.007   Constant B"
"        0.703   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
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"              Total depth                 44.904     mm"
"         6    005hyd   Hydrograph extension used in this file"
"  33          CATCHMENT 101"
"         2    Rectangular"
"         1    Equal length"
"         2    Horton equation"
"       101    No description"
"        0.000   % Impervious"
"        1.154   Total Area"
"      121.470   Flow length"
"        3.000   Overland Slope"
"        1.154   Pervious Area"
"      121.470   Pervious length"
"        3.000   Pervious slope"
"        0.000   Impervious Area"
"      121.470   Impervious length"
"        3.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       25.000   Pervious Max.infiltration"
"        5.000   Pervious Min.infiltration"
"        0.500   Pervious Lag constant (hours)"
"        7.500   Pervious Depression storage"
"        0.015   Impervious Manning 'n'"
"        0.000   Impervious Max.infiltration"
"        0.000   Impervious Min.infiltration"
"        0.500   Impervious Lag constant (hours)"
"        2.000   Impervious Depression storage"
"              0.074      0.000      0.000      0.000 c.m/sec"
"          Catchment 101          Pervious   Impervious Total Area  "
"          Surface Area           1.154      0.000      1.154      hectare"
"          Time of concentration  30.557     4.691      30.557     minutes"
"          Time to Centroid       107.091    90.135     107.091    minutes"
"          Rainfall depth         44.904     44.904     44.904     mm"
"          Rainfall volume        518.19     0.00       518.20     c.m"
"          Rainfall losses        29.514     2.000      29.514     mm"
"          Runoff depth           15.391     42.904     15.391     mm"
"          Runoff volume          177.61     0.00       177.61     c.m"
"          Runoff coefficient     0.343      0.000      0.343      "
```

```
"              Maximum flow            0.074        0.000        0.074        c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                  0.074     0.074     0.000     0.000"
" 38          START/RE-START TOTALS 101"
"            3   Runoff Totals on EXIT"
"            Total Catchment area                        1.154     hectare"
"            Total Impervious area                       0.000     hectare"
"            Total % impervious                          0.000"
" 19          EXIT"
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"            Output filename:                                        pre10.out"
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"            Company                                                         "
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"        10.000   Time Step"
"       180.000   Max. Storm length"
"      1500.000   Max. Hydrograph"
" 32            STORM Chicago storm"
"         1   Chicago storm"
"       670.324   Coefficient A"
"         3.007   Constant B"
"         0.698   Exponent C"
"         0.400   Fraction R"
"       180.000   Duration"
"         1.000   Time step multiplier"
"            Maximum intensity            107.682    mm/hr"
"            Total depth                   52.991    mm"
"         6   005hyd   Hydrograph extension used in this file"
" 33            CATCHMENT 101"
"         2   Rectangular"
"         1   Equal length"
"         2   Horton equation"
"       101   No description"
"         0.000   % Impervious"
"         1.154   Total Area"
"       121.470   Flow length"
"         3.000   Overland Slope"
"         1.154   Pervious Area"
"       121.470   Pervious length"
"         3.000   Pervious slope"
"         0.000   Impervious Area"
"       121.470   Impervious length"
"         3.000   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        25.000   Pervious Max.infiltration"
"         5.000   Pervious Min.infiltration"
"         0.500   Pervious Lag constant (hours)"
"         7.500   Pervious Depression storage"
"         0.015   Impervious Manning 'n'"
"         0.000   Impervious Max.infiltration"
"         0.000   Impervious Min.infiltration"
"         0.500   Impervious Lag constant (hours)"
"         2.000   Impervious Depression storage"
"                    0.117        0.000        0.000      0.000 c.m/sec"
"            Catchment 101            Pervious   Impervious Total Area "
"            Surface Area             1.154      0.000      1.154      hectare"
"            Time of concentration    26.359     4.413      26.358     minutes"
"            Time to Centroid         108.198    89.647     108.198    minutes"
"            Rainfall depth           52.991     52.991     52.991     mm"
"            Rainfall volume          611.52     0.00       611.52     c.m"
"            Rainfall losses          30.008     2.000      30.008     mm"
"            Runoff depth             22.983     50.991     22.983     mm"
"            Runoff volume            265.23     0.00       265.23     c.m"
"            Runoff coefficient       0.434      0.000      0.434      "
```

```
"             Maximum flow            0.117       0.000       0.117        c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"             4   Add Runoff "
"                   0.117      0.117      0.000      0.000"
" 38          START/RE-START TOTALS 101"
"             3   Runoff Totals on EXIT"
"             Total Catchment area                     1.154     hectare"
"             Total Impervious area                    0.000     hectare"
"             Total % impervious                       0.000"
" 19          EXIT"
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"                        MIDUSS Output ------------------------------------------------->"
"                        MIDUSS version                        Version 2.25  rev. 473"
"                        MIDUSS created                          February-07-10"
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"                        Job folder:                              C:\swm\17233"
"                        Output filename:                            pre25.out"
"                        Licensee name:                                    Bob"
"                        Company                                                "
"                        Date & Time last used:           12/07/2024 at 8:38:36 AM"
" 31           TIME PARAMETERS"
"         10.000    Time Step"
"        180.000    Max. Storm length"
"       1500.000    Max. Hydrograph"
" 32           STORM Chicago storm"
"             1    Chicago storm"
"        721.533    Coefficient A"
"          2.253    Constant B"
"          0.679    Exponent C"
"          0.400    Fraction R"
"        180.000    Duration"
"          1.000    Time step multiplier"
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"                  Total depth                     63.151     mm"
"             6    005hyd    Hydrograph extension used in this file"
" 33           CATCHMENT 101"
"             2    Rectangular"
"             1    Equal length"
"             2    Horton equation"
"           101    No description"
"          0.000    % Impervious"
"          1.154    Total Area"
"        121.470    Flow length"
"          3.000    Overland Slope"
"          1.154    Pervious Area"
"        121.470    Pervious length"
"          3.000    Pervious slope"
"          0.000    Impervious Area"
"        121.470    Impervious length"
"          3.000    Impervious slope"
"          0.250    Pervious Manning 'n'"
"         25.000    Pervious Max.infiltration"
"          5.000    Pervious Min.infiltration"
"          0.500    Pervious Lag constant (hours)"
"          7.500    Pervious Depression storage"
"          0.015    Impervious Manning 'n'"
"          0.000    Impervious Max.infiltration"
"          0.000    Impervious Min.infiltration"
"          0.500    Impervious Lag constant (hours)"
"          2.000    Impervious Depression storage"
"                      0.180        0.000        0.000      0.000 c.m/sec"
"                  Catchment 101           Pervious    Impervious Total Area  "
"                  Surface Area            1.154       0.000       1.154       hectare"
"                  Time of concentration   23.173      4.131       23.173      minutes"
"                  Time to Centroid        108.543     89.310      108.543     minutes"
"                  Rainfall depth          63.151      63.151      63.151      mm"
"                  Rainfall volume         728.76      0.00        728.76      c.m"
"                  Rainfall losses         30.582      2.000       30.582      mm"
"                  Runoff depth            32.569      61.151      32.569      mm"
"                  Runoff volume           375.84      0.00        375.84      c.m"
"                  Runoff coefficient      0.516       0.000       0.516       "
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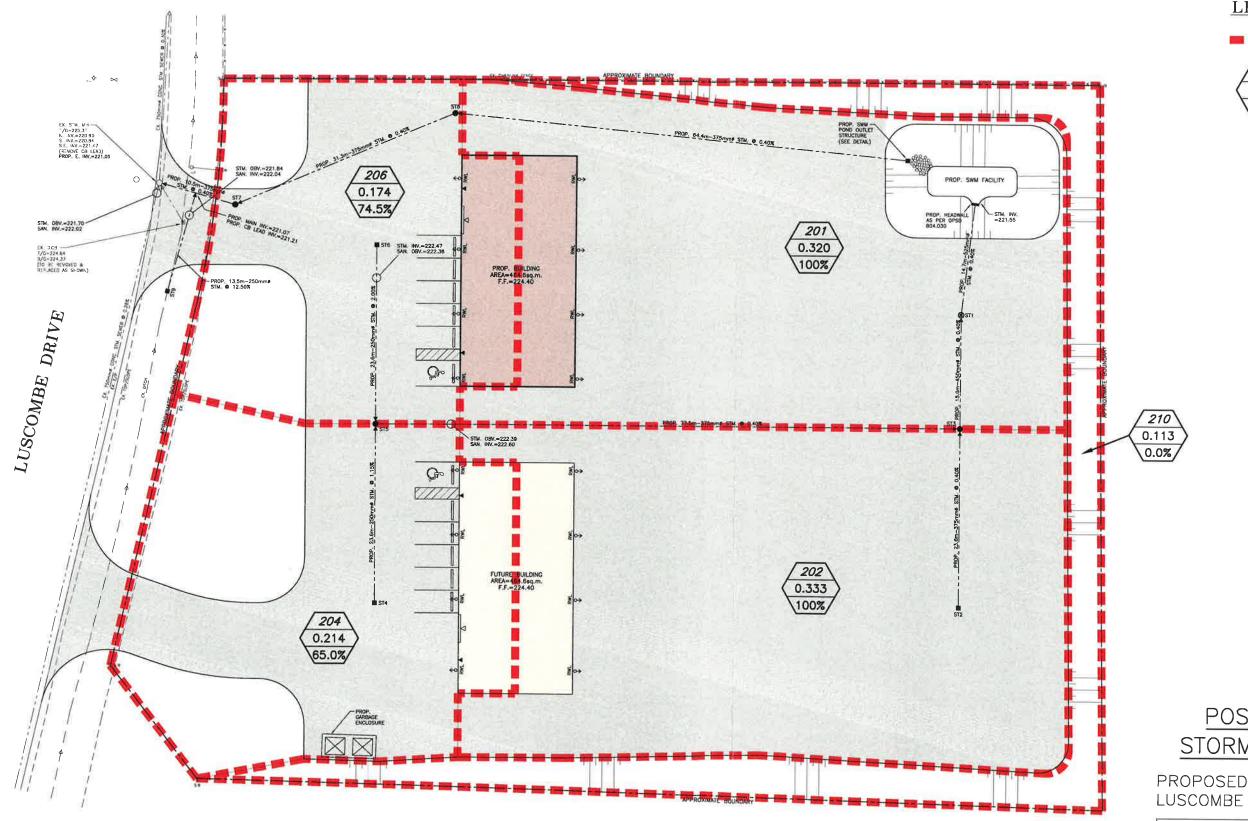
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"              Maximum flow            0.180      0.000      0.180      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"              4   Add Runoff "
"                     0.180     0.180     0.000     0.000"
" 38           START/RE-START TOTALS 101"
"              3   Runoff Totals on EXIT"
"              Total Catchment area                    1.154    hectare"
"              Total Impervious area                   0.000    hectare"
"              Total % impervious                      0.000"
" 19           EXIT"
```

```
"                    MIDUSS Output -------------------------------------------------->"
"                    MIDUSS version                          Version 2.25  rev. 473"
"                    MIDUSS created                              February-07-10"
"          10    Units used:                                         ie METRIC"
"                Job folder:                                      C:\swm\17233"
"                Output filename:                                     pre50.out"
"                Licensee name:                                            Bob"
"                Company                                                       "
"                Date & Time last used:              12/07/2024 at 8:37:38 AM"
" 31           TIME PARAMETERS"
"        10.000    Time Step"
"       180.000    Max. Storm length"
"      1500.000    Max. Hydrograph"
" 32           STORM Chicago storm"
"           1    Chicago storm"
"       766.038    Coefficient A"
"         1.898    Constant B"
"         0.668    Exponent C"
"         0.400    Fraction R"
"       180.000    Duration"
"         1.000    Time step multiplier"
"                Maximum intensity              141.545    mm/hr"
"                Total depth                     71.090    mm"
"           6    005hyd    Hydrograph extension used in this file"
" 33           CATCHMENT 101"
"           2    Rectangular"
"           1    Equal length"
"           2    Horton equation"
"         101    No description"
"         0.000    % Impervious"
"         1.154    Total Area"
"       121.470    Flow length"
"         3.000    Overland Slope"
"         1.154    Pervious Area"
"       121.470    Pervious length"
"         3.000    Pervious slope"
"         0.000    Impervious Area"
"       121.470    Impervious length"
"         3.000    Impervious slope"
"         0.250    Pervious Manning 'n'"
"        25.000    Pervious Max.infiltration"
"         5.000    Pervious Min.infiltration"
"         0.500    Pervious Lag constant (hours)"
"         7.500    Pervious Depression storage"
"         0.015    Impervious Manning 'n'"
"         0.000    Impervious Max.infiltration"
"         0.000    Impervious Min.infiltration"
"         0.500    Impervious Lag constant (hours)"
"         2.000    Impervious Depression storage"
"                    0.224      0.000      0.000      0.000 c.m/sec"
"                Catchment 101         Pervious   Impervious Total Area "
"                Surface Area          1.154      0.000      1.154      hectare"
"                Time of concentration 21.905     3.956      21.905     minutes"
"                Time to Centroid      108.648    89.121     108.648    minutes"
"                Rainfall depth        71.090     71.090     71.090     mm"
"                Rainfall volume       820.37     0.00       820.37     c.m"
"                Rainfall losses       30.909     2.000      30.909     mm"
"                Runoff depth          40.180     69.090     40.180     mm"
"                Runoff volume         463.68     0.00       463.68     c.m"
"                Runoff coefficient    0.565      0.000      0.565      "
```

```
"             Maximum flow              0.224      0.000      0.224       c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                    0.224     0.224     0.000      0.000"
" 38          START/RE-START TOTALS 101"
"            3   Runoff Totals on EXIT"
"            Total Catchment area                        1.154     hectare"
"            Total Impervious area                       0.000     hectare"
"            Total % impervious                          0.000"
" 19          EXIT"
```

```
"            MIDUSS Output  ------------------------------------------------>"
"            MIDUSS version                        Version 2.25  rev. 473"
"            MIDUSS created                            February-07-10"
"     10     Units used:                                    ie METRIC"
"            Job folder:                                 C:\swm\17233"
"            Output filename:                             pre100.out"
"            Licensee name:                                       Bob"
"            Company                                                  "
"            Date & Time last used:         12/07/2024 at 8:35:29 AM"
" 31           TIME PARAMETERS"
"       10.000    Time Step"
"      180.000    Max. Storm length"
"     1500.000    Max. Hydrograph"
" 32           STORM Chicago storm"
"        1     Chicago storm"
"      801.041   Coefficient A"
"        1.501   Constant B"
"        0.657   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"            Maximum intensity            155.782    mm/hr"
"            Total depth                   78.830    mm"
"        6   005hyd   Hydrograph extension used in this file"
" 33           CATCHMENT 101"
"        2     Rectangular"
"        1     Equal length"
"        2     Horton equation"
"      101     No description"
"        0.000   % Impervious"
"        1.154   Total Area"
"      121.470   Flow length"
"        3.000   Overland Slope"
"        1.154   Pervious Area"
"      121.470   Pervious length"
"        3.000   Pervious slope"
"        0.000   Impervious Area"
"      121.470   Impervious length"
"        3.000   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       25.000   Pervious Max.infiltration"
"        5.000   Pervious Min.infiltration"
"        0.500   Pervious Lag constant (hours)"
"        7.500   Pervious Depression storage"
"        0.015   Impervious Manning 'n'"
"        0.000   Impervious Max.infiltration"
"        0.000   Impervious Min.infiltration"
"        0.500   Impervious Lag constant (hours)"
"        2.000   Impervious Depression storage"
"              0.267      0.000      0.000      0.000 c.m/sec"
"            Catchment 101         Pervious   Impervious Total Area "
"            Surface Area          1.154      0.000      1.154    hectare"
"            Time of concentration 21.014     3.807      21.014   minutes"
"            Time to Centroid      108.220    0.000      108.220  minutes"
"            Rainfall depth        78.830     78.830     78.830   mm"
"            Rainfall volume       909.70     0.00       909.70   c.m"
"            Rainfall losses       31.239     78.830     31.239   mm"
"            Runoff depth          47.591     0.000      47.591   mm"
"            Runoff volume         549.20     0.00       549.20   c.m"
"            Runoff coefficient    0.604      0.000      0.604    "
```

```
"              Maximum flow            0.267         0.000         0.267         c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"              4   Add Runoff "
"                    0.267       0.267       0.000       0.000"
" 38           START/RE-START TOTALS 101"
"              3   Runoff Totals on EXIT"
"              Total Catchment area                       1.154     hectare"
"              Total Impervious area                      0.000     hectare"
"              Total % impervious                         0.000"
" 19           EXIT"
```

LEGEND

- ▬ ▬ ▬ STORM DRAINAGE BOUNDARY

- ⬡ 1 / 0.53 / 35.0
  - → STORM DRAINAGE NUMBER
  - → STORM AREA IN HECTARES
  - → % IMPERVIOUS

LUSCOMBE DRIVE

PROP. SWM FACILITY

PROP. SWM POND OUTLET STRUCTURE (SEE DETAIL)

PROP. HEADWALL AS PER OPSD 804.030

STM. INV. =221.55

PROP. BUILDING
AREA=464.6sq.m.
F.F.=224.40

FUTURE BUILDING
AREA=464.6sq.m.
F.F.=224.40

PROP. GARBAGE ENCLOSURE

206	0.174	74.5%
201	0.320	100%
210	0.113	0.0%
202	0.333	100%
204	0.214	65.0%

POST DEVELOPMENT STORM DRAINAGE AREAS

PROPOSED MANUFACTURING BUILDING
LUSCOMBE DRIVE — NORFOLK COUNTY

J.H. COHOON ENGINEERING LIMITED
CONSULTING ENGINEERS
BRANTFORD

CLIENT: TONY KOUNTY
SCALE: 1:500
JOB: 17233

Orifice Plate Calculations
Proposed Industrial Development
Luscombe Drive, Simcoe

Job: 17233   "March 2025

Pond Area ST1

Stage (m)	Depth (m)	Storage (cu.m.)		Discharge (cms)	h (m)	2gh	=(2gh)**0.5	C
223.00	0.00	0.49	0.00	0.0000	0	0	0.0000	0.63
223.15	0.15	10.81	10.32	0.0809	1.4525	28.49805	5.3384	0.63
223.30	0.30	41.64	41.15	0.0850	1.6025	31.44105	5.6072	0.63

Invert of Outlet/Orifice Plate   221.61
Orifice Plate Diameter   175 mm
Centreline of Orifice Plate   221.70

Area of Orifice   0.0241 sq.m.
Structure Storage   0.4932 cu.m.

Pond Area ST2

Stage (m)	Depth (m)	Storage (cu.m.)		Discharge (cms)	h (m)	2gh	=(2gh)**0.5	C
223.00	0.00	0.49	0.00	0.0000	0	0	0.0000	0.63
223.15	0.15	10.37	9.88	0.0809	1.4525	28.49805	5.3384	0.63
223.30	0.30	39.99	39.50	0.0850	1.6025	31.44105	5.6072	0.63

Invert of Outlet/Orifice Plate   221.81
Orifice Plate Diameter   175 mm
Centreline of Orifice Plate   221.90

Area of Orifice   0.0241 sq.m.
Structure Storage   0.4932 cu.m.

Pond Area ST4

Stage (m)	Depth (m)	Storage (cu.m.)		Discharge (cms)	h (m)	2gh	=(2gh)**0.5	C
223.85	0.00	2.49	0.00	0.0000	0	0	0.0000	0.63
224.00	0.15	13.04	10.55	0.0333	2.3025	45.17505	6.7212	0.63
224.15	0.30	44.68	42.19	0.0343	2.4525	48.11805	6.9367	0.63

Invert of Outlet/Orifice Plate   222.35
Orifice Plate Diameter   100 mm   Area of Orifice   0.0079 sq.m.
Centreline of Orifice Plate   222.40   Structure Storage   2.491 cu.m.

Pond Area ST6

Stage (m)	Depth (m)	Storage (cu.m.)		Discharge (cms)	h (m)	2gh	=(2gh)**0.5	C
223.85	0.00	0.00	0.49	0.0000	0	0	0.0000	0.63
224.00	0.15	11.25	11.74	0.0188	1.41	27.61515	5.2550	0.63
224.15	0.30	45.00	45.49	0.0198	1.56	30.55815	5.5279	0.63

Invert of Outlet/Orifice Plate   222.55
Orifice Plate Diameter   85 mm   Area of Orifice   0.0057 sq.m.
Centreline of Orifice Plate   222.59   Structure Storage   2.491 cu.m.

SWM Pond

Stage (m)	Depth (m)	Storage (cu.m.)		Discharge (cms)	h (m)	2gh	=(2gh)**0.5	C
221.60	0.00	0.00	0.00	0.0010	-0.02	-0.3924	#NUM!	0.63
222.40	0.80	99.14	99.14	0.0496	0.78	15.3036	3.9120	0.63
223.10	1.50	262.66	262.66	0.0683	1.48	29.0376	5.3887	0.63

Invert of Outlet/Orifice Plate   221.54
Orifice Plate Diameter   160 mm   Area of Orifice   0.0201 sq.m.
Centreline of Orifice Plate   221.62   Structure Storage   0 cu.m.

```
"                    MIDUSS Output ------------------------------------------------------>"
"                    MIDUSS version                          Version 2.25  rev. 473"
"                    MIDUSS created                          February-07-10"
"         10    Units used:                                       ie METRIC"
"               Job folder:                     C:\swm\17233\Update 2025-3-20"
"               Output filename:                                   pst54.out"
"               Licensee name:                                           Bob"
"               Company                                                     "
"               Date & Time last used:          25/07/2024 at 11:42:26 AM"
" 31           TIME PARAMETERS"
"        10.000   Time Step"
"       180.000   Max. Storm length"
"      1500.000   Max. Hydrograph"
" 32           STORM Chicago storm"
"            1    Chicago storm"
"       583.017   Coefficient A"
"         3.007   Constant B"
"         0.703   Exponent C"
"         0.400   Fraction R"
"       180.000   Duration"
"         1.000   Time step multiplier"
"               Maximum intensity          92.454    mm/hr"
"               Total depth                44.904    mm"
"            6    005hyd   Hydrograph extension used in this file"
" 33           CATCHMENT 201"
"            2    Rectangular"
"            1    Equal length"
"            2    Horton equation"
"          201    No description"
"       100.000   % Impervious"
"         0.320   Total Area"
"        80.000   Flow length"
"         1.200   Overland Slope"
"         0.000   Pervious Area"
"        80.000   Pervious length"
"         1.200   Pervious slope"
"         0.320   Impervious Area"
"        80.000   Impervious length"
"         1.200   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        25.000   Pervious Max.infiltration"
"         5.000   Pervious Min.infiltration"
"         0.500   Pervious Lag constant (hours)"
"         7.500   Pervious Depression storage"
"         0.015   Impervious Manning 'n'"
"         0.000   Impervious Max.infiltration"
"         0.000   Impervious Min.infiltration"
"         0.500   Impervious Lag constant (hours)"
"         2.000   Impervious Depression storage"
"                      0.082      0.000      0.000     0.000 c.m/sec"
"               Catchment 201        Pervious   Impervious Total Area "
"               Surface Area         0.000       0.320       0.320      hectare"
"               Time of concentration 31.308     4.806       4.806      minutes"
"               Time to Centroid     107.746     90.205      90.205     minutes"
"               Rainfall depth       44.904      44.904      44.904     mm"
"               Rainfall volume      0.00        143.69      143.69     c.m"
"               Rainfall losses      29.514      2.000       2.000      mm"
"               Runoff depth         15.391      42.904      42.904     mm"
"               Runoff volume        0.00        137.29      137.29     c.m"
"               Runoff coefficient   0.000       0.955       0.955      "
```

```
"                    Maximum flow          0.000      0.082      0.082      c.m/sec"
"  40              HYDROGRAPH Add Runoff "
"               4    Add Runoff "
"                         0.082      0.082      0.000      0.000"
"  51              PIPE DESIGN"
"        0.082    Current peak flow   c.m/sec"
"        0.013    Manning 'n'"
"        1.000    Diameter    metre"
"        1.000    Gradient    %"
"               Depth of flow                 0.127    metre"
"               Velocity                      1.421    m/sec"
"               Pipe capacity                 2.398    c.m/sec"
"               Critical depth                0.158    metre"
"  53              ROUTE Zero Route"
"        0.00    Zero Route Reach length    ( metre)"
"                         0.082      0.082      0.082      0.000 c.m/sec"
"  40              HYDROGRAPH   Combine    201"
"               6    Combine "
"             201    Node #"
"                    "
"               Maximum flow                  0.082    c.m/sec"
"               Hydrograph volume           137.294    c.m"
"                         0.082      0.082      0.082      0.082"
"  40              HYDROGRAPH Start - New Tributary"
"               2    Start - New Tributary"
"                         0.082      0.000      0.082      0.082"
"  33              CATCHMENT 202"
"               2    Rectangular"
"               1    Equal length"
"               2    Horton equation"
"             202    No description"
"        100.000    % Impervious"
"          0.333    Total Area"
"         83.250    Flow length"
"          1.200    Overland Slope"
"          0.000    Pervious Area"
"         83.250    Pervious length"
"          1.200    Pervious slope"
"          0.333    Impervious Area"
"         83.250    Impervious length"
"          1.200    Impervious slope"
"          0.250    Pervious Manning 'n'"
"         25.000    Pervious Max.infiltration"
"          5.000    Pervious Min.infiltration"
"          0.500    Pervious Lag constant (hours)"
"          7.500    Pervious Depression storage"
"          0.015    Impervious Manning 'n'"
"          0.000    Impervious Max.infiltration"
"          0.000    Impervious Min.infiltration"
"          0.500    Impervious Lag constant (hours)"
"          2.000    Impervious Depression storage"
"                         0.086      0.000      0.082      0.082 c.m/sec"
"               Catchment 202          Pervious   Impervious Total Area "
"               Surface Area           0.000      0.333      0.333    hectare"
"               Time of concentration 32.065      4.922      4.922    minutes"
"               Time to Centroid      108.382     90.284     90.284   minutes"
"               Rainfall depth         44.904     44.904     44.904   mm"
"               Rainfall volume        0.00       149.53     149.53   c.m"
"               Rainfall losses        29.514     2.000      2.000    mm"
"               Runoff depth           15.391     42.904     42.904   mm"
```

```
"              Runoff volume            0.00     142.87    142.87    c.m"
"              Runoff coefficient       0.000     0.955     0.955    "
"              Maximum flow             0.000     0.086     0.086    c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"         4   Add Runoff "
"                   0.086     0.086    0.082     0.082"
" 51           PIPE DESIGN"
"      0.086   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      1.000   Diameter    metre"
"      1.000   Gradient    %"
"              Depth of flow              0.129    metre"
"              Velocity                   1.438    m/sec"
"              Pipe capacity              2.398    c.m/sec"
"              Critical depth             0.161    metre"
" 53           ROUTE Zero Route"
"      0.00   Zero Route Reach length    ( metre)"
"                   0.086     0.086    0.086     0.082 c.m/sec"
" 40           HYDROGRAPH   Combine    202"
"         6   Combine "
"       202   Node #"
"             "
"              Maximum flow               0.086    c.m/sec"
"              Hydrograph volume        142.871    c.m"
"                   0.086     0.086    0.086     0.086"
" 40           HYDROGRAPH Start - New Tributary"
"         2   Start - New Tributary"
"                   0.086     0.000    0.086     0.086"
" 33           CATCHMENT 206"
"         2   Rectangular"
"         1   Equal length"
"         2   Horton equation"
"       206   No description"
"    74.500   % Impervious"
"     0.174   Total Area"
"    19.121   Flow length"
"     1.200   Overland Slope"
"     0.044   Pervious Area"
"    19.121   Pervious length"
"     1.200   Pervious slope"
"     0.130   Impervious Area"
"    19.121   Impervious length"
"     1.200   Impervious slope"
"     0.250   Pervious Manning 'n'"
"    25.000   Pervious Max.infiltration"
"     5.000   Pervious Min.infiltration"
"     0.500   Pervious Lag constant (hours)"
"     7.500   Pervious Depression storage"
"     0.015   Impervious Manning 'n'"
"     0.000   Impervious Max.infiltration"
"     0.000   Impervious Min.infiltration"
"     0.500   Impervious Lag constant (hours)"
"     2.000   Impervious Depression storage"
"                   0.039     0.000    0.086     0.086 c.m/sec"
"              Catchment 206          Pervious  Impervious Total Area "
"              Surface Area            0.044     0.130     0.174    hectare"
"              Time of concentration  13.265     2.036     3.264    minutes"
"              Time to Centroid        94.292    89.474    90.001    minutes"
"              Rainfall depth          44.904    44.904    44.904    mm"
"              Rainfall volume         19.92     58.21     78.13    c.m"
```

```
"          Rainfall losses        29.514      2.000      9.016      mm"
"          Runoff depth           15.391     42.904     35.888      mm"
"          Runoff volume           6.83      55.62      62.45       c.m"
"          Runoff coefficient      0.343      0.955      0.799        "
"          Maximum flow            0.005      0.033      0.039       c.m/sec"
" 40       HYDROGRAPH Add Runoff "
"       4  Add Runoff "
"                  0.039      0.039      0.086      0.086"
" 51       PIPE DESIGN"
"     0.039  Current peak flow    c.m/sec"
"     0.013  Manning 'n'"
"     1.000  Diameter     metre"
"     1.000  Gradient    %"
"          Depth of flow                 0.088     metre"
"          Velocity                      1.133     m/sec"
"          Pipe capacity                 2.398     c.m/sec"
"          Critical depth                0.108     metre"
" 53       ROUTE Zero Route"
"      0.00  Zero Route Reach length   ( metre)"
"                  0.039      0.039      0.039      0.086 c.m/sec"
" 40       HYDROGRAPH   Combine    206"
"       6  Combine "
"     206  Node #"
"                  "
"          Maximum flow                  0.039     c.m/sec"
"          Hydrograph volume            62.446     c.m"
"                  0.039      0.039      0.039      0.039"
" 40       HYDROGRAPH Start - New Tributary"
"       2  Start - New Tributary"
"                  0.039      0.000      0.039      0.039"
" 33       CATCHMENT 204"
"       2  Rectangular"
"       1  Equal length"
"       2  Horton equation"
"     204  No description"
"   65.000  % Impervious"
"    0.214  Total Area"
"   24.318  Flow length"
"    1.200  Overland Slope"
"    0.075  Pervious Area"
"   24.318  Pervious length"
"    1.200  Pervious slope"
"    0.139  Impervious Area"
"   24.318  Impervious length"
"    1.200  Impervious slope"
"    0.250  Pervious Manning 'n'"
"   25.000  Pervious Max.infiltration"
"    5.000  Pervious Min.infiltration"
"    0.500  Pervious Lag constant (hours)"
"    7.500  Pervious Depression storage"
"    0.015  Impervious Manning 'n'"
"    0.000  Impervious Max.infiltration"
"    0.000  Impervious Min.infiltration"
"    0.500  Impervious Lag constant (hours)"
"    2.000  Impervious Depression storage"
"                  0.044      0.000      0.039      0.039 c.m/sec"
"          Catchment 204        Pervious   Impervious Total Area "
"          Surface Area           0.075      0.139      0.214      hectare"
"          Time of concentration 15.324      2.352      4.452      minutes"
"          Time to Centroid      95.896     89.474     90.513      minutes"
```

```
"            Rainfall depth              44.904    44.904    44.904    mm"
"            Rainfall volume             33.63     62.46     96.10     c.m"
"            Rainfall losses             29.514    2.000     11.630    mm"
"            Runoff depth                15.391    42.904    33.274    mm"
"            Runoff volume               11.53     59.68     71.21     c.m"
"            Runoff coefficient          0.343     0.955     0.741     "
"            Maximum flow                0.008     0.036     0.044     c.m/sec"
" 40        HYDROGRAPH Add Runoff "
"       4   Add Runoff "
"                     0.044     0.044     0.039     0.039"
" 51        PIPE DESIGN"
"    0.044  Current peak flow    c.m/sec"
"    0.013  Manning 'n'"
"    1.000  Diameter    metre"
"    1.000  Gradient    %"
"            Depth of flow                  0.094     metre"
"            Velocity                       1.175     m/sec"
"            Pipe capacity                  2.398     c.m/sec"
"            Critical depth                 0.114     metre"
" 53        ROUTE Zero Route"
"    0.00   Zero Route Reach length    ( metre)"
"                     0.044     0.044     0.044     0.039 c.m/sec"
" 40        HYDROGRAPH   Combine    204"
"       6   Combine "
"     204   Node #"
"            "
"            Maximum flow                   0.044     c.m/sec"
"            Hydrograph volume              71.207    c.m"
"                     0.044     0.044     0.044     0.044"
" 40        HYDROGRAPH Start - New Tributary"
"       2   Start - New Tributary"
"                     0.044     0.000     0.044     0.044"
" 33        CATCHMENT 210"
"       2   Rectangular"
"       1   Equal length"
"       2   Horton equation"
"     210   No description"
"    0.000  % Impervious"
"    0.113  Total Area"
"   12.151  Flow length"
"    1.200  Overland Slope"
"    0.113  Pervious Area"
"   12.151  Pervious length"
"    1.200  Pervious slope"
"    0.000  Impervious Area"
"   12.151  Impervious length"
"    1.200  Impervious slope"
"    0.250  Pervious Manning 'n'"
"   25.000  Pervious Max.infiltration"
"    5.000  Pervious Min.infiltration"
"    0.500  Pervious Lag constant (hours)"
"    7.500  Pervious Depression storage"
"    0.015  Impervious Manning 'n'"
"    0.000  Impervious Max.infiltration"
"    0.000  Impervious Min.infiltration"
"    0.500  Impervious Lag constant (hours)"
"    2.000  Impervious Depression storage"
"                     0.018     0.000     0.044     0.044 c.m/sec"
"            Catchment 210          Pervious   Impervious Total Area "
"            Surface Area           0.113      0.000      0.113      hectare"
```

```
"              Time of concentration  10.106    1.551    10.106    minutes"
"              Time to Centroid       91.432    89.474   91.432    minutes"
"              Rainfall depth         44.904    44.904   44.904    mm"
"              Rainfall volume        50.74     0.00     50.74     c.m"
"              Rainfall losses        29.514    2.000    29.514    mm"
"              Runoff depth           15.391    42.904   15.391    mm"
"              Runoff volume          17.39     0.00     17.39     c.m"
"              Runoff coefficient     0.343     0.000    0.343     "
"              Maximum flow           0.018     0.000    0.018     c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"         4   Add Runoff "
"                  0.018     0.018     0.044     0.044"
" 51          PIPE DESIGN"
"     0.018   Current peak flow    c.m/sec"
"     0.013   Manning 'n'"
"     1.000   Diameter     metre"
"     1.000   Gradient     %"
"              Depth of flow                0.062    metre"
"              Velocity                     0.899    m/sec"
"              Pipe capacity                2.398    c.m/sec"
"              Critical depth               0.073    metre"
" 53          ROUTE Zero Route"
"     0.00    Zero Route Reach length    ( metre)"
"                  0.018     0.018     0.018     0.044 c.m/sec"
" 40          HYDROGRAPH    Combine    9999"
"         6   Combine "
"      9999   Node #"
"              "
"              Maximum flow                 0.018    c.m/sec"
"              Hydrograph volume            17.391   c.m"
"                  0.018     0.018     0.018     0.018"
" 40          HYDROGRAPH    Confluence    204"
"         7   Confluence "
"       204   Node #"
"              "
"              Maximum flow                 0.044    c.m/sec"
"              Hydrograph volume            71.207   c.m"
"                  0.018     0.044     0.018     0.000"
" 54          POND DESIGN"
"     0.044   Current peak flow    c.m/sec"
"     0.080   Target outflow    c.m/sec"
"      71.2   Hydrograph volume    c.m"
"        3.   Number of stages"
"   223.850   Minimum water level    metre"
"   224.150   Maximum water level    metre"
"   223.850   Starting water level    metre"
"         0   Keep Design Data: 1 = True; 0 = False"
"              Level Discharge    Volume"
"              223.850  1.00E-07    2.490"
"              224.000  0.03300    13.040"
"              224.150  0.03430    44.580"
"              Peak outflow                 0.027    c.m/sec"
"              Maximum level                223.994  metre"
"              Maximum storage              12.640   c.m"
"              Centroidal lag               1.618    hours"
"                  0.018     0.044     0.027     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"         5   Next link "
"                  0.018     0.027     0.027     0.000"
" 51          PIPE DESIGN"
```

```
"           0.027    Current peak flow    c.m/sec"
"           0.013    Manning 'n'"
"           0.250    Diameter    metre"
"           1.150    Gradient    %"
"                    Depth of flow                0.112     metre"
"                    Velocity                     1.240     m/sec"
"                    Pipe capacity                0.064     c.m/sec"
"                    Critical depth               0.132     metre"
" 53                 ROUTE      Pipe Route 24"
"          23.60         Pipe Route 24 Reach length    ( metre)"
"           0.382    X-factor <= 0.5"
"          14.277    K-lag    ( seconds)"
"           0.000    Default(0) or user spec.(1) values used"
"           0.500    X-factor <= 0.5"
"          30.000    K-lag    ( seconds)"
"           0.500    Beta weighting factor"
"          17.647    Routing time step    ( seconds)"
"               1    No. of sub-reaches"
"                    Peak outflow                 0.027     c.m/sec"
"                    0.018      0.027      0.027      0.000 c.m/sec"
" 40                 HYDROGRAPH    Combine    5"
"               6    Combine "
"               5    Node #"
"                    "
"                    Maximum flow                 0.027     c.m/sec"
"                    Hydrograph volume           71.207     c.m"
"                    0.018      0.027      0.027      0.027"
" 40                 HYDROGRAPH    Confluence    206"
"               7    Confluence "
"             206    Node #"
"                    "
"                    Maximum flow                 0.039     c.m/sec"
"                    Hydrograph volume           62.446     c.m"
"                    0.018      0.039      0.027      0.000"
" 54                 POND DESIGN"
"           0.039    Current peak flow    c.m/sec"
"           0.080    Target outflow    c.m/sec"
"          62.4     Hydrograph volume    c.m"
"           3.      Number of stages"
"         223.850   Minimum water level    metre"
"         224.150   Maximum water level    metre"
"         223.850   Starting water level    metre"
"               0    Keep Design Data: 1 = True; 0 = False"
"                    Level Discharge    Volume"
"                    223.850   0.01000    0.4900"
"                    224.000   0.01880   11.740"
"                    224.150   0.01980   45.490"
"                    Peak outflow                 0.019     c.m/sec"
"                    Maximum level              224.019     metre"
"                    Maximum storage             16.086     c.m"
"                    Centroidal lag               1.684     hours"
"                    0.018      0.039      0.019      0.000 c.m/sec"
" 40                 HYDROGRAPH Next link "
"               5    Next link "
"                    0.018      0.019      0.019      0.000"
" 51                 PIPE DESIGN"
"           0.019    Current peak flow    c.m/sec"
"           0.013    Manning 'n'"
"           0.250    Diameter    metre"
"           2.000    Gradient    %"
```

```
"                   Depth of flow                 0.081     metre"
"                   Velocity                      1.383     m/sec"
"                   Pipe capacity                 0.084     c.m/sec"
"                   Critical depth                0.110     metre"
" 53                ROUTE      Pipe Route 24"
"      23.60          Pipe Route 24 Reach length    ( metre)"
"      0.453    X-factor <= 0.5"
"     12.800    K-lag   ( seconds)"
"      0.000    Default(0) or user spec.(1) values used"
"      0.500    X-factor <= 0.5"
"     30.000    K-lag   ( seconds)"
"      0.500    Beta weighting factor"
"     13.953    Routing time step   ( seconds)"
"          1    No. of sub-reaches"
"                   Peak outflow                  0.019     c.m/sec"
"                       0.018      0.019      0.019     0.000 c.m/sec"
" 40                HYDROGRAPH   Combine     5"
"          6    Combine "
"          5    Node #"
"                   "
"                   Maximum flow                  0.045     c.m/sec"
"                   Hydrograph volume           134.263     c.m"
"                       0.018      0.019      0.019     0.045"
" 40                HYDROGRAPH   Confluence    5"
"          7    Confluence "
"          5    Node #"
"                   "
"                   Maximum flow                  0.045     c.m/sec"
"                   Hydrograph volume           134.263     c.m"
"                       0.018      0.045      0.019     0.000"
" 51                PIPE DESIGN"
"      0.045    Current peak flow    c.m/sec"
"      0.013    Manning 'n'"
"      0.375    Diameter    metre"
"      0.400    Gradient    %"
"                   Depth of flow                 0.167     metre"
"                   Velocity                      0.954     m/sec"
"                   Pipe capacity                 0.111     c.m/sec"
"                   Critical depth                0.154     metre"
" 53                ROUTE      Pipe Route 78"
"      77.50          Pipe Route 78 Reach length    ( metre)"
"      0.346    X-factor <= 0.5"
"     60.918    K-lag   ( seconds)"
"      0.000    Default(0) or user spec.(1) values used"
"      0.500    X-factor <= 0.5"
"     30.000    K-lag   ( seconds)"
"      0.500    Beta weighting factor"
"     75.000    Routing time step   ( seconds)"
"          1    No. of sub-reaches"
"                   Peak outflow                  0.045     c.m/sec"
"                       0.018      0.045      0.045     0.000 c.m/sec"
" 40                HYDROGRAPH   Combine     3"
"          6    Combine "
"          3    Node #"
"                   "
"                   Maximum flow                  0.045     c.m/sec"
"                   Hydrograph volume           134.263     c.m"
"                       0.018      0.045      0.045     0.045"
" 40                HYDROGRAPH   Confluence   202"
"          7    Confluence "
```

```
"        202   Node #"
"                    "
"              Maximum flow                    0.086    c.m/sec"
"              Hydrograph volume            142.871    c.m"
"                    0.018      0.086      0.045      0.000"
" 54           POND DESIGN"
"      0.086   Current peak flow    c.m/sec"
"      0.080   Target outflow    c.m/sec"
"      142.9   Hydrograph volume    c.m"
"         3.   Number of stages"
"      223.000   Minimum water level    metre"
"      223.150   Maximum water level    metre"
"      223.000   Starting water level    metre"
"         0   Keep Design Data: 1 = True; 0 = False"
"              Level Discharge     Volume"
"              223.000   0.00100   0.4900"
"              223.075   0.08990   10.370"
"              223.150   0.08500   39.990"
"              Peak outflow                   0.075    c.m/sec"
"              Maximum level                223.062    metre"
"              Maximum storage                8.670    c.m"
"              Centroidal lag                 1.537    hours"
"                    0.018      0.086      0.075      0.000 c.m/sec"
" 40           HYDROGRAPH Next link "
"         5   Next link "
"                    0.018      0.075      0.075      0.000"
" 51           PIPE DESIGN"
"      0.075   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      0.375   Diameter    metre"
"      0.400   Gradient    %"
"              Depth of flow                  0.226    metre"
"              Velocity                       1.079    m/sec"
"              Pipe capacity                  0.111    c.m/sec"
"              Critical depth                 0.200    metre"
" 53           ROUTE     Pipe Route 24"
"      23.60        Pipe Route 24 Reach length   ( metre)"
"      0.000   X-factor <= 0.5"
"      16.407   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"      30.000   K-lag   ( seconds)"
"      0.618   Beta weighting factor"
"      40.000   Routing time step   ( seconds)"
"         1   No. of sub-reaches"
"              Peak outflow                   0.074    c.m/sec"
"                    0.018      0.075      0.074      0.000 c.m/sec"
" 40           HYDROGRAPH   Combine     3"
"         6   Combine "
"         3   Node #"
"                    "
"              Maximum flow                   0.116    c.m/sec"
"              Hydrograph volume            277.130    c.m"
"                    0.018      0.075      0.074      0.116"
" 40           HYDROGRAPH   Confluence     3"
"         7   Confluence "
"         3   Node #"
"                    "
"              Maximum flow                   0.116    c.m/sec"
"              Hydrograph volume            277.130    c.m"
```

```
"                          0.018      0.116      0.074        0.000"
" 51          PIPE DESIGN"
"        0.116   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        0.450   Diameter   metre"
"        0.400   Gradient   %"
"                Depth of flow                0.262     metre"
"                Velocity                     1.203     m/sec"
"                Pipe capacity                0.180     c.m/sec"
"                Critical depth               0.237     metre"
" 53          ROUTE    Pipe Route 15"
"        15.00       Pipe Route 15 Reach length    ( metre)"
"        0.000   X-factor <= 0.5"
"        9.350   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag    ( seconds)"
"        0.737   Beta weighting factor"
"       35.294   Routing time step   ( seconds)"
"            1   No. of sub-reaches"
"                Peak outflow                 0.114     c.m/sec"
"                     0.018      0.116      0.114        0.000 c.m/sec"
" 40          HYDROGRAPH   Combine    201"
"            6   Combine "
"          201   Node #"
"                    "
"                Maximum flow                 0.197     c.m/sec"
"                Hydrograph volume          414.424     c.m"
"                     0.018      0.116      0.114        0.197"
" 40          HYDROGRAPH   Confluence    201"
"            7   Confluence "
"          201   Node #"
"                    "
"                Maximum flow                 0.197     c.m/sec"
"                Hydrograph volume          414.424     c.m"
"                     0.018      0.197      0.114        0.000"
" 51          PIPE DESIGN"
"        0.197   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        0.525   Diameter    metre"
"        0.400   Gradient   %"
"                Depth of flow                0.331     metre"
"                Velocity                     1.369     m/sec"
"                Pipe capacity                0.272     c.m/sec"
"                Critical depth               0.298     metre"
" 53          ROUTE    Pipe Route 16"
"        15.70       Pipe Route 16 Reach length    ( metre)"
"        0.000   X-factor <= 0.5"
"        8.603   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag    ( seconds)"
"        0.799   Beta weighting factor"
"       37.500   Routing time step   ( seconds)"
"            1   No. of sub-reaches"
"                Peak outflow                 0.195     c.m/sec"
"                     0.018      0.197      0.195        0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"            5   Next link "
"                     0.018      0.195      0.195        0.000"
```

```
"  40              HYDROGRAPH Undo"
"                  1   Undo"
"                       0.018      0.197      0.195     0.000"
"  56              DIVERSION"
"                201   Node number"
"              0.197   Overflow threshold"
"              1.000   Required diverted fraction"
"                  0   Conduit type; 1=Pipe;2=Channel"
"                Peak of diverted flow           0.000     c.m/sec"
"                Volume of diverted flow         0.000     c.m"
"                DIV00201.005hyd"
"                No Flow Diverted"
"                       0.018      0.197      0.197     0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"                  5   Next link "
"                       0.018      0.197      0.197     0.000"
"  40              HYDROGRAPH Undo"
"                  1   Undo"
"                       0.018      0.197      0.197     0.000"
"  56              DIVERSION"
"                  3   Node number"
"              0.197   Overflow threshold"
"              1.000   Required diverted fraction"
"                  0   Conduit type; 1=Pipe;2=Channel"
"                Peak of diverted flow           0.000     c.m/sec"
"                Volume of diverted flow         0.000     c.m"
"                DIV00003.005hyd"
"                No Flow Diverted"
"                       0.018      0.197      0.197     0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"                  5   Next link "
"                       0.018      0.197      0.197     0.000"
"  54              POND DESIGN"
"              0.197   Current peak flow    c.m/sec"
"              0.090   Target outflow     c.m/sec"
"              414.4   Hydrograph volume    c.m"
"                 3.   Number of stages"
"            221.600   Minimum water level     metre"
"            223.100   Maximum water level     metre"
"            221.600   Starting water level    metre"
"                  0   Keep Design Data: 1 = True; 0 = False"
"                      Level Discharge    Volume"
"                    221.600   0.01000    0.01000"
"                    222.350   0.04960    99.140"
"                    223.100   0.06830   262.660"
"                Peak outflow                   0.059     c.m/sec"
"                Maximum level               222.712     metre"
"                Maximum storage             178.090     c.m"
"                Centroidal lag                2.236     hours"
"                       0.018      0.197      0.059     0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"                  5   Next link "
"                       0.018      0.059      0.059     0.000"
"  51              PIPE DESIGN"
"              0.059   Current peak flow    c.m/sec"
"              0.013   Manning 'n'"
"              0.375   Diameter    metre"
"              0.400   Gradient   %"
"                Depth of flow                 0.194     metre"
"                Velocity                      1.018     m/sec"
```

```
"              Pipe capacity                    0.111    c.m/sec"
"              Critical depth                   0.176    metre"
" 53          ROUTE     Pipe Route 59"
"     59.40       Pipe Route 59 Reach length    ( metre)"
"      0.257   X-factor <= 0.5"
"     43.762   K-lag    ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag    ( seconds)"
"      0.500   Beta weighting factor"
"     60.000   Routing time step    ( seconds)"
"          1   No. of sub-reaches"
"              Peak outflow                     0.059    c.m/sec"
"                    0.018      0.059     0.059     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"          5   Next link "
"                    0.018      0.059     0.059     0.000"
" 51          PIPE DESIGN"
"      0.059   Current peak flow     c.m/sec"
"      0.013   Manning 'n'"
"      0.375   Diameter    metre"
"      0.400   Gradient    %"
"              Depth of flow                    0.194    metre"
"              Velocity                         1.017    m/sec"
"              Pipe capacity                    0.111    c.m/sec"
"              Critical depth                   0.176    metre"
" 53          ROUTE     Pipe Route 31"
"     31.30       Pipe Route 31 Reach length    ( metre)"
"      0.040   X-factor <= 0.5"
"     23.072   K-lag    ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag    ( seconds)"
"      0.500   Beta weighting factor"
"     42.857   Routing time step    ( seconds)"
"          1   No. of sub-reaches"
"              Peak outflow                     0.058    c.m/sec"
"                    0.018      0.059     0.058     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"          5   Next link "
"                    0.018      0.058     0.058     0.000"
" 51          PIPE DESIGN"
"      0.058   Current peak flow     c.m/sec"
"      0.013   Manning 'n'"
"      0.375   Diameter    metre"
"      0.400   Gradient    %"
"              Depth of flow                    0.193    metre"
"              Velocity                         1.017    m/sec"
"              Pipe capacity                    0.111    c.m/sec"
"              Critical depth                   0.175    metre"
" 53          ROUTE     Pipe Route 11"
"     10.50       Pipe Route 11 Reach length    ( metre)"
"      0.000   X-factor <= 0.5"
"      7.742   K-lag    ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag    ( seconds)"
"      0.736   Beta weighting factor"
"     28.571   Routing time step    ( seconds)"
"          1   No. of sub-reaches"
```

```
"                   Peak outflow                    0.058     c.m/sec"
"                          0.018      0.058      0.058    0.000 c.m/sec"
" 40          HYDROGRAPH    Combine      9999"
"             6    Combine  "
"          9999    Node #"
"                      "
"                   Maximum flow                    0.065     c.m/sec"
"                   Hydrograph volume               432.757   c.m"
"                          0.018      0.058      0.058    0.065"
" 40          HYDROGRAPH    Confluence    9999"
"             7    Confluence "
"          9999    Node #"
"                      "
"                   Maximum flow                    0.065     c.m/sec"
"                   Hydrograph volume               432.757   c.m"
"                          0.018      0.065      0.058    0.000"
" 38          START/RE-START TOTALS 9999"
"             3    Runoff Totals on EXIT"
"             Total Catchment area                        1.154     hectare"
"             Total Impervious area                       0.922     hectare"
"             Total % impervious                          79.873"
" 19          EXIT"
```

```
"                    MIDUSS Output ------------------------------------------------------>"
"                    MIDUSS version                            Version 2.25  rev. 473"
"                    MIDUSS created                            February-07-10"
"          10    Units used:                                   ie METRIC"
"                    Job folder:                               C:\swm\17233\Update 2025-3-20"
"                    Output filename:                          pst104.out"
"                    Licensee name:                            Bob"
"                    Company                                             "
"                    Date & Time last used:      25/07/2024 at 11:47:29 AM"
" 31           TIME PARAMETERS"
"      10.000   Time Step"
"     180.000   Max. Storm length"
"    1500.000   Max. Hydrograph"
" 32           STORM Chicago storm"
"           1   Chicago storm"
"     670.324   Coefficient A"
"       3.007   Constant B"
"       0.698   Exponent C"
"       0.400   Fraction R"
"     180.000   Duration"
"       1.000   Time step multiplier"
"              Maximum intensity        107.682    mm/hr"
"              Total depth               52.991    mm"
"           6   005hyd   Hydrograph extension used in this file"
" 33           CATCHMENT 201"
"           2   Rectangular"
"           1   Equal length"
"           2   Horton equation"
"         201   No description"
"     100.000   % Impervious"
"       0.320   Total Area"
"      80.000   Flow length"
"       1.200   Overland Slope"
"       0.000   Pervious Area"
"      80.000   Pervious length"
"       1.200   Pervious slope"
"       0.320   Impervious Area"
"      80.000   Impervious length"
"       1.200   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      25.000   Pervious Max.infiltration"
"       5.000   Pervious Min.infiltration"
"       0.500   Pervious Lag constant (hours)"
"       7.500   Pervious Depression storage"
"       0.015   Impervious Manning 'n'"
"       0.000   Impervious Max.infiltration"
"       0.000   Impervious Min.infiltration"
"       0.500   Impervious Lag constant (hours)"
"       2.000   Impervious Depression storage"
"                    0.096        0.000        0.000      0.000 c.m/sec"
"              Catchment 201            Pervious   Impervious Total Area  "
"              Surface Area             0.000      0.320      0.320      hectare"
"              Time of concentration    27.007     4.522      4.522      minutes"
"              Time to Centroid         108.702    89.711     89.711     minutes"
"              Rainfall depth           52.991     52.991     52.991     mm"
"              Rainfall volume          0.00       169.57     169.57     c.m"
"              Rainfall losses          30.008     2.000      2.000      mm"
"              Runoff depth             22.983     50.991     50.991     mm"
"              Runoff volume            0.00       163.17     163.17     c.m"
"              Runoff coefficient       0.000      0.962      0.962       "
```

```
"          Maximum flow              0.000       0.096       0.096      c.m/sec"
" 40             HYDROGRAPH Add Runoff "
"            4    Add Runoff "
"                          0.096     0.096     0.000     0.000"
" 51             PIPE DESIGN"
"       0.096   Current peak flow     c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient    %"
"            Depth of flow                  0.136    metre"
"            Velocity                       1.488    m/sec"
"            Pipe capacity                  2.398    c.m/sec"
"            Critical depth                 0.170    metre"
" 53             ROUTE Zero Route"
"       0.00   Zero Route Reach length    ( metre)"
"                          0.096     0.096     0.096    0.000 c.m/sec"
" 40             HYDROGRAPH   Combine    201"
"            6    Combine "
"          201    Node #"
"                          "
"            Maximum flow                   0.096    c.m/sec"
"            Hydrograph volume            163.172    c.m"
"                          0.096     0.096     0.096    0.096"
" 40             HYDROGRAPH Start - New Tributary"
"            2    Start - New Tributary"
"                          0.096     0.000     0.096    0.096"
" 33             CATCHMENT 202"
"            2    Rectangular"
"            1    Equal length"
"            2    Horton equation"
"          202    No description"
"      100.000   % Impervious"
"        0.333   Total Area"
"       83.250   Flow length"
"        1.200   Overland Slope"
"        0.000   Pervious Area"
"       83.250   Pervious length"
"        1.200   Pervious slope"
"        0.333   Impervious Area"
"       83.250   Impervious length"
"        1.200   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       25.000   Pervious Max.infiltration"
"        5.000   Pervious Min.infiltration"
"        0.500   Pervious Lag constant (hours)"
"        7.500   Pervious Depression storage"
"        0.015   Impervious Manning 'n'"
"        0.000   Impervious Max.infiltration"
"        0.000   Impervious Min.infiltration"
"        0.500   Impervious Lag constant (hours)"
"        2.000   Impervious Depression storage"
"                     0.100      0.000       0.096      0.096 c.m/sec"
"            Catchment 202         Pervious   Impervious Total Area "
"            Surface Area          0.000      0.333      0.333      hectare"
"            Time of concentration 27.660     4.631      4.631      minutes"
"            Time to Centroid      109.192    89.773     89.773     minutes"
"            Rainfall depth        52.991     52.991     52.991     mm"
"            Rainfall volume       0.00       176.46     176.46     c.m"
"            Rainfall losses       30.008     2.000      2.000      mm"
"            Runoff depth          22.983     50.991     50.991     mm"
```

```
"             Runoff volume             0.00      169.80    169.80    c.m"
"             Runoff coefficient        0.000     0.962     0.962     "
"             Maximum flow              0.000     0.100     0.100     c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"          4  Add Runoff "
"                0.100     0.100     0.096     0.096"
" 51          PIPE DESIGN"
"    0.100    Current peak flow    c.m/sec"
"    0.013    Manning 'n'"
"    1.000    Diameter    metre"
"    1.000    Gradient    %"
"             Depth of flow              0.139     metre"
"             Velocity                   1.505     m/sec"
"             Pipe capacity              2.398     c.m/sec"
"             Critical depth             0.174     metre"
" 53          ROUTE Zero Route"
"    0.00    Zero Route Reach length   ( metre)"
"                0.100      0.100      0.100     0.096 c.m/sec"
" 40          HYDROGRAPH   Combine    202"
"          6  Combine "
"        202  Node #"
"              "
"             Maximum flow               0.100     c.m/sec"
"             Hydrograph volume          169.800   c.m"
"                0.100      0.100      0.100     0.100"
" 40          HYDROGRAPH Start - New Tributary"
"          2  Start - New Tributary"
"                0.100      0.000      0.100     0.100"
" 33          CATCHMENT 206"
"          2  Rectangular"
"          1  Equal length"
"          2  Horton equation"
"        206  No description"
"     74.500  % Impervious"
"      0.174  Total Area"
"     19.121  Flow length"
"      1.200  Overland Slope"
"      0.044  Pervious Area"
"     19.121  Pervious length"
"      1.200  Pervious slope"
"      0.130  Impervious Area"
"     19.121  Impervious length"
"      1.200  Impervious slope"
"      0.250  Pervious Manning 'n'"
"     25.000  Pervious Max.infiltration"
"      5.000  Pervious Min.infiltration"
"      0.500  Pervious Lag constant (hours)"
"      7.500  Pervious Depression storage"
"      0.015  Impervious Manning 'n'"
"      0.000  Impervious Max.infiltration"
"      0.000  Impervious Min.infiltration"
"      0.500  Impervious Lag constant (hours)"
"      2.000  Impervious Depression storage"
"                0.048      0.000      0.100      0.100 c.m/sec"
"             Catchment 206          Pervious   Impervious Total Area "
"             Surface Area           0.044      0.130      0.174      hectare"
"             Time of concentration  11.443     1.916      3.189      minutes"
"             Time to Centroid       95.985     89.145     90.059     minutes"
"             Rainfall depth         52.991     52.991     52.991     mm"
"             Rainfall volume        23.51      68.69      92.20      c.m"
```

```
"            Rainfall losses          30.008      2.000      9.142      mm"
"            Runoff depth             22.983     50.991     43.849      mm"
"            Runoff volume            10.20      66.10      76.30       c.m"
"            Runoff coefficient        0.434      0.962      0.827       "
"            Maximum flow              0.009      0.039      0.048      c.m/sec"
" 40        HYDROGRAPH Add Runoff "
"        4   Add Runoff "
"                  0.048      0.048      0.100      0.100"
" 51        PIPE DESIGN"
"    0.048   Current peak flow    c.m/sec"
"    0.013   Manning 'n'"
"    1.000   Diameter    metre"
"    1.000   Gradient    %"
"            Depth of flow              0.098     metre"
"            Velocity                   1.208     m/sec"
"            Pipe capacity              2.398     c.m/sec"
"            Critical depth             0.120     metre"
" 53        ROUTE Zero Route"
"    0.00   Zero Route Reach length    ( metre)"
"                  0.048      0.048      0.048      0.100 c.m/sec"
" 40        HYDROGRAPH   Combine     206"
"        6   Combine "
"      206   Node #"
"                  "
"            Maximum flow               0.048     c.m/sec"
"            Hydrograph volume         76.298     c.m"
"                  0.048      0.048      0.048      0.048"
" 40        HYDROGRAPH Start - New Tributary"
"        2   Start - New Tributary"
"                  0.048      0.000      0.048      0.048"
" 33        CATCHMENT 204"
"        2   Rectangular"
"        1   Equal length"
"        2   Horton equation"
"      204   No description"
"   65.000   % Impervious"
"    0.214   Total Area"
"   24.318   Flow length"
"    1.200   Overland Slope"
"    0.075   Pervious Area"
"   24.318   Pervious length"
"    1.200   Pervious slope"
"    0.139   Impervious Area"
"   24.318   Impervious length"
"    1.200   Impervious slope"
"    0.250   Pervious Manning 'n'"
"   25.000   Pervious Max.infiltration"
"    5.000   Pervious Min.infiltration"
"    0.500   Pervious Lag constant (hours)"
"    7.500   Pervious Depression storage"
"    0.015   Impervious Manning 'n'"
"    0.000   Impervious Max.infiltration"
"    0.000   Impervious Min.infiltration"
"    0.500   Impervious Lag constant (hours)"
"    2.000   Impervious Depression storage"
"                  0.055      0.000      0.048      0.048 c.m/sec"
"            Catchment 204          Pervious   Impervious Total Area "
"            Surface Area             0.075      0.139      0.214      hectare"
"            Time of concentration   13.218      2.213      4.363      minutes"
"            Time to Centroid         97.661     89.147     90.810     minutes"
```

```
"              Rainfall depth            52.991    52.991    52.991    mm"
"              Rainfall volume           39.69     73.71     113.40    c.m"
"              Rainfall losses           30.008    2.000     11.803    mm"
"              Runoff depth              22.983    50.991    41.188    mm"
"              Runoff volume             17.21     70.93     88.14     c.m"
"              Runoff coefficient        0.434     0.962     0.777     "
"              Maximum flow              0.013     0.042     0.055     c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"        4     Add Runoff "
"                     0.055     0.055      0.048      0.048"
" 51           PIPE DESIGN"
"      0.055   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      1.000   Diameter    metre"
"      1.000   Gradient    %"
"              Depth of flow                 0.104     metre"
"              Velocity                      1.259     m/sec"
"              Pipe capacity                 2.398     c.m/sec"
"              Critical depth                0.128     metre"
" 53           ROUTE Zero Route"
"      0.00    Zero Route Reach length   ( metre)"
"                     0.055     0.055      0.055      0.048 c.m/sec"
" 40           HYDROGRAPH   Combine    204"
"        6     Combine "
"      204     Node #"
"                     "
"              Maximum flow                  0.055     c.m/sec"
"              Hydrograph volume             88.143    c.m"
"                     0.055     0.055      0.055      0.055"
" 40           HYDROGRAPH Start - New Tributary"
"        2     Start - New Tributary"
"                     0.055     0.000      0.055      0.055"
" 33           CATCHMENT 210"
"        2     Rectangular"
"        1     Equal length"
"        2     Horton equation"
"      210     No description"
"      0.000   % Impervious"
"      0.113   Total Area"
"     12.151   Flow length"
"      1.200   Overland Slope"
"      0.113   Pervious Area"
"     12.151   Pervious length"
"      1.200   Pervious slope"
"      0.000   Impervious Area"
"     12.151   Impervious length"
"      1.200   Impervious slope"
"      0.250   Pervious Manning 'n'"
"     25.000   Pervious Max.infiltration"
"      5.000   Pervious Min.infiltration"
"      0.500   Pervious Lag constant (hours)"
"      7.500   Pervious Depression storage"
"      0.015   Impervious Manning 'n'"
"      0.000   Impervious Max.infiltration"
"      0.000   Impervious Min.infiltration"
"      0.500   Impervious Lag constant (hours)"
"      2.000   Impervious Depression storage"
"                     0.026     0.000      0.055      0.055 c.m/sec"
"              Catchment 210        Pervious   Impervious Total Area "
"              Surface Area         0.113      0.000      0.113      hectare"
```

```
"              Time of concentration  8.717      1.460      8.717     minutes"
"              Time to Centroid       93.910     89.143     93.910    minutes"
"              Rainfall depth         52.991     52.991     52.991    mm"
"              Rainfall volume        59.88      0.00       59.88     c.m"
"              Rainfall losses        30.008     2.000      30.008    mm"
"              Runoff depth           22.983     50.991     22.983    mm"
"              Runoff volume          25.97      0.00       25.97     c.m"
"              Runoff coefficient     0.434      0.000      0.434      "
"              Maximum flow           0.026      0.000      0.026     c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"         4    Add Runoff "
"                 0.026      0.026     0.055      0.055"
" 51          PIPE DESIGN"
"     0.026   Current peak flow    c.m/sec"
"     0.013   Manning 'n'"
"     1.000   Diameter    metre"
"     1.000   Gradient    %"
"              Depth of flow                0.074    metre"
"              Velocity                     1.009    m/sec"
"              Pipe capacity                2.398    c.m/sec"
"              Critical depth               0.089    metre"
" 53          ROUTE Zero Route"
"     0.00   Zero Route Reach length   ( metre)"
"                 0.026      0.026     0.026     0.055 c.m/sec"
" 40          HYDROGRAPH   Combine     9999"
"         6    Combine "
"      9999   Node #"
"                 "
"              Maximum flow                 0.026    c.m/sec"
"              Hydrograph volume            25.971   c.m"
"                 0.026      0.026     0.026     0.026"
" 40          HYDROGRAPH   Confluence    204"
"         7    Confluence "
"       204   Node #"
"                 "
"              Maximum flow                 0.055    c.m/sec"
"              Hydrograph volume            88.143   c.m"
"                 0.026      0.055     0.026     0.000"
" 54          POND DESIGN"
"     0.055   Current peak flow    c.m/sec"
"     0.080   Target outflow    c.m/sec"
"      88.1   Hydrograph volume    c.m"
"        3.   Number of stages"
"   223.850   Minimum water level    metre"
"   224.150   Maximum water level    metre"
"   223.850   Starting water level    metre"
"         0   Keep Design Data: 1 = True; 0 = False"
"              Level Discharge    Volume"
"            223.850  1.00E-07    2.490"
"            224.000  0.03300    13.040"
"            224.150  0.03430    44.580"
"              Peak outflow                 0.033    c.m/sec"
"              Maximum level                224.018  metre"
"              Maximum storage              16.729   c.m"
"              Centroidal lag               1.624    hours"
"                 0.026      0.055     0.033     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"         5    Next link "
"                 0.026      0.033     0.033     0.000"
" 51          PIPE DESIGN"
```

```
"       0.033   Current peak flow     c.m/sec"
"       0.013   Manning 'n'"
"       0.250   Diameter     metre"
"       1.150   Gradient     %"
"               Depth of flow                 0.128     metre"
"               Velocity                      1.311     m/sec"
"               Pipe capacity                 0.064     c.m/sec"
"               Critical depth                0.148     metre"
" 53            ROUTE     Pipe Route 24"
"       23.60         Pipe Route 24 Reach length    ( metre)"
"       0.360   X-factor <= 0.5"
"      13.501   K-lag    ( seconds)"
"       0.000   Default(0) or user spec.(1) values used"
"       0.500   X-factor <= 0.5"
"      30.000   K-lag    ( seconds)"
"       0.500   Beta weighting factor"
"      17.143   Routing time step    ( seconds)"
"           1   No. of sub-reaches"
"               Peak outflow                  0.033     c.m/sec"
"                   0.026     0.033     0.033     0.000 c.m/sec"
" 40            HYDROGRAPH   Combine     5"
"           6   Combine "
"           5   Node #"
"               "
"               Maximum flow                  0.033     c.m/sec"
"               Hydrograph volume           89.594     c.m"
"                   0.026     0.033     0.033     0.033"
" 40            HYDROGRAPH   Confluence    206"
"           7   Confluence "
"         206   Node #"
"               "
"               Maximum flow                  0.048     c.m/sec"
"               Hydrograph volume           76.298     c.m"
"                   0.026     0.048     0.033     0.000"
" 54            POND DESIGN"
"       0.048   Current peak flow     c.m/sec"
"       0.080   Target outflow     c.m/sec"
"        76.3   Hydrograph volume     c.m"
"          3.   Number of stages"
"     223.850   Minimum water level     metre"
"     224.150   Maximum water level     metre"
"     223.850   Starting water level     metre"
"           0   Keep Design Data: 1 = True; 0 = False"
"               Level Discharge     Volume"
"               223.850   0.01000   0.4900"
"               224.000   0.01880   11.740"
"               224.150   0.01980   45.490"
"               Peak outflow                  0.019     c.m/sec"
"               Maximum level               224.047     metre"
"               Maximum storage              22.265     c.m"
"               Centroidal lag                1.717     hours"
"                   0.026     0.048     0.019     0.000 c.m/sec"
" 40            HYDROGRAPH Next link "
"           5   Next link "
"                   0.026     0.019     0.019     0.000"
" 51            PIPE DESIGN"
"       0.019   Current peak flow     c.m/sec"
"       0.013   Manning 'n'"
"       0.250   Diameter     metre"
"       2.000   Gradient     %"
```

```
"              Depth of flow                 0.081    metre"
"              Velocity                      1.387    m/sec"
"              Pipe capacity                 0.084    c.m/sec"
"              Critical depth                0.111    metre"
" 53          ROUTE      Pipe Route 24"
"     23.60        Pipe Route 24 Reach length    ( metre)"
"     0.453   X-factor <= 0.5"
"    12.764   K-lag    ( seconds)"
"     0.000   Default(0) or user spec.(1) values used"
"     0.500   X-factor <= 0.5"
"    30.000   K-lag    ( seconds)"
"     0.500   Beta weighting factor"
"    13.953   Routing time step    ( seconds)"
"         1   No. of sub-reaches"
"              Peak outflow                  0.019    c.m/sec"
"                    0.026      0.019      0.019    0.000 c.m/sec"
" 40          HYDROGRAPH   Combine     5"
"         6   Combine "
"         5   Node #"
"                  "
"              Maximum flow                  0.052    c.m/sec"
"              Hydrograph volume           166.090    c.m"
"                    0.026      0.019      0.019    0.052"
" 40          HYDROGRAPH   Confluence    5"
"         7   Confluence "
"         5   Node #"
"                  "
"              Maximum flow                  0.052    c.m/sec"
"              Hydrograph volume           166.090    c.m"
"                    0.026      0.052      0.019    0.000"
" 51          PIPE DESIGN"
"     0.052   Current peak flow     c.m/sec"
"     0.013   Manning 'n'"
"     0.375   Diameter    metre"
"     0.400   Gradient    %"
"              Depth of flow                 0.181    metre"
"              Velocity                      0.989    m/sec"
"              Pipe capacity                 0.111    c.m/sec"
"              Critical depth                0.165    metre"
" 53          ROUTE      Pipe Route 78"
"     77.50        Pipe Route 78 Reach length    ( metre)"
"     0.330   X-factor <= 0.5"
"    58.787   K-lag    ( seconds)"
"     0.000   Default(0) or user spec.(1) values used"
"     0.500   X-factor <= 0.5"
"    30.000   K-lag    ( seconds)"
"     0.500   Beta weighting factor"
"    75.000   Routing time step    ( seconds)"
"         1   No. of sub-reaches"
"              Peak outflow                  0.052    c.m/sec"
"                    0.026      0.052      0.052    0.000 c.m/sec"
" 40          HYDROGRAPH   Combine     3"
"         6   Combine "
"         3   Node #"
"                  "
"              Maximum flow                  0.052    c.m/sec"
"              Hydrograph volume           166.090    c.m"
"                    0.026      0.052      0.052    0.052"
" 40          HYDROGRAPH   Confluence   202"
"         7   Confluence "
```

```
"         202    Node #"
"                  "
"                Maximum flow                        0.100    c.m/sec"
"                Hydrograph volume                 169.800    c.m"
"                   0.026      0.100      0.052      0.000"
" 54             POND DESIGN"
"      0.100    Current peak flow    c.m/sec"
"      0.080    Target outflow     c.m/sec"
"      169.8    Hydrograph volume     c.m"
"         3.    Number of stages"
"    223.000    Minimum water level     metre"
"    223.150    Maximum water level     metre"
"    223.000    Starting water level     metre"
"         0    Keep Design Data: 1 = True; 0 = False"
"                Level Discharge     Volume"
"                223.000    0.00100    0.4900"
"                223.075    0.08990    10.370"
"                223.150    0.08500    39.990"
"                Peak outflow                        0.087    c.m/sec"
"                Maximum level                     223.073    metre"
"                Maximum storage                    10.091    c.m"
"                Centroidal lag                      1.528    hours"
"                   0.026      0.100      0.087      0.000 c.m/sec"
" 40             HYDROGRAPH Next link "
"         5    Next link "
"                   0.026      0.087      0.087      0.000"
" 51             PIPE DESIGN"
"      0.087    Current peak flow    c.m/sec"
"      0.013    Manning 'n'"
"      0.375    Diameter    metre"
"      0.400    Gradient    %"
"                Depth of flow                       0.251    metre"
"                Velocity                            1.113    m/sec"
"                Pipe capacity                       0.111    c.m/sec"
"                Critical depth                      0.217    metre"
" 53             ROUTE     Pipe Route 24"
"      23.60        Pipe Route 24 Reach length    ( metre)"
"      0.000    X-factor <= 0.5"
"     15.909    K-lag    ( seconds)"
"      0.000    Default(0) or user spec.(1) values used"
"      0.500    X-factor <= 0.5"
"     30.000    K-lag    ( seconds)"
"      0.664    Beta weighting factor"
"     46.154    Routing time step    ( seconds)"
"         1    No. of sub-reaches"
"                Peak outflow                        0.086    c.m/sec"
"                   0.026      0.087      0.086      0.000 c.m/sec"
" 40             HYDROGRAPH    Combine    3"
"         6    Combine "
"         3    Node #"
"                  "
"                Maximum flow                        0.134    c.m/sec"
"                Hydrograph volume                 335.887    c.m"
"                   0.026      0.087      0.086      0.134"
" 40             HYDROGRAPH    Confluence    3"
"         7    Confluence "
"         3    Node #"
"                  "
"                Maximum flow                        0.134    c.m/sec"
"                Hydrograph volume                 335.887    c.m"
```

```
"               0.026      0.134      0.086      0.000"
" 51            PIPE DESIGN"
"    0.134    Current peak flow    c.m/sec"
"    0.013    Manning 'n'"
"    0.450    Diameter    metre"
"    0.400    Gradient    %"
"            Depth of flow            0.289    metre"
"            Velocity                 1.242    m/sec"
"            Pipe capacity            0.180    c.m/sec"
"            Critical depth           0.256    metre"
" 53            ROUTE    Pipe Route 15"
"    15.00        Pipe Route 15 Reach length    ( metre)"
"    0.000    X-factor <= 0.5"
"    9.060    K-lag    ( seconds)"
"    0.000    Default(0) or user spec.(1) values used"
"    0.500    X-factor <= 0.5"
"   30.000    K-lag    ( seconds)"
"    0.785    Beta weighting factor"
"   37.500    Routing time step    ( seconds)"
"        1    No. of sub-reaches"
"            Peak outflow                0.133    c.m/sec"
"               0.026      0.134      0.133      0.000 c.m/sec"
" 40            HYDROGRAPH    Combine    201"
"        6    Combine "
"      201    Node #"
"            "
"            Maximum flow                0.228    c.m/sec"
"            Hydrograph volume         499.058    c.m"
"               0.026      0.134      0.133      0.228"
" 40            HYDROGRAPH    Confluence    201"
"        7    Confluence "
"      201    Node #"
"            "
"            Maximum flow                0.228    c.m/sec"
"            Hydrograph volume         499.058    c.m"
"               0.026      0.228      0.133      0.000"
" 51            PIPE DESIGN"
"    0.228    Current peak flow    c.m/sec"
"    0.013    Manning 'n'"
"    0.525    Diameter    metre"
"    0.400    Gradient    %"
"            Depth of flow            0.368    metre"
"            Velocity                 1.408    m/sec"
"            Pipe capacity            0.272    c.m/sec"
"            Critical depth           0.323    metre"
" 53            ROUTE    Pipe Route 16"
"    15.70        Pipe Route 16 Reach length    ( metre)"
"    0.000    X-factor <= 0.5"
"    8.365    K-lag    ( seconds)"
"    0.000    Default(0) or user spec.(1) values used"
"    0.500    X-factor <= 0.5"
"   30.000    K-lag    ( seconds)"
"    0.822    Beta weighting factor"
"   46.154    Routing time step    ( seconds)"
"        1    No. of sub-reaches"
"            Peak outflow                0.226    c.m/sec"
"               0.026      0.228      0.226      0.000 c.m/sec"
" 40            HYDROGRAPH Next link "
"        5    Next link "
"               0.026      0.226      0.226      0.000"
```

```
"  40              HYDROGRAPH Undo"
"                1   Undo"
"                     0.026      0.228      0.226      0.000"
"  56                DIVERSION"
"              201   Node number"
"            0.229   Overflow threshold"
"            1.000   Required diverted fraction"
"                0   Conduit type; 1=Pipe;2=Channel"
"                Peak of diverted flow           0.000    c.m/sec"
"                Volume of diverted flow         0.000    c.m"
"                DIV00201.005hyd"
"                No Flow Diverted"
"                     0.026      0.228      0.228      0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"                5   Next link "
"                     0.026      0.228      0.228      0.000"
"  40              HYDROGRAPH Undo"
"                1   Undo"
"                     0.026      0.228      0.228      0.000"
"  56                DIVERSION"
"                3   Node number"
"            0.200   Overflow threshold"
"            1.000   Required diverted fraction"
"                0   Conduit type; 1=Pipe;2=Channel"
"                Peak of diverted flow           0.028    c.m/sec"
"                Volume of diverted flow        16.994    c.m"
"                DIV00003.005hyd"
"                Diversion to Dverland Flow 0.028 cms"
"                     0.026      0.228      0.200      0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"                5   Next link "
"                     0.026      0.200      0.200      0.000"
"  54                POND DESIGN"
"            0.200   Current peak flow      c.m/sec"
"            0.090   Target outflow     c.m/sec"
"            482.1   Hydrograph volume     c.m"
"               3.   Number of stages"
"          221.600   Minimum water level     metre"
"          223.100   Maximum water level     metre"
"          221.600   Starting water level    metre"
"                0   Keep Design Data: 1 = True; 0 = False"
"                   Level Discharge     Volume"
"                  221.600   0.01000   0.01000"
"                  222.350   0.04960    99.140"
"                  223.100   0.06830   262.660"
"                Peak outflow                   0.062     c.m/sec"
"                Maximum level                222.834     metre"
"                Maximum storage              204.706     c.m"
"                Centroidal lag                 2.298     hours"
"                     0.026      0.200      0.062      0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"                5   Next link "
"                     0.026      0.062      0.062      0.000"
"  51                PIPE DESIGN"
"            0.062   Current peak flow      c.m/sec"
"            0.013   Manning 'n'"
"            0.375   Diameter     metre"
"            0.400   Gradient    %"
"                Depth of flow                  0.200     metre"
"                Velocity                       1.030     m/sec"
```

```
"                    Pipe capacity                  0.111    c.m/sec"
"                    Critical depth                 0.180    metre"
" 53                 ROUTE      Pipe Route 59"
"      59.40         Pipe Route 59 Reach length    ( metre)"
"       0.246   X-factor <= 0.5"
"      43.248   K-lag    ( seconds)"
"       0.000   Default(0) or user spec.(1) values used"
"       0.500   X-factor <= 0.5"
"      30.000   K-lag    ( seconds)"
"       0.500   Beta weighting factor"
"      60.000   Routing time step    ( seconds)"
"           1   No. of sub-reaches"
"                  Peak outflow                     0.062    c.m/sec"
"                        0.026     0.062     0.062     0.000 c.m/sec"
" 40                 HYDROGRAPH Next link "
"           5   Next link "
"                        0.026     0.062     0.062     0.000"
" 51                 PIPE DESIGN"
"       0.062   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       0.375   Diameter    metre"
"       0.400   Gradient    %"
"                  Depth of flow                    0.200    metre"
"                  Velocity                         1.030    m/sec"
"                  Pipe capacity                    0.111    c.m/sec"
"                  Critical depth                   0.180    metre"
" 53                 ROUTE      Pipe Route 31"
"      31.30         Pipe Route 31 Reach length    ( metre)"
"       0.019   X-factor <= 0.5"
"      22.790   K-lag    ( seconds)"
"       0.000   Default(0) or user spec.(1) values used"
"       0.500   X-factor <= 0.5"
"      30.000   K-lag    ( seconds)"
"       0.500   Beta weighting factor"
"      42.857   Routing time step    ( seconds)"
"           1   No. of sub-reaches"
"                  Peak outflow                     0.062    c.m/sec"
"                        0.026     0.062     0.062     0.000 c.m/sec"
" 40                 HYDROGRAPH Next link "
"           5   Next link "
"                        0.026     0.062     0.062     0.000"
" 51                 PIPE DESIGN"
"       0.062   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       0.375   Diameter    metre"
"       0.400   Gradient    %"
"                  Depth of flow                    0.200    metre"
"                  Velocity                         1.030    m/sec"
"                  Pipe capacity                    0.111    c.m/sec"
"                  Critical depth                   0.180    metre"
" 53                 ROUTE      Pipe Route 11"
"      10.50         Pipe Route 11 Reach length    ( metre)"
"       0.000   X-factor <= 0.5"
"       7.645   K-lag    ( seconds)"
"       0.000   Default(0) or user spec.(1) values used"
"       0.500   X-factor <= 0.5"
"      30.000   K-lag    ( seconds)"
"       0.750   Beta weighting factor"
"      28.571   Routing time step    ( seconds)"
"           1   No. of sub-reaches"
```

```
"                    Peak outflow                    0.062      c.m/sec"
"                            0.026       0.062      0.062      0.000 c.m/sec"
" 40             HYDROGRAPH   Combine      9999"
"                6    Combine "
"             9999   Node #"
"                       "
"                    Maximum flow                    0.075      c.m/sec"
"                    Hydrograph volume               508.480    c.m"
"                            0.026       0.062      0.062      0.075"
" 40             HYDROGRAPH   Confluence    9999"
"                7   Confluence "
"             9999   Node #"
"                       "
"                    Maximum flow                    0.075      c.m/sec"
"                    Hydrograph volume               508.480    c.m"
"                            0.026       0.075      0.062      0.000"
" 38             START/RE-START TOTALS 9999"
"                3   Runoff Totals on EXIT"
"                Total Catchment area                       1.154      hectare"
"                Total Impervious area                       0.922      hectare"
"                Total % impervious                         79.873"
" 19             EXIT"
```

```
"        MIDUSS Output ------------------------------------------------>"
"                  MIDUSS version                      Version 2.25  rev. 473"
"                  MIDUSS created                        February-07-10"
"       10   Units used:                                       ie METRIC"
"            Job folder:                        C:\swm\17233\Update 2025-3-20"
"            Output filename:                                  pst254.out"
"            Licensee name:                                           Bob"
"            Company                                                      "
"            Date & Time last used:               25/07/2024 at 11:51:23 AM"
" 31        TIME PARAMETERS"
"       10.000   Time Step"
"      180.000   Max. Storm length"
"     1500.000   Max. Hydrograph"
" 32        STORM Chicago storm"
"        1   Chicago storm"
"      721.533   Coefficient A"
"        2.253   Constant B"
"        0.679   Exponent C"
"        0.400   Fraction R"
"      180.000   Duration"
"        1.000   Time step multiplier"
"            Maximum intensity          127.011    mm/hr"
"            Total depth                 63.151    mm"
"        6   005hyd   Hydrograph extension used in this file"
" 33        CATCHMENT 201"
"        2   Rectangular"
"        1   Equal length"
"        2   Horton equation"
"      201   No description"
"      100.000   % Impervious"
"        0.320   Total Area"
"       80.000   Flow length"
"        1.200   Overland Slope"
"        0.000   Pervious Area"
"       80.000   Pervious length"
"        1.200   Pervious slope"
"        0.320   Impervious Area"
"       80.000   Impervious length"
"        1.200   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       25.000   Pervious Max.infiltration"
"        5.000   Pervious Min.infiltration"
"        0.500   Pervious Lag constant (hours)"
"        7.500   Pervious Depression storage"
"        0.015   Impervious Manning 'n'"
"        0.000   Impervious Max.infiltration"
"        0.000   Impervious Min.infiltration"
"        0.500   Impervious Lag constant (hours)"
"        2.000   Impervious Depression storage"
"                 0.113      0.000      0.000      0.000 c.m/sec"
```

Catchment 201	Pervious	Impervious	Total Area	
Surface Area	0.000	0.320	0.320	hectare"
Time of concentration	23.743	4.233	4.233	minutes"
Time to Centroid	109.051	89.371	89.371	minutes"
Rainfall depth	63.151	63.151	63.151	mm"
Rainfall volume	0.00	202.08	202.08	c.m"
Rainfall losses	30.582	2.000	2.000	mm"
Runoff depth	32.569	61.151	61.151	mm"
Runoff volume	0.00	195.68	195.68	c.m"
Runoff coefficient	0.000	0.968	0.968	"

```
"               Maximum flow          0.000      0.113      0.113      c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"          4   Add Runoff "
"                         0.113    0.113    0.000      0.000"
" 51           PIPE DESIGN"
"      0.113   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      1.000   Diameter    metre"
"      1.000   Gradient    %"
"              Depth of flow             0.148    metre"
"              Velocity                  1.563    m/sec"
"              Pipe capacity             2.398    c.m/sec"
"              Critical depth            0.185    metre"
" 53           ROUTE Zero Route"
"      0.00    Zero Route Reach length  ( metre)"
"                     0.113      0.113      0.113    0.000 c.m/sec"
" 40           HYDROGRAPH   Combine    201"
"          6   Combine "
"        201   Node #"
"               "
"              Maximum flow              0.113    c.m/sec"
"              Hydrograph volume       195.683    c.m"
"                     0.113      0.113      0.113    0.113"
" 40           HYDROGRAPH Start - New Tributary"
"          2   Start - New Tributary"
"                     0.113    0.000      0.113    0.113"
" 33           CATCHMENT 202"
"          2   Rectangular"
"          1   Equal length"
"          2   Horton equation"
"        202   No description"
"    100.000   % Impervious"
"      0.333   Total Area"
"     83.250   Flow length"
"      1.200   Overland Slope"
"      0.000   Pervious Area"
"     83.250   Pervious length"
"      1.200   Pervious slope"
"      0.333   Impervious Area"
"     83.250   Impervious length"
"      1.200   Impervious slope"
"      0.250   Pervious Manning 'n'"
"     25.000   Pervious Max.infiltration"
"      5.000   Pervious Min.infiltration"
"      0.500   Pervious Lag constant (hours)"
"      7.500   Pervious Depression storage"
"      0.015   Impervious Manning 'n'"
"      0.000   Impervious Max.infiltration"
"      0.000   Impervious Min.infiltration"
"      0.500   Impervious Lag constant (hours)"
"      2.000   Impervious Depression storage"
"                     0.117    0.000      0.113      0.113 c.m/sec"
"              Catchment 202          Pervious   Impervious Total Area "
"              Surface Area           0.000      0.333      0.333      hectare"
"              Time of concentration  24.317     4.335      4.335      minutes"
"              Time to Centroid       109.549    89.429     89.429     minutes"
"              Rainfall depth         63.151     63.151     63.151     mm"
"              Rainfall volume        0.00       210.29     210.29     c.m"
"              Rainfall losses        30.582     2.000      2.000      mm"
"              Runoff depth           32.569     61.151     61.151     mm"
```

```
"                    Runoff volume              0.00      203.63     203.63     c.m"
"                    Runoff coefficient         0.000       0.968      0.968     "
"                    Maximum flow               0.000       0.117      0.117     c.m/sec"
" 40                 HYDROGRAPH Add Runoff "
"           4    Add Runoff "
"                        0.117      0.117      0.113      0.113"
" 51                 PIPE DESIGN"
"      0.117    Current peak flow    c.m/sec"
"      0.013    Manning 'n'"
"      1.000    Diameter    metre"
"      1.000    Gradient    %"
"               Depth of flow                 0.151     metre"
"               Velocity                      1.581     m/sec"
"               Pipe capacity                 2.398     c.m/sec"
"               Critical depth                0.189     metre"
" 53                 ROUTE Zero Route"
"      0.00    Zero Route Reach length   ( metre)"
"                        0.117      0.117      0.117      0.113 c.m/sec"
" 40                 HYDROGRAPH   Combine   202"
"         6    Combine "
"       202    Node #"
"                "
"               Maximum flow                  0.117     c.m/sec"
"               Hydrograph volume            203.632    c.m"
"                        0.117      0.117      0.117      0.117"
" 40                 HYDROGRAPH Start - New Tributary"
"         2    Start - New Tributary"
"                        0.117      0.000      0.117      0.117"
" 33                 CATCHMENT 206"
"         2    Rectangular"
"         1    Equal length"
"         2    Horton equation"
"       206    No description"
"     74.500    % Impervious"
"      0.174    Total Area"
"     19.121    Flow length"
"      1.200    Overland Slope"
"      0.044    Pervious Area"
"     19.121    Pervious length"
"      1.200    Pervious slope"
"      0.130    Impervious Area"
"     19.121    Impervious length"
"      1.200    Impervious slope"
"      0.250    Pervious Manning 'n'"
"     25.000    Pervious Max.infiltration"
"      5.000    Pervious Min.infiltration"
"      0.500    Pervious Lag constant (hours)"
"      7.500    Pervious Depression storage"
"      0.015    Impervious Manning 'n'"
"      0.000    Impervious Max.infiltration"
"      0.000    Impervious Min.infiltration"
"      0.500    Impervious Lag constant (hours)"
"      2.000    Impervious Depression storage"
"                        0.060      0.000      0.117      0.117 c.m/sec"
"               Catchment 206          Pervious   Impervious Total Area "
"               Surface Area            0.044       0.130      0.174     hectare"
"               Time of concentration  10.060       1.793      3.068     minutes"
"               Time to Centroid        97.246      88.972     90.248    minutes"
"               Rainfall depth          63.151      63.151     63.151    mm"
"               Rainfall volume          28.02       81.86     109.88    c.m"
```

```
"               Rainfall losses            30.582      2.000      9.288      mm"
"               Runoff depth               32.569     61.151     53.862      mm"
"               Runoff volume              14.45      79.27      93.72       c.m"
"               Runoff coefficient          0.516      0.968      0.853      "
"               Maximum flow                0.014      0.046      0.060      c.m/sec"
" 40            HYDROGRAPH Add Runoff "
"          4    Add Runoff "
"                      0.060      0.060      0.117      0.117"
" 51            PIPE DESIGN"
"      0.060    Current peak flow    c.m/sec"
"      0.013    Manning 'n'"
"      1.000    Diameter    metre"
"      1.000    Gradient    %"
"               Depth of flow                      0.109    metre"
"               Velocity                           1.293    m/sec"
"               Pipe capacity                      2.398    c.m/sec"
"               Critical depth                     0.134    metre"
" 53            ROUTE Zero Route"
"       0.00    Zero Route Reach length    ( metre)"
"                      0.060      0.060      0.060      0.117 c.m/sec"
" 40            HYDROGRAPH   Combine    206"
"          6    Combine "
"        206    Node #"
"                      "
"               Maximum flow                       0.060    c.m/sec"
"               Hydrograph volume                 93.721    c.m"
"                      0.060      0.060      0.060      0.060"
" 40            HYDROGRAPH Start - New Tributary"
"          2    Start - New Tributary"
"                      0.060      0.000      0.060      0.060"
" 33            CATCHMENT 204"
"          2    Rectangular"
"          1    Equal length"
"          2    Horton equation"
"        204    No description"
"     65.000    % Impervious"
"      0.214    Total Area"
"     24.318    Flow length"
"      1.200    Overland Slope"
"      0.075    Pervious Area"
"     24.318    Pervious length"
"      1.200    Pervious slope"
"      0.139    Impervious Area"
"     24.318    Impervious length"
"      1.200    Impervious slope"
"      0.250    Pervious Manning 'n'"
"     25.000    Pervious Max.infiltration"
"      5.000    Pervious Min.infiltration"
"      0.500    Pervious Lag constant (hours)"
"      7.500    Pervious Depression storage"
"      0.015    Impervious Manning 'n'"
"      0.000    Impervious Max.infiltration"
"      0.000    Impervious Min.infiltration"
"      0.500    Impervious Lag constant (hours)"
"      2.000    Impervious Depression storage"
"                      0.070      0.000      0.060      0.060 c.m/sec"
"               Catchment 204             Pervious   Impervious Total Area "
"               Surface Area               0.075      0.139      0.214      hectare"
"               Time of concentration     11.621      2.072      4.200      minutes"
"               Time to Centroid          98.868     88.972     91.178      minutes"
```

```
"                 Rainfall depth              63.151      63.151      63.151      mm"
"                 Rainfall volume             47.30       87.84       135.14      c.m"
"                 Rainfall losses             30.582      2.000       12.004      mm"
"                 Runoff depth                32.569      61.151      51.147      mm"
"                 Runoff volume               24.39       85.06       109.45      c.m"
"                 Runoff coefficient          0.516       0.968       0.810       "
"                 Maximum flow                0.021       0.049       0.070       c.m/sec"
" 40              HYDROGRAPH Add Runoff "
"          4      Add Runoff "
"                      0.070       0.070       0.060       0.060"
" 51              PIPE DESIGN"
"      0.070      Current peak flow    c.m/sec"
"      0.013      Manning 'n'"
"      1.000      Diameter    metre"
"      1.000      Gradient    %"
"                 Depth of flow                     0.117     metre"
"                 Velocity                          1.354     m/sec"
"                 Pipe capacity                     2.398     c.m/sec"
"                 Critical depth                    0.145     metre"
" 53              ROUTE Zero Route"
"      0.00       Zero Route Reach length    ( metre)"
"                      0.070       0.070       0.070       0.060 c.m/sec"
" 40              HYDROGRAPH   Combine     204"
"          6      Combine "
"        204      Node #"
"                      "
"                 Maximum flow                      0.070     c.m/sec"
"                 Hydrograph volume                 109.455   c.m"
"                      0.070       0.070       0.070       0.070"
" 40              HYDROGRAPH Start - New Tributary"
"          2      Start - New Tributary"
"                      0.070       0.000       0.070       0.070"
" 33              CATCHMENT 210"
"          2      Rectangular"
"          1      Equal length"
"          2      Horton equation"
"        210      No description"
"      0.000      % Impervious"
"      0.113      Total Area"
"     12.151      Flow length"
"      1.200      Overland Slope"
"      0.113      Pervious Area"
"     12.151      Pervious length"
"      1.200      Pervious slope"
"      0.000      Impervious Area"
"     12.151      Impervious length"
"      1.200      Impervious slope"
"      0.250      Pervious Manning 'n'"
"     25.000      Pervious Max.infiltration"
"      5.000      Pervious Min.infiltration"
"      0.500      Pervious Lag constant (hours)"
"      7.500      Pervious Depression storage"
"      0.015      Impervious Manning 'n'"
"      0.000      Impervious Max.infiltration"
"      0.000      Impervious Min.infiltration"
"      0.500      Impervious Lag constant (hours)"
"      2.000      Impervious Depression storage"
"                      0.036       0.000       0.070       0.070 c.m/sec"
"                 Catchment 210            Pervious   Impervious Total Area "
"                 Surface Area             0.113      0.000      0.113       hectare"
```

```
"               Time of concentration   7.664      1.366      7.664      minutes"
"               Time to Centroid        95.967     88.972     95.967     minutes"
"               Rainfall depth          63.151     63.151     63.151     mm"
"               Rainfall volume         71.36      0.00       71.36      c.m"
"               Rainfall losses         30.582     2.000      30.582     mm"
"               Runoff depth            32.569     61.151     32.569     mm"
"               Runoff volume           36.80      0.00       36.80      c.m"
"               Runoff coefficient      0.516      0.000      0.516      "
"               Maximum flow            0.036      0.000      0.036      c.m/sec"
" 40            HYDROGRAPH Add Runoff "
"         4     Add Runoff "
"                     0.036      0.036      0.070      0.070"
" 51            PIPE DESIGN"
"       0.036   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter     metre"
"       1.000   Gradient     %"
"               Depth of flow              0.086      metre"
"               Velocity                   1.112      m/sec"
"               Pipe capacity              2.398      c.m/sec"
"               Critical depth             0.104      metre"
" 53            ROUTE Zero Route"
"       0.00    Zero Route Reach length   ( metre)"
"                     0.036      0.036      0.036      0.070 c.m/sec"
" 40            HYDROGRAPH   Combine   9999"
"         6     Combine "
"      9999     Node #"
"                "
"               Maximum flow               0.036      c.m/sec"
"               Hydrograph volume          36.802     c.m"
"                     0.036      0.036      0.036      0.036"
" 40            HYDROGRAPH   Confluence   204"
"         7     Confluence "
"       204     Node #"
"                "
"               Maximum flow               0.070      c.m/sec"
"               Hydrograph volume          109.455    c.m"
"                     0.036      0.070      0.036      0.000"
" 54            POND DESIGN"
"       0.070   Current peak flow    c.m/sec"
"       0.080   Target outflow     c.m/sec"
"       109.5   Hydrograph volume    c.m"
"         3.    Number of stages"
"     223.850   Minimum water level    metre"
"     224.150   Maximum water level    metre"
"     223.850   Starting water level    metre"
"         0     Keep Design Data: 1 = True; 0 = False"
"               Level Discharge    Volume"
"               223.850  1.00E-07    2.490"
"               224.000   0.03300   13.040"
"               224.150   0.03430   44.580"
"               Peak outflow               0.033      c.m/sec"
"               Maximum level              224.055    metre"
"               Maximum storage            24.542     c.m"
"               Centroidal lag             1.654      hours"
"                     0.036      0.070      0.033      0.000 c.m/sec"
" 40            HYDROGRAPH Next link "
"         5     Next link "
"                     0.036      0.033      0.033      0.000"
" 51            PIPE DESIGN"
```

```
"        0.033    Current peak flow    c.m/sec"
"        0.013    Manning 'n'"
"        0.250    Diameter    metre"
"        1.150    Gradient    %"
"                 Depth of flow              0.129    metre"
"                 Velocity                   1.315    m/sec"
"                 Pipe capacity              0.064    c.m/sec"
"                 Critical depth             0.148    metre"
" 53             ROUTE    Pipe Route 24"
"        23.60        Pipe Route 24 Reach length    ( metre)"
"        0.359    X-factor <= 0.5"
"        13.463   K-lag    ( seconds)"
"        0.000    Default(0) or user spec.(1) values used"
"        0.500    X-factor <= 0.5"
"        30.000   K-lag    ( seconds)"
"        0.500    Beta weighting factor"
"        17.143   Routing time step    ( seconds)"
"           1   No. of sub-reaches"
"                 Peak outflow               0.033    c.m/sec"
"                        0.036     0.033     0.033     0.000 c.m/sec"
" 40             HYDROGRAPH    Combine    5"
"           6   Combine "
"           5   Node #"
"                    "
"                 Maximum flow               0.033    c.m/sec"
"                 Hydrograph volume         110.992    c.m"
"                        0.036     0.033     0.033     0.033"
" 40             HYDROGRAPH    Confluence    206"
"           7   Confluence "
"         206   Node #"
"                    "
"                 Maximum flow               0.060    c.m/sec"
"                 Hydrograph volume          93.721    c.m"
"                        0.036     0.060     0.033     0.000"
" 54             POND DESIGN"
"        0.060    Current peak flow    c.m/sec"
"        0.080    Target outflow    c.m/sec"
"        93.7     Hydrograph volume    c.m"
"        3.       Number of stages"
"        223.850  Minimum water level    metre"
"        224.150  Maximum water level    metre"
"        223.850  Starting water level    metre"
"           0   Keep Design Data: 1 = True; 0 = False"
"                 Level Discharge    Volume"
"                 223.850   0.01000   0.4900"
"                 224.000   0.01880   11.740"
"                 224.150   0.01980   45.490"
"                 Peak outflow               0.019    c.m/sec"
"                 Maximum level             224.082    metre"
"                 Maximum storage            30.149    c.m"
"                 Centroidal lag              1.765    hours"
"                        0.036     0.060     0.019     0.000 c.m/sec"
" 40             HYDROGRAPH Next link "
"           5   Next link "
"                        0.036     0.019     0.019     0.000"
" 51             PIPE DESIGN"
"        0.019    Current peak flow    c.m/sec"
"        0.013    Manning 'n'"
"        0.250    Diameter    metre"
"        2.000    Gradient    %"
```

```
"              Depth of flow                      0.082     metre"
"              Velocity                           1.391     m/sec"
"              Pipe capacity                      0.084     c.m/sec"
"              Critical depth                     0.111     metre"
" 53           ROUTE     Pipe Route 24"
"    23.60         Pipe Route 24 Reach length    ( metre)"
"    0.453    X-factor <= 0.5"
"   12.721    K-lag    ( seconds)"
"    0.000    Default(0) or user spec.(1) values used"
"    0.500    X-factor <= 0.5"
"   30.000    K-lag    ( seconds)"
"    0.500    Beta weighting factor"
"   13.636    Routing time step    ( seconds)"
"        1    No. of sub-reaches"
"              Peak outflow                       0.019     c.m/sec"
"                   0.036      0.019      0.019      0.000 c.m/sec"
" 40           HYDROGRAPH    Combine      5"
"        6    Combine "
"        5    Node #"
"             "
"              Maximum flow                       0.053     c.m/sec"
"              Hydrograph volume                204.771     c.m"
"                   0.036      0.019      0.019      0.053"
" 40           HYDROGRAPH    Confluence     5"
"        7    Confluence "
"        5    Node #"
"             "
"              Maximum flow                       0.053     c.m/sec"
"              Hydrograph volume                204.771     c.m"
"                   0.036      0.053      0.019      0.000"
" 51           PIPE DESIGN"
"    0.053    Current peak flow    c.m/sec"
"    0.013    Manning 'n'"
"    0.375    Diameter    metre"
"    0.400    Gradient    %"
"              Depth of flow                      0.182     metre"
"              Velocity                           0.992     m/sec"
"              Pipe capacity                      0.111     c.m/sec"
"              Critical depth                     0.166     metre"
" 53           ROUTE     Pipe Route 78"
"    77.50         Pipe Route 78 Reach length    ( metre)"
"    0.329    X-factor <= 0.5"
"   58.614    K-lag    ( seconds)"
"    0.000    Default(0) or user spec.(1) values used"
"    0.500    X-factor <= 0.5"
"   30.000    K-lag    ( seconds)"
"    0.500    Beta weighting factor"
"   75.000    Routing time step    ( seconds)"
"        1    No. of sub-reaches"
"              Peak outflow                       0.053     c.m/sec"
"                   0.036      0.053      0.053      0.000 c.m/sec"
" 40           HYDROGRAPH    Combine      3"
"        6    Combine "
"        3    Node #"
"             "
"              Maximum flow                       0.053     c.m/sec"
"              Hydrograph volume                204.771     c.m"
"                   0.036      0.053      0.053      0.053"
" 40           HYDROGRAPH    Confluence   202"
"        7    Confluence "
```

```
"        202    Node #"
"                  "
"             Maximum flow                    0.117    c.m/sec"
"             Hydrograph volume             203.632    c.m"
"                  0.036     0.117     0.053      0.000"
" 54            POND DESIGN"
"     0.117   Current peak flow    c.m/sec"
"     0.080   Target outflow    c.m/sec"
"     203.6   Hydrograph volume    c.m"
"        3.   Number of stages"
"   223.000   Minimum water level    metre"
"   223.150   Maximum water level    metre"
"   223.000   Starting water level    metre"
"        0   Keep Design Data: 1 = True; 0 = False"
"             Level Discharge    Volume"
"           223.000   0.00100   0.4900"
"           223.075   0.08990   10.370"
"           223.150   0.08500   39.990"
"             Peak outflow                   0.089    c.m/sec"
"             Maximum level                223.084    metre"
"             Maximum storage              13.922    c.m"
"             Centroidal lag                 1.529    hours"
"                  0.036     0.117     0.089      0.000 c.m/sec"
" 40            HYDROGRAPH Next link "
"        5   Next link "
"                  0.036     0.089     0.089      0.000"
" 51            PIPE DESIGN"
"     0.089   Current peak flow    c.m/sec"
"     0.013   Manning 'n'"
"     0.375   Diameter    metre"
"     0.400   Gradient    %"
"             Depth of flow                  0.255    metre"
"             Velocity                       1.117    m/sec"
"             Pipe capacity                  0.111    c.m/sec"
"             Critical depth                 0.219    metre"
" 53            ROUTE     Pipe Route 24"
"     23.60       Pipe Route 24 Reach length   ( metre)"
"     0.000   X-factor <= 0.5"
"    15.849   K-lag   ( seconds)"
"     0.000   Default(0) or user spec.(1) values used"
"     0.500   X-factor <= 0.5"
"    30.000   K-lag    ( seconds)"
"     0.674   Beta weighting factor"
"    46.154   Routing time step   ( seconds)"
"        1   No. of sub-reaches"
"             Peak outflow                   0.088    c.m/sec"
"                  0.036     0.089     0.088      0.000 c.m/sec"
" 40            HYDROGRAPH   Combine    3"
"        6   Combine "
"        3   Node #"
"                  "
"             Maximum flow                   0.136    c.m/sec"
"             Hydrograph volume            413.715    c.m"
"                  0.036     0.089     0.088     0.136"
" 40            HYDROGRAPH   Confluence    3"
"        7   Confluence "
"        3   Node #"
"                  "
"             Maximum flow                   0.136    c.m/sec"
"             Hydrograph volume            413.715    c.m"
```

```
"                       0.036    0.136     0.088     0.000"
" 51          PIPE DESIGN"
"      0.136   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      0.450   Diameter    metre"
"      0.400   Gradient   %"
"             Depth of flow              0.293    metre"
"             Velocity                   1.247    m/sec"
"             Pipe capacity              0.180    c.m/sec"
"             Critical depth             0.259    metre"
" 53          ROUTE     Pipe Route 15"
"      15.00       Pipe Route 15 Reach length   ( metre)"
"      0.000   X-factor <= 0.5"
"      9.025   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag    ( seconds)"
"      0.777   Beta weighting factor"
"     40.000   Routing time step   ( seconds)"
"          1   No. of sub-reaches"
"             Peak outflow                0.135    c.m/sec"
"                    0.036    0.136     0.135     0.000 c.m/sec"
" 40          HYDROGRAPH   Combine    201"
"          6   Combine "
"        201   Node #"
"             "
"             Maximum flow                0.248    c.m/sec"
"             Hydrograph volume         609.398    c.m"
"                    0.036    0.136     0.135     0.248"
" 40          HYDROGRAPH   Confluence    201"
"          7   Confluence "
"        201   Node #"
"             "
"             Maximum flow                0.248    c.m/sec"
"             Hydrograph volume         609.398    c.m"
"                    0.036    0.248     0.135     0.000"
" 51          PIPE DESIGN"
"      0.248   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      0.525   Diameter    metre"
"      0.400   Gradient   %"
"             Depth of flow              0.394    metre"
"             Velocity                   1.424    m/sec"
"             Pipe capacity              0.272    c.m/sec"
"             Critical depth             0.337    metre"
" 53          ROUTE     Pipe Route 16"
"      15.70       Pipe Route 16 Reach length   ( metre)"
"      0.000   X-factor <= 0.5"
"      8.267   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag   ( seconds)"
"      0.856   Beta weighting factor"
"     50.000   Routing time step   ( seconds)"
"          1   No. of sub-reaches"
"             Peak outflow                0.246    c.m/sec"
"                    0.036    0.248     0.246     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"          5   Next link "
"                    0.036    0.246     0.246     0.000"
```

```
"  40               HYDROGRAPH Undo"
"             1    Undo"
"                     0.036      0.248      0.246      0.000"
"  56             DIVERSION"
"           201    Node number"
"         0.200    Overflow threshold"
"         1.000    Required diverted fraction"
"             0    Conduit type; 1=Pipe;2=Channel"
"               Peak of diverted flow          0.048     c.m/sec"
"               Volume of diverted flow       28.915     c.m"
"               DIV00201.005hyd"
"               Divert to Overland Flow 0.048 cms"
"                     0.036      0.248      0.200      0.000 c.m/sec"
"  40               HYDROGRAPH Next link "
"             5    Next link "
"                     0.036      0.200      0.200      0.000"
"  40               HYDROGRAPH Undo"
"             1    Undo"
"                     0.036      0.248      0.200      0.000"
"  56             DIVERSION"
"             3    Node number"
"         0.200    Overflow threshold"
"         1.000    Required diverted fraction"
"             0    Conduit type; 1=Pipe;2=Channel"
"               Peak of diverted flow          0.048     c.m/sec"
"               Volume of diverted flow       28.915     c.m"
"               DIV00003.005hyd"
"               Diversion to Dverland Flow 0.048 cms"
"                     0.036      0.248      0.200      0.000 c.m/sec"
"  40               HYDROGRAPH Next link "
"             5    Next link "
"                     0.036      0.200      0.200      0.000"
"  54             POND DESIGN"
"         0.200    Current peak flow     c.m/sec"
"         0.090    Target outflow       c.m/sec"
"         580.5    Hydrograph volume     c.m"
"            3.    Number of stages"
"       221.600    Minimum water level      metre"
"       223.100    Maximum water level      metre"
"       221.600    Starting water level     metre"
"             0    Keep Design Data: 1 = True; 0 = False"
"                 Level Discharge     Volume"
"               221.600    0.01000    0.01000"
"               222.350    0.04960    99.140"
"               223.100    0.06830    262.660"
"               Peak outflow                 0.066     c.m/sec"
"               Maximum level              223.026     metre"
"               Maximum storage            246.502     c.m"
"               Centroidal lag               2.391     hours"
"                     0.036      0.200      0.066      0.000 c.m/sec"
"  40               HYDROGRAPH Next link "
"             5    Next link "
"                     0.036      0.066      0.066      0.000"
"  51             PIPE DESIGN"
"         0.066    Current peak flow     c.m/sec"
"         0.013    Manning 'n'"
"         0.375    Diameter     metre"
"         0.400    Gradient     %"
"               Depth of flow                0.209     metre"
"               Velocity                     1.049     m/sec"
```

```
"                Pipe capacity                    0.111     c.m/sec"
"                Critical depth                   0.188     metre"
" 53             ROUTE      Pipe Route 59"
"    59.40         Pipe Route 59 Reach length    ( metre)"
"    0.227    X-factor <= 0.5"
"   42.465    K-lag    ( seconds)"
"    0.000    Default(0) or user spec.(1) values used"
"    0.500    X-factor <= 0.5"
"   30.000    K-lag    ( seconds)"
"    0.500    Beta weighting factor"
"   60.000    Routing time step   ( seconds)"
"        1    No. of sub-reaches"
"                Peak outflow                     0.066     c.m/sec"
"                    0.036      0.066       0.066      0.000 c.m/sec"
" 40             HYDROGRAPH Next link "
"        5    Next link "
"                    0.036      0.066       0.066      0.000"
" 51             PIPE DESIGN"
"    0.066    Current peak flow     c.m/sec"
"    0.013    Manning 'n'"
"    0.375    Diameter     metre"
"    0.400    Gradient     %"
"                Depth of flow                    0.209     metre"
"                Velocity                         1.049     m/sec"
"                Pipe capacity                    0.111     c.m/sec"
"                Critical depth                   0.188     metre"
" 53             ROUTE      Pipe Route 31"
"    31.30         Pipe Route 31 Reach length    ( metre)"
"    0.000    X-factor <= 0.5"
"   22.382    K-lag    ( seconds)"
"    0.000    Default(0) or user spec.(1) values used"
"    0.500    X-factor <= 0.5"
"   30.000    K-lag    ( seconds)"
"    0.509    Beta weighting factor"
"   42.857    Routing time step   ( seconds)"
"        1    No. of sub-reaches"
"                Peak outflow                     0.066     c.m/sec"
"                    0.036      0.066       0.066      0.000 c.m/sec"
" 40             HYDROGRAPH Next link "
"        5    Next link "
"                    0.036      0.066       0.066      0.000"
" 51             PIPE DESIGN"
"    0.066    Current peak flow     c.m/sec"
"    0.013    Manning 'n'"
"    0.375    Diameter     metre"
"    0.400    Gradient     %"
"                Depth of flow                    0.209     metre"
"                Velocity                         1.049     m/sec"
"                Pipe capacity                    0.111     c.m/sec"
"                Critical depth                   0.187     metre"
" 53             ROUTE      Pipe Route 11"
"    10.50         Pipe Route 11 Reach length    ( metre)"
"    0.000    X-factor <= 0.5"
"    7.510    K-lag    ( seconds)"
"    0.000    Default(0) or user spec.(1) values used"
"    0.500    X-factor <= 0.5"
"   30.000    K-lag    ( seconds)"
"    0.761    Beta weighting factor"
"   30.000    Routing time step   ( seconds)"
"        1    No. of sub-reaches"
```

```
"                    Peak outflow                   0.066     c.m/sec"
"                          0.036      0.066     0.066     0.000 c.m/sec"
" 40          HYDROGRAPH   Combine     9999"
"              6    Combine "
"           9999    Node #"
"                          "
"             Maximum flow                          0.087     c.m/sec"
"             Hydrograph volume                   616.501     c.m"
"                          0.036      0.066     0.066     0.087"
" 40          HYDROGRAPH   Confluence   9999"
"              7    Confluence "
"           9999    Node #"
"                          "
"             Maximum flow                          0.087     c.m/sec"
"             Hydrograph volume                   616.501     c.m"
"                          0.036      0.087     0.066     0.000"
" 38          START/RE-START TOTALS 9999"
"              3    Runoff Totals on EXIT"
"             Total Catchment area                        1.154      hectare"
"             Total Impervious area                       0.922      hectare"
"             Total % impervious                         79.873"
" 19          EXIT"
```

```
"              MIDUSS Output ----------------------------------------------->"
"              MIDUSS version                           Version 2.25  rev. 473"
"              MIDUSS created                               February-07-10"
"       10     Units used:                                      ie METRIC"
"              Job folder:                        C:\swm\17233\Update 2025-3-20"
"              Output filename:                                 pst504.out"
"              Licensee name:                                         Bob"
"              Company                                                      "
"              Date & Time last used:              25/07/2024 at 12:07:54 PM"
" 31          TIME PARAMETERS"
"      10.000   Time Step"
"     180.000   Max. Storm length"
"    1500.000   Max. Hydrograph"
" 32          STORM Chicago storm"
"         1   Chicago storm"
"     766.038   Coefficient A"
"       1.898   Constant B"
"       0.668   Exponent C"
"       0.400   Fraction R"
"     180.000   Duration"
"       1.000   Time step multiplier"
"            Maximum intensity            141.545    mm/hr"
"            Total depth                   71.090    mm"
"         6   005hyd   Hydrograph extension used in this file"
" 33          CATCHMENT 201"
"         2   Rectangular"
"         1   Equal length"
"         2   Horton equation"
"       201   No description"
"     100.000   % Impervious"
"       0.320   Total Area"
"      80.000   Flow length"
"       1.200   Overland Slope"
"       0.000   Pervious Area"
"      80.000   Pervious length"
"       1.200   Pervious slope"
"       0.320   Impervious Area"
"      80.000   Impervious length"
"       1.200   Impervious slope"
"       0.250   Pervious Manning 'n'"
"      25.000   Pervious Max.infiltration"
"       5.000   Pervious Min.infiltration"
"       0.500   Pervious Lag constant (hours)"
"       7.500   Pervious Depression storage"
"       0.015   Impervious Manning 'n'"
"       0.000   Impervious Max.infiltration"
"       0.000   Impervious Min.infiltration"
"       0.500   Impervious Lag constant (hours)"
"       2.000   Impervious Depression storage"
"                   0.126      0.000      0.000      0.000 c.m/sec"
"            Catchment 201           Pervious   Impervious Total Area  "
"            Surface Area            0.000      0.320      0.320       hectare"
"            Time of concentration   22.444     4.053      4.053       minutes"
"            Time to Centroid        109.162    89.168     89.168      minutes"
"            Rainfall depth          71.090     71.090     71.090      mm"
"            Rainfall volume         0.00       227.49     227.49      c.m"
"            Rainfall losses         30.909     2.000      2.000       mm"
"            Runoff depth            40.180     69.090     69.090      mm"
"            Runoff volume           0.00       221.09     221.09      c.m"
"            Runoff coefficient      0.000      0.972      0.972       "
```

```
"              Maximum flow              0.000      0.126      0.126      c.m/sec"
" 40             HYDROGRAPH Add Runoff "
"              4   Add Runoff "
"                    0.126      0.126      0.000      0.000"
" 51             PIPE DESIGN"
"        0.126   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        1.000   Diameter    metre"
"        1.000   Gradient    %"
"              Depth of flow              0.156    metre"
"              Velocity                   1.614    m/sec"
"              Pipe capacity              2.398    c.m/sec"
"              Critical depth             0.196    metre"
" 53             ROUTE Zero Route"
"        0.00   Zero Route Reach length   ( metre)"
"                    0.126      0.126      0.126      0.000 c.m/sec"
" 40             HYDROGRAPH   Combine    201"
"              6   Combine "
"            201   Node #"
"                    "
"              Maximum flow              0.126    c.m/sec"
"              Hydrograph volume         221.087    c.m"
"                    0.126      0.126      0.126      0.126"
" 40             HYDROGRAPH Start - New Tributary"
"              2   Start - New Tributary"
"                    0.126      0.000      0.126      0.126"
" 33             CATCHMENT 202"
"              2   Rectangular"
"              1   Equal length"
"              2   Horton equation"
"            202   No description"
"        100.000   % Impervious"
"        0.333   Total Area"
"        83.250   Flow length"
"        1.200   Overland Slope"
"        0.000   Pervious Area"
"        83.250   Pervious length"
"        1.200   Pervious slope"
"        0.333   Impervious Area"
"        83.250   Impervious length"
"        1.200   Impervious slope"
"        0.250   Pervious Manning 'n'"
"        25.000   Pervious Max.infiltration"
"        5.000   Pervious Min.infiltration"
"        0.500   Pervious Lag constant (hours)"
"        7.500   Pervious Depression storage"
"        0.015   Impervious Manning 'n'"
"        0.000   Impervious Max.infiltration"
"        0.000   Impervious Min.infiltration"
"        0.500   Impervious Lag constant (hours)"
"        2.000   Impervious Depression storage"
"                    0.131      0.000      0.126      0.126 c.m/sec"
"              Catchment 202         Pervious   Impervious Total Area "
"              Surface Area          0.000      0.333      0.333      hectare"
"              Time of concentration 22.987     4.151      4.151      minutes"
"              Time to Centroid      109.671    89.219     89.219     minutes"
"              Rainfall depth        71.090     71.090     71.090     mm"
"              Rainfall volume       0.00       236.73     236.73     c.m"
"              Rainfall losses       30.909     2.000      2.000      mm"
"              Runoff depth          40.180     69.090     69.090     mm"
```

```
"                    Runoff volume              0.00        230.07        230.07     c.m"
"                    Runoff coefficient         0.000         0.972         0.972     "
"                    Maximum flow               0.000         0.131         0.131     c.m/sec"
" 40                 HYDROGRAPH Add Runoff "
"              4     Add Runoff "
"                          0.131       0.131       0.126        0.126"
" 51                 PIPE DESIGN"
"        0.131    Current peak flow      c.m/sec"
"        0.013    Manning 'n'"
"        1.000    Diameter     metre"
"        1.000    Gradient     %"
"                    Depth of flow                   0.159     metre"
"                    Velocity                        1.633     m/sec"
"                    Pipe capacity                   2.398     c.m/sec"
"                    Critical depth                  0.200     metre"
" 53                 ROUTE Zero Route"
"        0.00    Zero Route Reach length    ( metre)"
"                          0.131        0.131        0.131      0.126 c.m/sec"
" 40                 HYDROGRAPH   Combine      202"
"              6     Combine "
"            202     Node #"
"                          "
"                    Maximum flow                    0.131     c.m/sec"
"                    Hydrograph volume             230.069     c.m"
"                          0.131        0.131        0.131      0.131"
" 40                 HYDROGRAPH Start - New Tributary"
"              2     Start - New Tributary"
"                          0.131       0.000       0.131        0.131"
" 33                 CATCHMENT 206"
"              2     Rectangular"
"              1     Equal length"
"              2     Horton equation"
"            206     No description"
"         74.500    % Impervious"
"          0.174    Total Area"
"         19.121    Flow length"
"          1.200    Overland Slope"
"          0.044    Pervious Area"
"         19.121    Pervious length"
"          1.200    Pervious slope"
"          0.130    Impervious Area"
"         19.121    Impervious length"
"          1.200    Impervious slope"
"          0.250    Pervious Manning 'n'"
"         25.000    Pervious Max.infiltration"
"          5.000    Pervious Min.infiltration"
"          0.500    Pervious Lag constant (hours)"
"          7.500    Pervious Depression storage"
"          0.015    Impervious Manning 'n'"
"          0.000    Impervious Max.infiltration"
"          0.000    Impervious Min.infiltration"
"          0.500    Impervious Lag constant (hours)"
"          2.000    Impervious Depression storage"
"                          0.068        0.000        0.131      0.131 c.m/sec"
"                    Catchment 206           Pervious   Impervious Total Area "
"                    Surface Area            0.044      0.130      0.174     hectare"
"                    Time of concentration   9.510      1.717      3.011     minutes"
"                    Time to Centroid       97.845     88.885     90.372     minutes"
"                    Rainfall depth         71.090     71.090     71.090     mm"
"                    Rainfall volume        31.54      92.15     123.70      c.m"
```

```
"             Rainfall losses        30.909      2.000      9.372      mm"
"             Runoff depth           40.180     69.090     61.718      mm"
"             Runoff volume          17.83      89.56     107.39      c.m"
"             Runoff coefficient      0.565      0.972      0.868       "
"             Maximum flow            0.017      0.051      0.068      c.m/sec"
" 40          HYDROGRAPH Add Runoff "
"          4    Add Runoff "
"                     0.068      0.068      0.131      0.131"
" 51          PIPE DESIGN"
"      0.068   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      1.000   Diameter    metre"
"      1.000   Gradient    %"
"             Depth of flow                 0.116    metre"
"             Velocity                      1.342    m/sec"
"             Pipe capacity                 2.398    c.m/sec"
"             Critical depth                0.143    metre"
" 53          ROUTE Zero Route"
"      0.00   Zero Route Reach length    ( metre)"
"                     0.068      0.068      0.068      0.131 c.m/sec"
" 40          HYDROGRAPH   Combine    206"
"          6    Combine "
"        206    Node #"
"                 "
"             Maximum flow                  0.068    c.m/sec"
"             Hydrograph volume           107.389    c.m"
"                     0.068      0.068      0.068      0.068"
" 40          HYDROGRAPH Start - New Tributary"
"          2    Start - New Tributary"
"                     0.068      0.000      0.068      0.068"
" 33          CATCHMENT 204"
"          2    Rectangular"
"          1    Equal length"
"          2    Horton equation"
"        204    No description"
"     65.000   % Impervious"
"      0.214   Total Area"
"     24.318   Flow length"
"      1.200   Overland Slope"
"      0.075   Pervious Area"
"     24.318   Pervious length"
"      1.200   Pervious slope"
"      0.139   Impervious Area"
"     24.318   Impervious length"
"      1.200   Impervious slope"
"      0.250   Pervious Manning 'n'"
"     25.000   Pervious Max.infiltration"
"      5.000   Pervious Min.infiltration"
"      0.500   Pervious Lag constant (hours)"
"      7.500   Pervious Depression storage"
"      0.015   Impervious Manning 'n'"
"      0.000   Impervious Max.infiltration"
"      0.000   Impervious Min.infiltration"
"      0.500   Impervious Lag constant (hours)"
"      2.000   Impervious Depression storage"
"                     0.081      0.000      0.068      0.068 c.m/sec"
"          Catchment 204          Pervious   Impervious Total Area "
"          Surface Area           0.075      0.139      0.214      hectare"
"          Time of concentration 10.985      1.984      4.130      minutes"
"          Time to Centroid      99.160     88.885     91.335      minutes"
```

```
"                    Rainfall depth              71.090    71.090    71.090    mm"
"                    Rainfall volume             53.25     98.89     152.13    c.m"
"                    Rainfall losses             30.909    2.000     12.118    mm"
"                    Runoff depth                40.180    69.090    58.971    mm"
"                    Runoff volume               30.09     96.10     126.20    c.m"
"                    Runoff coefficient          0.565     0.972     0.830     "
"                    Maximum flow                0.026     0.055     0.081     c.m/sec"
" 40                 HYDROGRAPH Add Runoff "
"              4     Add Runoff "
"                          0.081      0.081     0.068      0.068"
" 51                 PIPE DESIGN"
"        0.081    Current peak flow    c.m/sec"
"        0.013    Manning 'n'"
"        1.000    Diameter    metre"
"        1.000    Gradient    %"
"                 Depth of flow                  0.125     metre"
"                 Velocity                       1.413     m/sec"
"                 Pipe capacity                  2.398     c.m/sec"
"                 Critical depth                 0.156     metre"
" 53                 ROUTE Zero Route"
"        0.00    Zero Route Reach length    ( metre)"
"                          0.081      0.081     0.081      0.068 c.m/sec"
" 40                 HYDROGRAPH   Combine    204"
"              6     Combine "
"            204     Node #"
"                      "
"                 Maximum flow                   0.081     c.m/sec"
"                 Hydrograph volume              126.199   c.m"
"                          0.081      0.081     0.081      0.081"
" 40                 HYDROGRAPH Start - New Tributary"
"              2     Start - New Tributary"
"                          0.081      0.000     0.081      0.081"
" 33                 CATCHMENT 210"
"              2     Rectangular"
"              1     Equal length"
"              2     Horton equation"
"            210     No description"
"        0.000    % Impervious"
"        0.113    Total Area"
"       12.151    Flow length"
"        1.200    Overland Slope"
"        0.113    Pervious Area"
"       12.151    Pervious length"
"        1.200    Pervious slope"
"        0.000    Impervious Area"
"       12.151    Impervious length"
"        1.200    Impervious slope"
"        0.250    Pervious Manning 'n'"
"       25.000    Pervious Max.infiltration"
"        5.000    Pervious Min.infiltration"
"        0.500    Pervious Lag constant (hours)"
"        7.500    Pervious Depression storage"
"        0.015    Impervious Manning 'n'"
"        0.000    Impervious Max.infiltration"
"        0.000    Impervious Min.infiltration"
"        0.500    Impervious Lag constant (hours)"
"        2.000    Impervious Depression storage"
"                          0.043      0.000     0.081      0.081 c.m/sec"
"              Catchment 210           Pervious    Impervious Total Area "
"              Surface Area            0.113       0.000      0.113       hectare"
```

```
"                 Time of concentration  7.245      1.308      7.245      minutes"
"                 Time to Centroid       96.555     88.885     96.555     minutes"
"                 Rainfall depth         71.090     71.090     71.090     mm"
"                 Rainfall volume        80.33      0.00       80.33      c.m"
"                 Rainfall losses        30.909     2.000      30.909     mm"
"                 Runoff depth           40.180     69.090     40.180     mm"
"                 Runoff volume          45.40      0.00       45.40      c.m"
"                 Runoff coefficient     0.565      0.000      0.565      "
"                 Maximum flow           0.043      0.000      0.043      c.m/sec"
" 40              HYDROGRAPH Add Runoff "
"              4  Add Runoff "
"                        0.043     0.043      0.081      0.081"
" 51              PIPE DESIGN"
"        0.043  Current peak flow    c.m/sec"
"        0.013  Manning 'n'"
"        1.000  Diameter    metre"
"        1.000  Gradient    %"
"                 Depth of flow              0.093     metre"
"                 Velocity                   1.171     m/sec"
"                 Pipe capacity              2.398     c.m/sec"
"                 Critical depth             0.114     metre"
" 53              ROUTE Zero Route"
"        0.00   Zero Route Reach length    ( metre)"
"                        0.043      0.043      0.043    0.081 c.m/sec"
" 40              HYDROGRAPH    Combine     9999"
"              6  Combine "
"           9999  Node #"
"                    "
"                 Maximum flow               0.043     c.m/sec"
"                 Hydrograph volume          45.404    c.m"
"                        0.043      0.043      0.043    0.043"
" 40              HYDROGRAPH    Confluence    204"
"              7  Confluence "
"            204  Node #"
"                    "
"                 Maximum flow               0.081     c.m/sec"
"                 Hydrograph volume          126.199   c.m"
"                        0.043      0.081      0.043    0.000"
" 54              POND DESIGN"
"        0.081  Current peak flow    c.m/sec"
"        0.080  Target outflow    c.m/sec"
"        126.2  Hydrograph volume    c.m"
"           3.  Number of stages"
"      223.850  Minimum water level    metre"
"      224.150  Maximum water level    metre"
"      223.850  Starting water level    metre"
"           0  Keep Design Data: 1 = True; 0 = False"
"                 Level Discharge    Volume"
"              223.850  1.00E-07    2.490"
"              224.000  0.03300    13.040"
"              224.150  0.03430    44.580"
"                 Peak outflow               0.034     c.m/sec"
"                 Maximum level              224.085   metre"
"                 Maximum storage            30.852    c.m"
"                 Centroidal lag             1.676     hours"
"                        0.043      0.081      0.034    0.000 c.m/sec"
" 40              HYDROGRAPH Next link "
"              5  Next link "
"                        0.043      0.034      0.034    0.000"
" 51              PIPE DESIGN"
```

```
"            0.034    Current peak flow     c.m/sec"
"            0.013    Manning 'n'"
"            0.250    Diameter    metre"
"            1.150    Gradient    %"
"                 Depth of flow                   0.129    metre"
"                 Velocity                        1.317    m/sec"
"                 Pipe capacity                   0.064    c.m/sec"
"                 Critical depth                  0.149    metre"
" 53              ROUTE     Pipe Route 24"
"            23.60       Pipe Route 24 Reach length    ( metre)"
"            0.358    X-factor <= 0.5"
"           13.435    K-lag    ( seconds)"
"            0.000    Default(0) or user spec.(1) values used"
"            0.500    X-factor <= 0.5"
"           30.000    K-lag    ( seconds)"
"            0.500    Beta weighting factor"
"           17.143    Routing time step    ( seconds)"
"                1    No. of sub-reaches"
"                 Peak outflow                    0.034    c.m/sec"
"                     0.043     0.034      0.034     0.000 c.m/sec"
" 40              HYDROGRAPH   Combine     5"
"                6    Combine "
"                5    Node #"
"                     "
"                 Maximum flow                    0.034    c.m/sec"
"                 Hydrograph volume             125.475    c.m"
"                     0.043     0.034      0.034     0.034"
" 40              HYDROGRAPH   Confluence   206"
"                7    Confluence "
"              206    Node #"
"                     "
"                 Maximum flow                    0.068    c.m/sec"
"                 Hydrograph volume             107.389    c.m"
"                     0.043     0.068      0.034     0.000"
" 54              POND DESIGN"
"            0.068    Current peak flow     c.m/sec"
"            0.080    Target outflow    c.m/sec"
"            107.4    Hydrograph volume    c.m"
"               3.    Number of stages"
"          223.850    Minimum water level    metre"
"          224.150    Maximum water level    metre"
"          223.850    Starting water level    metre"
"                0    Keep Design Data: 1 = True; 0 = False"
"                    Level Discharge    Volume"
"                  223.850   0.01000    0.4900"
"                  224.000   0.01880    11.740"
"                  224.150   0.01980    45.490"
"                 Peak outflow                    0.020    c.m/sec"
"                 Maximum level                 224.107    metre"
"                 Maximum storage                35.901    c.m"
"                 Centroidal lag                  1.804    hours"
"                     0.043     0.068      0.020     0.000 c.m/sec"
" 40              HYDROGRAPH Next link "
"                5    Next link "
"                     0.043     0.020      0.020     0.000"
" 51              PIPE DESIGN"
"            0.020    Current peak flow     c.m/sec"
"            0.013    Manning 'n'"
"            0.250    Diameter    metre"
"            2.000    Gradient    %"
```

```
"           Depth of flow                    0.082    metre"
"           Velocity                         1.395    m/sec"
"           Pipe capacity                    0.084    c.m/sec"
"           Critical depth                   0.112    metre"
" 53        ROUTE      Pipe Route 24"
"      23.60        Pipe Route 24 Reach length    ( metre)"
"      0.453   X-factor <= 0.5"
"     12.690   K-lag    ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag    ( seconds)"
"      0.500   Beta weighting factor"
"     13.636   Routing time step   ( seconds)"
"          1   No. of sub-reaches"
"           Peak outflow                     0.020    c.m/sec"
"                  0.043      0.020      0.020     0.000 c.m/sec"
" 40        HYDROGRAPH   Combine     5"
"          6   Combine "
"          5   Node #"
"               "
"           Maximum flow                     0.053    c.m/sec"
"           Hydrograph volume              232.497    c.m"
"                  0.043      0.020      0.020     0.053"
" 40        HYDROGRAPH   Confluence   5"
"          7   Confluence "
"          5   Node #"
"               "
"           Maximum flow                     0.053    c.m/sec"
"           Hydrograph volume              232.497    c.m"
"                  0.043      0.053      0.020     0.000"
" 51        PIPE DESIGN"
"      0.053   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      0.375   Diameter    metre"
"      0.400   Gradient    %"
"           Depth of flow                    0.183    metre"
"           Velocity                         0.994    m/sec"
"           Pipe capacity                    0.111    c.m/sec"
"           Critical depth                   0.167    metre"
" 53        ROUTE      Pipe Route 78"
"      77.50        Pipe Route 78 Reach length    ( metre)"
"      0.328   X-factor <= 0.5"
"     58.489   K-lag    ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag    ( seconds)"
"      0.500   Beta weighting factor"
"     75.000   Routing time step   ( seconds)"
"          1   No. of sub-reaches"
"           Peak outflow                     0.053    c.m/sec"
"                  0.043      0.053      0.053     0.000 c.m/sec"
" 40        HYDROGRAPH   Combine     3"
"          6   Combine "
"          3   Node #"
"               "
"           Maximum flow                     0.053    c.m/sec"
"           Hydrograph volume              232.497    c.m"
"                  0.043      0.053      0.053     0.053"
" 40        HYDROGRAPH   Confluence   202"
"          7   Confluence "
```

```
"            202   Node #"
"                   "
"               Maximum flow                    0.131    c.m/sec"
"               Hydrograph volume            230.069    c.m"
"                    0.043     0.131     0.053     0.000"
" 54            POND DESIGN"
"      0.131   Current peak flow    c.m/sec"
"      0.080   Target outflow    c.m/sec"
"      230.1   Hydrograph volume     c.m"
"         3.   Number of stages"
"      223.000   Minimum water level     metre"
"      223.150   Maximum water level     metre"
"      223.000   Starting water level     metre"
"         0   Keep Design Data: 1 = True; 0 = False"
"               Level Discharge    Volume"
"               223.000   0.00100   0.4900"
"               223.075   0.08990   10.370"
"               223.150   0.08500   39.990"
"            Peak outflow                    0.089    c.m/sec"
"            Maximum level                223.083    metre"
"            Maximum storage              13.587    c.m"
"            Centroidal lag                 1.529    hours"
"                 0.043      0.131     0.089     0.000 c.m/sec"
" 40           HYDROGRAPH Next link "
"         5   Next link "
"                 0.043     0.089     0.089     0.000"
" 51           PIPE DESIGN"
"      0.089   Current peak flow     c.m/sec"
"      0.013   Manning 'n'"
"      0.375   Diameter    metre"
"      0.400   Gradient    %"
"            Depth of flow                  0.255    metre"
"            Velocity                       1.117    m/sec"
"            Pipe capacity                  0.111    c.m/sec"
"            Critical depth                 0.219    metre"
" 53           ROUTE     Pipe Route 24"
"      23.60       Pipe Route 24 Reach length    ( metre)"
"      0.000   X-factor <= 0.5"
"     15.847   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag    ( seconds)"
"      0.675   Beta weighting factor"
"     46.154   Routing time step   ( seconds)"
"         1   No. of sub-reaches"
"            Peak outflow                   0.089    c.m/sec"
"                 0.043      0.089     0.089     0.000 c.m/sec"
" 40           HYDROGRAPH   Combine    3"
"         6   Combine "
"         3   Node #"
"                   "
"            Maximum flow                    0.142    c.m/sec"
"            Hydrograph volume            468.701    c.m"
"                 0.043      0.089     0.089     0.142"
" 40           HYDROGRAPH   Confluence    3"
"         7   Confluence "
"         3   Node #"
"                   "
"            Maximum flow                    0.142    c.m/sec"
"            Hydrograph volume            468.701    c.m"
```

```
"                              0.043      0.142      0.089      0.000"
" 51              PIPE DESIGN"
"      0.142   Current peak flow     c.m/sec"
"      0.013   Manning 'n'"
"      0.450   Diameter    metre"
"      0.400   Gradient    %"
"              Depth of flow                  0.302     metre"
"              Velocity                       1.257     m/sec"
"              Pipe capacity                  0.180     c.m/sec"
"              Critical depth                 0.264     metre"
" 53              ROUTE     Pipe Route 15"
"      15.00       Pipe Route 15 Reach length   ( metre)"
"      0.000   X-factor <= 0.5"
"      8.952   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag   ( seconds)"
"      0.801   Beta weighting factor"
"     40.000   Routing time step   ( seconds)"
"          1   No. of sub-reaches"
"              Peak outflow                   0.142     c.m/sec"
"                    0.043      0.142      0.142      0.000 c.m/sec"
" 40              HYDROGRAPH   Combine     201"
"          6   Combine "
"        201   Node #"
"              "
"              Maximum flow                   0.261     c.m/sec"
"              Hydrograph volume            689.787     c.m"
"                    0.043      0.142      0.142      0.261"
" 40              HYDROGRAPH   Confluence   201"
"          7   Confluence "
"        201   Node #"
"              "
"              Maximum flow                   0.261     c.m/sec"
"              Hydrograph volume            689.787     c.m"
"                    0.043      0.261      0.142      0.000"
" 51              PIPE DESIGN"
"      0.261   Current peak flow     c.m/sec"
"      0.013   Manning 'n'"
"      0.525   Diameter    metre"
"      0.400   Gradient    %"
"              Depth of flow                  0.413     metre"
"              Velocity                       1.431     m/sec"
"              Pipe capacity                  0.272     c.m/sec"
"              Critical depth                 0.346     metre"
" 53              ROUTE     Pipe Route 16"
"      15.70       Pipe Route 16 Reach length   ( metre)"
"      0.000   X-factor <= 0.5"
"      8.229   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag   ( seconds)"
"      0.869   Beta weighting factor"
"     54.545   Routing time step   ( seconds)"
"          1   No. of sub-reaches"
"              Peak outflow                   0.259     c.m/sec"
"                    0.043      0.261      0.259      0.000 c.m/sec"
" 40              HYDROGRAPH Next link "
"          5   Next link "
"                    0.043      0.259      0.259      0.000"
```

```
"  40              HYDROGRAPH Undo"
"            1   Undo"
"                    0.043      0.261      0.259      0.000"
"  56             DIVERSION"
"            0    Node number"
"        0.174   Overflow threshold"
"        1.000   Required diverted fraction"
"            0   Conduit type; 1=Pipe;2=Channel"
"              Peak of diverted flow          0.087     c.m/sec"
"              Volume of diverted flow       53.193     c.m"
"              DIV00000.005hyd"
"              Divert to Overland Flow 0.087 cms"
"                    0.043      0.261      0.174      0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"            5   Next link "
"                    0.043      0.174      0.174      0.000"
"  56             DIVERSION"
"            3    Node number"
"        0.174   Overflow threshold"
"        1.000   Required diverted fraction"
"            0   Conduit type; 1=Pipe;2=Channel"
"              Peak of diverted flow          0.000     c.m/sec"
"              Volume of diverted flow        0.000     c.m"
"              DIV00003.005hyd"
"              No Flow Diverted"
"                    0.043      0.174      0.174      0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"            5   Next link "
"                    0.043      0.174      0.174      0.000"
"  54             POND DESIGN"
"        0.174   Current peak flow     c.m/sec"
"        0.090   Target outflow    c.m/sec"
"        636.6   Hydrograph volume     c.m"
"            3.  Number of stages"
"      221.600   Minimum water level     metre"
"      223.100   Maximum water level     metre"
"      221.600   Starting water level     metre"
"            0   Keep Design Data: 1 = True; 0 = False"
"                Level Discharge     Volume"
"              221.600    0.01000    0.01000"
"              222.350    0.04960    99.140"
"              223.100    0.06830    262.660"
"              Peak outflow                  0.068     c.m/sec"
"              Maximum level               223.097     metre"
"              Maximum storage             262.063     c.m"
"              Centroidal lag                2.441     hours"
"                    0.043      0.174      0.068      0.000 c.m/sec"
"  40              HYDROGRAPH Next link "
"            5   Next link "
"                    0.043      0.068      0.068      0.000"
"  51             PIPE DESIGN"
"        0.068   Current peak flow     c.m/sec"
"        0.013   Manning 'n'"
"        0.375   Diameter    metre"
"        0.400   Gradient    %"
"              Depth of flow                 0.212     metre"
"              Velocity                      1.055     m/sec"
"              Pipe capacity                 0.111     c.m/sec"
"              Critical depth                0.190     metre"
"  53             ROUTE     Pipe Route 59"
```

```
"       59.40        Pipe Route 59 Reach length   ( metre)"
"        0.220   X-factor <= 0.5"
"       42.219   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag   ( seconds)"
"        0.500   Beta weighting factor"
"       60.000   Routing time step   ( seconds)"
"           1   No. of sub-reaches"
"             Peak outflow                   0.068    c.m/sec"
"                   0.043     0.068     0.068     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"           5   Next link "
"                   0.043     0.068     0.068     0.000"
" 51          PIPE DESIGN"
"        0.068   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        0.375   Diameter    metre"
"        0.400   Gradient    %"
"             Depth of flow                 0.212    metre"
"             Velocity                      1.055    m/sec"
"             Pipe capacity                 0.111    c.m/sec"
"             Critical depth                0.190    metre"
" 53          ROUTE      Pipe Route 31"
"       31.30        Pipe Route 31 Reach length   ( metre)"
"        0.000   X-factor <= 0.5"
"       22.247   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag   ( seconds)"
"        0.516   Beta weighting factor"
"       42.857   Routing time step   ( seconds)"
"           1   No. of sub-reaches"
"             Peak outflow                   0.068    c.m/sec"
"                   0.043     0.068     0.068     0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"           5   Next link "
"                   0.043     0.068     0.068     0.000"
" 51          PIPE DESIGN"
"        0.068   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        0.375   Diameter    metre"
"        0.400   Gradient    %"
"             Depth of flow                 0.212    metre"
"             Velocity                      1.055    m/sec"
"             Pipe capacity                 0.111    c.m/sec"
"             Critical depth                0.190    metre"
" 53          ROUTE      Pipe Route 11"
"       10.50        Pipe Route 11 Reach length   ( metre)"
"        0.000   X-factor <= 0.5"
"        7.463   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag   ( seconds)"
"        0.770   Beta weighting factor"
"       30.000   Routing time step   ( seconds)"
"           1   No. of sub-reaches"
"             Peak outflow                   0.068    c.m/sec"
"                   0.043     0.068     0.068     0.000 c.m/sec"
" 40          HYDROGRAPH   Combine    9999"
```

```
"          6    Combine "
"       9999    Node #"
"                  "
"          Maximum flow                     0.095    c.m/sec"
"          Hydrograph volume             681.031    c.m"
"              0.043      0.068      0.068    0.095"
" 40       HYDROGRAPH   Confluence     9999"
"          7    Confluence "
"       9999    Node #"
"                  "
"          Maximum flow                     0.095    c.m/sec"
"          Hydrograph volume             681.031    c.m"
"              0.043      0.095      0.068    0.000"
" 38       START/RE-START TOTALS 9999"
"          3    Runoff Totals on EXIT"
"          Total Catchment area                     1.154    hectare"
"          Total Impervious area                    0.922    hectare"
"          Total % impervious                      79.873"
" 19       EXIT"
```

```
"                 MIDUSS Output ---------------------------------------------->"
"                 MIDUSS version                       Version 2.25  rev. 473"
"                 MIDUSS created                            February-07-10"
"        10       Units used:                                   ie METRIC"
"                 Job folder:                     C:\swm\17233\Update 2025-3-20"
"                 Output filename:                             pst1004.out"
"                 Licensee name:                                     Bob"
"                 Company                                                "
"                 Date & Time last used:          25/07/2024 at 11:37:53 AM"
" 31          TIME PARAMETERS"
"        10.000    Time Step"
"       180.000    Max. Storm length"
"      1500.000    Max. Hydrograph"
" 32          STORM Chicago storm"
"            1     Chicago storm"
"       801.041    Coefficient A"
"         1.501    Constant B"
"         0.657    Exponent C"
"         0.400    Fraction R"
"       180.000    Duration"
"         1.000    Time step multiplier"
"               Maximum intensity          155.782    mm/hr"
"               Total depth                 78.830    mm"
"            6    005hyd   Hydrograph extension used in this file"
" 33          CATCHMENT 201"
"            2     Rectangular"
"            1     Equal length"
"            2     Horton equation"
"          201    No description"
"       100.000   % Impervious"
"         0.320   Total Area"
"        80.000   Flow length"
"         1.200   Overland Slope"
"         0.000   Pervious Area"
"        80.000   Pervious length"
"         1.200   Pervious slope"
"         0.320   Impervious Area"
"        80.000   Impervious length"
"         1.200   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        25.000   Pervious Max.infiltration"
"         5.000   Pervious Min.infiltration"
"         0.500   Pervious Lag constant (hours)"
"         7.500   Pervious Depression storage"
"         0.015   Impervious Manning 'n'"
"         0.000   Impervious Max.infiltration"
"         0.000   Impervious Min.infiltration"
"         0.500   Impervious Lag constant (hours)"
"         2.000   Impervious Depression storage"
"                     0.138      0.000      0.000      0.000 c.m/sec"
"               Catchment 201          Pervious   Impervious Total Area "
"               Surface Area           0.000      0.320      0.320      hectare"
"               Time of concentration  21.531     3.901      3.901      minutes"
"               Time to Centroid       108.691    89.036     89.036     minutes"
"               Rainfall depth         78.830     78.830     78.830     mm"
"               Rainfall volume        0.00       252.26     252.26     c.m"
"               Rainfall losses        31.239     2.000      2.000      mm"
"               Runoff depth           47.591     76.830     76.830     mm"
"               Runoff volume          0.00       245.86     245.86     c.m"
"               Runoff coefficient     0.000      0.975      0.975      "
```

```
"                Maximum flow            0.000        0.138        0.138      c.m/sec"
" 40                HYDROGRAPH Add Runoff "
"              4    Add Runoff "
"                                0.138      0.138      0.000       0.000"
" 51              PIPE DESIGN"
"         0.138   Current peak flow    c.m/sec"
"         0.013   Manning 'n'"
"         1.000   Diameter    metre"
"         1.000   Gradient    %"
"                Depth of flow                    0.163    metre"
"                Velocity                         1.661    m/sec"
"                Pipe capacity                    2.398    c.m/sec"
"                Critical depth                   0.206    metre"
" 53              ROUTE Zero Route"
"         0.00   Zero Route Reach length    ( metre)"
"                                0.138      0.138      0.138     0.000 c.m/sec"
" 40              HYDROGRAPH   Combine    201"
"              6    Combine "
"            201    Node #"
"                            "
"                Maximum flow                     0.138    c.m/sec"
"                Hydrograph volume               245.856   c.m"
"                                0.138      0.138      0.138    0.138"
" 40              HYDROGRAPH Start - New Tributary"
"              2    Start - New Tributary"
"                                0.138      0.000      0.138    0.138"
" 33              CATCHMENT 202"
"              2    Rectangular"
"              1    Equal length"
"              2    Horton equation"
"            202    No description"
"       100.000   % Impervious"
"         0.333   Total Area"
"        83.250   Flow length"
"         1.200   Overland Slope"
"         0.000   Pervious Area"
"        83.250   Pervious length"
"         1.200   Pervious slope"
"         0.333   Impervious Area"
"        83.250   Impervious length"
"         1.200   Impervious slope"
"         0.250   Pervious Manning 'n'"
"        25.000   Pervious Max.infiltration"
"         5.000   Pervious Min.infiltration"
"         0.500   Pervious Lag constant (hours)"
"         7.500   Pervious Depression storage"
"         0.015   Impervious Manning 'n'"
"         0.000   Impervious Max.infiltration"
"         0.000   Impervious Min.infiltration"
"         0.500   Impervious Lag constant (hours)"
"         2.000   Impervious Depression storage"
"                        0.144      0.000        0.138       0.138 c.m/sec"
"                Catchment 202          Pervious   Impervious Total Area "
"                Surface Area           0.000      0.333      0.333      hectare"
"                Time of concentration  22.052     3.995      3.995      minutes"
"                Time to Centroid       109.160    89.085     89.085     minutes"
"                Rainfall depth         78.830     78.830     78.830     mm"
"                Rainfall volume        0.00       262.50     262.50     c.m"
"                Rainfall losses        31.239     2.000      2.000      mm"
"                Runoff depth           47.591     76.830     76.830     mm"
```

```
"                    Runoff volume          0.00      255.84     255.84    c.m"
"                    Runoff coefficient     0.000     0.975      0.975     "
"                    Maximum flow           0.000     0.144      0.144     c.m/sec"
" 40                 HYDROGRAPH Add Runoff "
"            4   Add Runoff "
"                        0.144     0.144     0.138     0.138"
" 51                 PIPE DESIGN"
"       0.144    Current peak flow    c.m/sec"
"       0.013    Manning 'n'"
"       1.000    Diameter    metre"
"       1.000    Gradient    %"
"                Depth of flow              0.166     metre"
"                Velocity                   1.680     m/sec"
"                Pipe capacity              2.398     c.m/sec"
"                Critical depth             0.210     metre"
" 53                 ROUTE Zero Route"
"       0.00    Zero Route Reach length    ( metre)"
"                        0.144     0.144     0.144     0.138 c.m/sec"
" 40                 HYDROGRAPH   Combine    202"
"            6   Combine "
"          202   Node #"
"                    "
"                Maximum flow               0.144     c.m/sec"
"                Hydrograph volume          255.844   c.m"
"                        0.144     0.144     0.144     0.144"
" 40                 HYDROGRAPH Start - New Tributary"
"            2   Start - New Tributary"
"                        0.144     0.000     0.144     0.144"
" 33                 CATCHMENT 206"
"            2   Rectangular"
"            1   Equal length"
"            2   Horton equation"
"          206   No description"
"       74.500   % Impervious"
"        0.174   Total Area"
"       19.121   Flow length"
"        1.200   Overland Slope"
"        0.044   Pervious Area"
"       19.121   Pervious length"
"        1.200   Pervious slope"
"        0.130   Impervious Area"
"       19.121   Impervious length"
"        1.200   Impervious slope"
"        0.250   Pervious Manning 'n'"
"       25.000   Pervious Max.infiltration"
"        5.000   Pervious Min.infiltration"
"        0.500   Pervious Lag constant (hours)"
"        7.500   Pervious Depression storage"
"        0.015   Impervious Manning 'n'"
"        0.000   Impervious Max.infiltration"
"        0.000   Impervious Min.infiltration"
"        0.500   Impervious Lag constant (hours)"
"        2.000   Impervious Depression storage"
"                    0.075     0.000     0.144     0.144 c.m/sec"
"            Catchment 206            Pervious   Impervious Total Area "
"            Surface Area             0.044      0.130      0.174     hectare"
"            Time of concentration    9.123      1.653      2.959     minutes"
"            Time to Centroid         98.009     88.849     90.451    minutes"
"            Rainfall depth           78.830     78.830     78.830    mm"
"            Rainfall volume          34.98      102.19     137.16    c.m"
```

```
"              Rainfall losses        31.239     2.000      9.456     mm"
"              Runoff depth           47.591    76.830     69.374     mm"
"              Runoff volume          21.12     99.59     120.71      c.m"
"              Runoff coefficient      0.604     0.975      0.880      "
"              Maximum flow            0.019     0.056      0.075     c.m/sec"
" 40           HYDROGRAPH Add Runoff "
"        4     Add Runoff "
"                       0.075     0.075      0.144      0.144"
" 51           PIPE DESIGN"
"      0.075   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      1.000   Diameter    metre"
"      1.000   Gradient    %"
"              Depth of flow               0.122     metre"
"              Velocity                    1.386     m/sec"
"              Pipe capacity               2.398     c.m/sec"
"              Critical depth              0.151     metre"
" 53           ROUTE Zero Route"
"       0.00   Zero Route Reach length    ( metre)"
"                       0.075     0.075      0.075     0.144 c.m/sec"
" 40           HYDROGRAPH   Combine    206"
"        6     Combine "
"      206     Node #"
"                "
"              Maximum flow                0.075     c.m/sec"
"              Hydrograph volume         120.711     c.m"
"                       0.075     0.075      0.075      0.075"
" 40           HYDROGRAPH Start - New Tributary"
"        2     Start - New Tributary"
"                       0.075     0.000      0.075      0.075"
" 33           CATCHMENT 204"
"        2     Rectangular"
"        1     Equal length"
"        2     Horton equation"
"      204     No description"
"     65.000   % Impervious"
"      0.214   Total Area"
"     24.318   Flow length"
"      1.200   Overland Slope"
"      0.075   Pervious Area"
"     24.318   Pervious length"
"      1.200   Pervious slope"
"      0.139   Impervious Area"
"     24.318   Impervious length"
"      1.200   Impervious slope"
"      0.250   Pervious Manning 'n'"
"     25.000   Pervious Max.infiltration"
"      5.000   Pervious Min.infiltration"
"      0.500   Pervious Lag constant (hours)"
"      7.500   Pervious Depression storage"
"      0.015   Impervious Manning 'n'"
"      0.000   Impervious Max.infiltration"
"      0.000   Impervious Min.infiltration"
"      0.500   Impervious Lag constant (hours)"
"      2.000   Impervious Depression storage"
"                       0.091     0.000      0.075      0.075 c.m/sec"
"              Catchment 204          Pervious  Impervious Total Area "
"              Surface Area            0.075     0.139      0.214     hectare"
"              Time of concentration  10.538     1.909      4.068     minutes"
"              Time to Centroid       99.125    88.849     91.419     minutes"
```

```
"            Rainfall depth              78.830      78.830      78.830      mm"
"            Rainfall volume             59.04      109.65      168.70      c.m"
"            Rainfall losses             31.239      2.000       12.234      mm"
"            Runoff depth                47.591      76.830      66.597      mm"
"            Runoff volume               35.65      106.87      142.52      c.m"
"            Runoff coefficient          0.604       0.975       0.845      "
"            Maximum flow                0.031       0.060       0.091      c.m/sec"
" 40            HYDROGRAPH Add Runoff "
"          4    Add Runoff "
"                 0.091      0.091      0.075      0.075"
" 51            PIPE DESIGN"
"       0.091   Current peak flow    c.m/sec"
"       0.013   Manning 'n'"
"       1.000   Diameter    metre"
"       1.000   Gradient    %"
"            Depth of flow                    0.133    metre"
"            Velocity                         1.466    m/sec"
"            Pipe capacity                    2.398    c.m/sec"
"            Critical depth                   0.166    metre"
" 53            ROUTE Zero Route"
"       0.00   Zero Route Reach length    ( metre)"
"                 0.091      0.091      0.091      0.075 c.m/sec"
" 40            HYDROGRAPH   Combine    204"
"          6    Combine "
"        204    Node #"
"                    "
"            Maximum flow                     0.091    c.m/sec"
"            Hydrograph volume              142.517    c.m"
"                 0.091      0.091      0.091      0.091"
" 40            HYDROGRAPH Start - New Tributary"
"          2    Start - New Tributary"
"                 0.091      0.000      0.091      0.091"
" 33            CATCHMENT 210"
"          2    Rectangular"
"          1    Equal length"
"          2    Horton equation"
"        210    No description"
"      0.000    % Impervious"
"      0.113    Total Area"
"     12.151    Flow length"
"      1.200    Overland Slope"
"      0.113    Pervious Area"
"     12.151    Pervious length"
"      1.200    Pervious slope"
"      0.000    Impervious Area"
"     12.151    Impervious length"
"      1.200    Impervious slope"
"      0.250    Pervious Manning 'n'"
"     25.000    Pervious Max.infiltration"
"      5.000    Pervious Min.infiltration"
"      0.500    Pervious Lag constant (hours)"
"      7.500    Pervious Depression storage"
"      0.015    Impervious Manning 'n'"
"      0.000    Impervious Max.infiltration"
"      0.000    Impervious Min.infiltration"
"      0.500    Impervious Lag constant (hours)"
"      2.000    Impervious Depression storage"
"                 0.049      0.000      0.091      0.091 c.m/sec"
"            Catchment 210            Pervious   Impervious Total Area "
"            Surface Area             0.113      0.000      0.113      hectare"
```

```
"            Time of concentration  6.950     1.259     6.950      minutes"
"            Time to Centroid       96.777    88.849    96.777     minutes"
"            Rainfall depth         78.830    78.830    78.830     mm"
"            Rainfall volume        89.08     0.00      89.08      c.m"
"            Rainfall losses        31.239    2.000     31.239     mm"
"            Runoff depth           47.591    76.830    47.591     mm"
"            Runoff volume          53.78     0.00      53.78      c.m"
"            Runoff coefficient     0.604     0.000     0.604      "
"            Maximum flow           0.049     0.000     0.049      c.m/sec"
" 40         HYDROGRAPH Add Runoff "
"        4   Add Runoff "
"                0.049     0.049     0.091     0.091"
" 51         PIPE DESIGN"
"    0.049   Current peak flow    c.m/sec"
"    0.013   Manning 'n'"
"    1.000   Diameter    metre"
"    1.000   Gradient    %"
"            Depth of flow                0.099     metre"
"            Velocity                     1.214     m/sec"
"            Pipe capacity                2.398     c.m/sec"
"            Critical depth               0.121     metre"
" 53         ROUTE Zero Route"
"    0.00   Zero Route Reach length    ( metre)"
"                0.049     0.049     0.049     0.091 c.m/sec"
" 40         HYDROGRAPH   Combine    9999"
"        6   Combine "
"     9999   Node #"
"             "
"            Maximum flow                 0.049     c.m/sec"
"            Hydrograph volume            53.778    c.m"
"                0.049     0.049     0.049     0.049"
" 40         HYDROGRAPH   Confluence    204"
"        7   Confluence "
"      204   Node #"
"             "
"            Maximum flow                 0.091     c.m/sec"
"            Hydrograph volume            142.517   c.m"
"                0.049     0.091     0.049     0.000"
" 54         POND DESIGN"
"    0.091   Current peak flow    c.m/sec"
"    0.080   Target outflow    c.m/sec"
"    142.5   Hydrograph volume    c.m"
"       3.   Number of stages"
"  223.850   Minimum water level    metre"
"  224.150   Maximum water level    metre"
"  223.850   Starting water level    metre"
"        0   Keep Design Data: 1 = True; 0 = False"
"            Level Discharge    Volume"
"            223.850  1.00E-07    2.490"
"            224.000  0.03300    13.040"
"            224.150  0.03430    44.580"
"            Peak outflow                 0.034     c.m/sec"
"            Maximum level                224.117   metre"
"            Maximum storage              37.601    c.m"
"            Centroidal lag               1.698     hours"
"                0.049     0.091     0.034     0.000 c.m/sec"
" 40         HYDROGRAPH Next link "
"        5   Next link "
"                0.049     0.034     0.034     0.000"
" 51         PIPE DESIGN"
```

```
"        0.034   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        0.250   Diameter    metre"
"        1.150   Gradient   %"
"                Depth of flow                  0.130    metre"
"                Velocity                       1.320    m/sec"
"                Pipe capacity                  0.064    c.m/sec"
"                Critical depth                 0.150    metre"
" 53             ROUTE    Pipe Route 24"
"       23.60        Pipe Route 24 Reach length    ( metre)"
"        0.357   X-factor <= 0.5"
"       13.408   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag   ( seconds)"
"        0.500   Beta weighting factor"
"       17.143   Routing time step   ( seconds)"
"            1   No. of sub-reaches"
"                Peak outflow                   0.034    c.m/sec"
"                    0.049      0.034      0.034      0.000 c.m/sec"
" 40             HYDROGRAPH   Combine    5"
"            6   Combine "
"            5   Node #"
"                "
"                Maximum flow                   0.034    c.m/sec"
"                Hydrograph volume            141.691    c.m"
"                    0.049      0.034      0.034      0.034"
" 40             HYDROGRAPH   Confluence    206"
"            7   Confluence "
"          206   Node #"
"                "
"                Maximum flow                   0.075    c.m/sec"
"                Hydrograph volume            120.711    c.m"
"                    0.049      0.075      0.034      0.000"
" 54             POND DESIGN"
"        0.075   Current peak flow    c.m/sec"
"        0.080   Target outflow    c.m/sec"
"        120.7   Hydrograph volume    c.m"
"           3.   Number of stages"
"      223.850   Minimum water level    metre"
"      224.150   Maximum water level    metre"
"      223.850   Starting water level    metre"
"            0   Keep Design Data: 1 = True; 0 = False"
"                 Level Discharge    Volume"
"                223.850   0.01000    0.4900"
"                224.000   0.01880    11.740"
"                224.150   0.01980    45.490"
"                Peak outflow                   0.020    c.m/sec"
"                Maximum level                224.134    metre"
"                Maximum storage               41.972    c.m"
"                Centroidal lag                 1.845    hours"
"                    0.049      0.075      0.020      0.000 c.m/sec"
" 40             HYDROGRAPH Next link "
"            5   Next link "
"                    0.049      0.020      0.020      0.000"
" 51             PIPE DESIGN"
"        0.020   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        0.250   Diameter    metre"
"        2.000   Gradient   %"
```

```
"           Depth of flow                    0.082     metre"
"           Velocity                         1.398     m/sec"
"           Pipe capacity                    0.084     c.m/sec"
"           Critical depth                   0.113     metre"
" 53        ROUTE     Pipe Route 24"
"    23.60       Pipe Route 24 Reach length    ( metre)"
"    0.452   X-factor <= 0.5"
"   12.657   K-lag    ( seconds)"
"    0.000   Default(0) or user spec.(1) values used"
"    0.500   X-factor <= 0.5"
"   30.000   K-lag    ( seconds)"
"    0.500   Beta weighting factor"
"   13.636   Routing time step    ( seconds)"
"        1   No. of sub-reaches"
"           Peak outflow                     0.020     c.m/sec"
"                0.049     0.020     0.020     0.000 c.m/sec"
" 40        HYDROGRAPH   Combine     5"
"        6   Combine "
"        5   Node #"
"            "
"           Maximum flow                     0.054     c.m/sec"
"           Hydrograph volume              262.019     c.m"
"                0.049     0.020     0.020     0.054"
" 40        HYDROGRAPH   Confluence     5"
"        7   Confluence "
"        5   Node #"
"            "
"           Maximum flow                     0.054     c.m/sec"
"           Hydrograph volume              262.019     c.m"
"                0.049     0.054     0.020     0.000"
" 51        PIPE DESIGN"
"    0.054   Current peak flow    c.m/sec"
"    0.013   Manning 'n'"
"    0.375   Diameter    metre"
"    0.400   Gradient    %"
"           Depth of flow                    0.184     metre"
"           Velocity                         0.996     m/sec"
"           Pipe capacity                    0.111     c.m/sec"
"           Critical depth                   0.168     metre"
" 53        ROUTE     Pipe Route 78"
"    77.50       Pipe Route 78 Reach length    ( metre)"
"    0.327   X-factor <= 0.5"
"   58.364   K-lag    ( seconds)"
"    0.000   Default(0) or user spec.(1) values used"
"    0.500   X-factor <= 0.5"
"   30.000   K-lag    ( seconds)"
"    0.500   Beta weighting factor"
"   75.000   Routing time step    ( seconds)"
"        1   No. of sub-reaches"
"           Peak outflow                     0.054     c.m/sec"
"                0.049     0.054     0.054     0.000 c.m/sec"
" 40        HYDROGRAPH   Combine     3"
"        6   Combine "
"        3   Node #"
"            "
"           Maximum flow                     0.054     c.m/sec"
"           Hydrograph volume              262.019     c.m"
"                0.049     0.054     0.054     0.054"
" 40        HYDROGRAPH   Confluence   202"
"        7   Confluence "
```

```
"          202    Node #"
"                    "
"               Maximum flow                    0.144    c.m/sec"
"               Hydrograph volume              255.844   c.m"
"                    0.049      0.144     0.054      0.000"
" 54            POND DESIGN"
"        0.144   Current peak flow    c.m/sec"
"        0.080   Target outflow     c.m/sec"
"        255.8   Hydrograph volume     c.m"
"          3.    Number of stages"
"      223.000   Minimum water level     metre"
"      223.150   Maximum water level     metre"
"      223.000   Starting water level    metre"
"          0     Keep Design Data: 1 = True; 0 = False"
"                Level  Discharge     Volume"
"               223.000   0.00100    0.4900"
"               223.075   0.08990   10.370"
"               223.150   0.08500   39.990"
"               Peak outflow                  0.088    c.m/sec"
"               Maximum level                223.100    metre"
"               Maximum storage               20.197    c.m"
"               Centroidal lag                1.530    hours"
"                    0.049      0.144     0.088      0.000 c.m/sec"
" 40            HYDROGRAPH Next link "
"          5    Next link "
"                    0.049      0.088     0.088      0.000"
" 51            PIPE DESIGN"
"        0.088   Current peak flow    c.m/sec"
"        0.013   Manning 'n'"
"        0.375   Diameter    metre"
"        0.400   Gradient    %"
"               Depth of flow                 0.253    metre"
"               Velocity                      1.114    m/sec"
"               Pipe capacity                 0.111    c.m/sec"
"               Critical depth                0.218    metre"
" 53            ROUTE     Pipe Route 24"
"        23.60       Pipe Route 24 Reach length   ( metre)"
"        0.000   X-factor <= 0.5"
"       15.882   K-lag   ( seconds)"
"        0.000   Default(0) or user spec.(1) values used"
"        0.500   X-factor <= 0.5"
"       30.000   K-lag    ( seconds)"
"        0.668   Beta weighting factor"
"       46.154   Routing time step   ( seconds)"
"          1    No. of sub-reaches"
"               Peak outflow                  0.088    c.m/sec"
"                    0.049      0.088     0.088      0.000 c.m/sec"
" 40            HYDROGRAPH   Combine    3"
"          6    Combine "
"          3    Node #"
"                    "
"               Maximum flow                  0.141    c.m/sec"
"               Hydrograph volume            510.291   c.m"
"                    0.049      0.088     0.088      0.141"
" 40            HYDROGRAPH   Confluence   3"
"          7    Confluence "
"          3    Node #"
"                    "
"               Maximum flow                  0.141    c.m/sec"
"               Hydrograph volume            510.291   c.m"
```

```
"                               0.049      0.141      0.088      0.000"
" 51          PIPE DESIGN"
"       0.141   Current peak flow     c.m/sec"
"       0.013   Manning 'n'"
"       0.450   Diameter     metre"
"       0.400   Gradient    %"
"              Depth of flow                    0.300     metre"
"              Velocity                         1.255     m/sec"
"              Pipe capacity                    0.180     c.m/sec"
"              Critical depth                   0.263     metre"
" 53          ROUTE      Pipe Route 15"
"       15.00      Pipe Route 15 Reach length   ( metre)"
"       0.000   X-factor <= 0.5"
"       8.963   K-lag   ( seconds)"
"       0.000   Default(0) or user spec.(1) values used"
"       0.500   X-factor <= 0.5"
"      30.000   K-lag   ( seconds)"
"       0.797   Beta weighting factor"
"      40.000   Routing time step   ( seconds)"
"           1   No. of sub-reaches"
"              Peak outflow                     0.141     c.m/sec"
"                  0.049      0.141      0.141      0.000 c.m/sec"
" 40          HYDROGRAPH   Combine     201"
"           6   Combine "
"         201   Node #"
"               "
"              Maximum flow                     0.274     c.m/sec"
"              Hydrograph volume              756.147     c.m"
"                  0.049      0.141      0.141      0.274"
" 40          HYDROGRAPH   Confluence   201"
"           7   Confluence "
"         201   Node #"
"               "
"              Maximum flow                     0.274     c.m/sec"
"              Hydrograph volume              756.147     c.m"
"                  0.049      0.274      0.141      0.000"
" 51          PIPE DESIGN"
"       0.274   Current peak flow     c.m/sec"
"       0.013   Manning 'n'"
"       0.525   Diameter     metre"
"       0.400   Gradient    %"
"              Surcharged HGL                   0.407     %"
"              Velocity                         1.267     m/sec"
"              Pipe capacity                    0.272     c.m/sec"
"              Critical depth                   0.000     metre"
" 53          ROUTE      Pipe Route 16"
"       15.70      Pipe Route 16 Reach length   ( metre)"
"       0.000   X-factor <= 0.5"
"       8.963   K-lag   ( seconds)"
"       0.000   Default(0) or user spec.(1) values used"
"       0.500   X-factor <= 0.5"
"      30.000   K-lag   ( seconds)"
"       0.797   Beta weighting factor"
"      40.000   Routing time step   ( seconds)"
"           1   No. of sub-reaches"
"              Peak outflow                     0.274     c.m/sec"
"                  0.049      0.274      0.274      0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"           5   Next link "
"                  0.049      0.274      0.274      0.000"
```

```
" 40             HYDROGRAPH Undo"
"             1   Undo"
"                     0.049      0.274      0.274      0.000"
" 56           DIVERSION"
"           201   Node number"
"         0.174   Overflow threshold"
"         1.000   Required diverted fraction"
"             0   Conduit type; 1=Pipe;2=Channel"
"             Peak of diverted flow          0.100     c.m/sec"
"             Volume of diverted flow       62.197     c.m"
"             DIV00201.005hyd"
"             Divert to Overland Flow 0.1 cms"
"                     0.049      0.274      0.174      0.000 c.m/sec"
" 40           HYDROGRAPH Next link "
"             5   Next link "
"                     0.049      0.174      0.174      0.000"
" 40           HYDROGRAPH Undo"
"             1   Undo"
"                     0.049      0.274      0.174      0.000"
" 56           DIVERSION"
"             3   Node number"
"         0.150   Overflow threshold"
"         1.000   Required diverted fraction"
"             0   Conduit type; 1=Pipe;2=Channel"
"             Peak of diverted flow          0.124     c.m/sec"
"             Volume of diverted flow       90.997     c.m"
"             DIV00003.005hyd"
"             Diversion to Dverland Flow 0.024 cms"
"                     0.049      0.274      0.150      0.000 c.m/sec"
" 40           HYDROGRAPH Next link "
"             5   Next link "
"                     0.049      0.150      0.150      0.000"
" 54           POND DESIGN"
"         0.150   Current peak flow      c.m/sec"
"         0.090   Target outflow       c.m/sec"
"         665.1   Hydrograph volume      c.m"
"             3.  Number of stages"
"       221.600   Minimum water level     metre"
"       223.100   Maximum water level     metre"
"       221.600   Starting water level     metre"
"             0   Keep Design Data: 1 = True; 0 = False"
"                 Level Discharge     Volume"
"             221.600   0.01000   0.01000"
"             222.350   0.04960   99.140"
"             223.100   0.06830  262.660"
"             Peak outflow                  0.068     c.m/sec"
"             Maximum level               223.072     metre"
"             Maximum storage             256.632     c.m"
"             Centroidal lag                2.466     hours"
"                     0.049      0.150      0.068      0.000 c.m/sec"
" 40           HYDROGRAPH Next link "
"             5   Next link "
"                     0.049      0.068      0.068      0.000"
" 51           PIPE DESIGN"
"         0.068   Current peak flow     c.m/sec"
"         0.013   Manning 'n'"
"         0.375   Diameter     metre"
"         0.400   Gradient    %"
"             Depth of flow                 0.211     metre"
"             Velocity                      1.053     m/sec"
```

```
"             Pipe capacity               0.111    c.m/sec"
"             Critical depth              0.189    metre"
" 53          ROUTE     Pipe Route 59"
"     59.40      Pipe Route 59 Reach length   ( metre)"
"      0.222   X-factor <= 0.5"
"     42.294   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag   ( seconds)"
"      0.500   Beta weighting factor"
"     60.000   Routing time step   ( seconds)"
"         1   No. of sub-reaches"
"             Peak outflow                0.068    c.m/sec"
"                 0.049    0.068    0.068    0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"         5   Next link "
"                 0.049    0.068    0.068    0.000"
" 51          PIPE DESIGN"
"      0.068   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      0.375   Diameter    metre"
"      0.400   Gradient    %"
"             Depth of flow               0.211    metre"
"             Velocity                    1.053    m/sec"
"             Pipe capacity               0.111    c.m/sec"
"             Critical depth              0.189    metre"
" 53          ROUTE     Pipe Route 31"
"     31.30      Pipe Route 31 Reach length   ( metre)"
"      0.000   X-factor <= 0.5"
"     22.291   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag   ( seconds)"
"      0.514   Beta weighting factor"
"     42.857   Routing time step   ( seconds)"
"         1   No. of sub-reaches"
"             Peak outflow                0.068    c.m/sec"
"                 0.049    0.068    0.068    0.000 c.m/sec"
" 40          HYDROGRAPH Next link "
"         5   Next link "
"                 0.049    0.068    0.068    0.000"
" 51          PIPE DESIGN"
"      0.068   Current peak flow    c.m/sec"
"      0.013   Manning 'n'"
"      0.375   Diameter    metre"
"      0.400   Gradient    %"
"             Depth of flow               0.211    metre"
"             Velocity                    1.053    m/sec"
"             Pipe capacity               0.111    c.m/sec"
"             Critical depth              0.189    metre"
" 53          ROUTE     Pipe Route 11"
"     10.50      Pipe Route 11 Reach length   ( metre)"
"      0.000   X-factor <= 0.5"
"      7.479   K-lag   ( seconds)"
"      0.000   Default(0) or user spec.(1) values used"
"      0.500   X-factor <= 0.5"
"     30.000   K-lag   ( seconds)"
"      0.767   Beta weighting factor"
"     30.000   Routing time step   ( seconds)"
"         1   No. of sub-reaches"
```

```
"                       Peak outflow                      0.067    c.m/sec"
"                          0.049      0.068     0.067    0.000 c.m/sec"
" 40            HYDROGRAPH   Combine    9999"
"           6    Combine "
"        9999   Node #"
"                  "
"               Maximum flow                     0.101    c.m/sec"
"               Hydrograph volume                719.259   c.m"
"                          0.049      0.068     0.067    0.101"
" 40            HYDROGRAPH   Confluence   9999"
"           7   Confluence "
"        9999   Node #"
"                  "
"               Maximum flow                     0.101    c.m/sec"
"               Hydrograph volume                719.259   c.m"
"                          0.049      0.101     0.067    0.000"
" 38            START/RE-START TOTALS 9999"
"           3   Runoff Totals on EXIT"
"               Total Catchment area                       1.154     hectare"
"               Total Impervious area                      0.922     hectare"
"               Total % impervious                        79.873"
" 19            EXIT"
```