THE CORPORATION OF THE TOWN OF AMHERSTBURG
BY-LAW NO. 2018-82

By-law to authorize the execution of a Development Agreement between 2562982 Ontario Limited and the Corporation of the Town of Amherstburg 1500 Alma Street, Amherstburg

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WHEREAS under Section 8 of the Municipal Act 2001, S.O., 2001, c. 25, as amended, a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act;

AND WHEREAS under Section 9. (1) (a) and (b) of the Municipal Act 2001, S.O., 2001, c. 25, as amended, Section 8 shall be interpreted broadly so as to confer broad authority on municipalities to enable them to govern their affairs as they consider appropriate and to enhance their ability to respond to municipal issues;

AND WHEREAS the Corporation of the Town of Amherstburg and the Owner have agreed to the site plan, site servicing and elevations in the Development Agreement;

AND WHEREAS the Corporation of the Town of Amherstburg and owners of said property have agreed to the terms and conditions of a Development Agreement in the form annexed hereto;

NOW THEREFORE the Corporation of the Town of Amherstburg enacts as follows:

1. THAT the Mayor and Clerk be hereby authorized to enter into a Development Agreement between 2562982 Ontario Limited and the Corporation of the Town of Amherstburg for the development of 1500 Alma Street for a manufacturing building with associated office space, covered storage area, open storage area with diesel filing station and separate storage building, said agreement affixed hereto;

2. THAT this By-law shall come into force and take effect immediately upon the final passing thereof at which time all by-laws that are inconsistent with the provisions of this by-law and the same are hereby amended insofar as it is necessary to give effect to the provisions of this by-law.

Read a first, second and third time and finally passed this 24th day of September, 2018.

MAYOR – ALDO DICARLO

CLERK – PAULA PARKER

DEVELOPMENT AGREEMENT

THIS AGREEMENT made in quadruplicate this 24th day of September, 2018.

BETWEEN:

2562982 ONTARIO LIMITED
(Hereinafter collectively called "**Owner**")

OF THE FIRST PART;

- and -

THE CORPORATION OF THE TOWN OF AMHERSTBURG
(Hereinafter called the "**Corporation**")

OF THE SECOND PART;

Hereinafter collectively referred to as the "**Parties**"

WHEREAS the lands affected by this Agreement are described in Schedule "A" attached hereto, and are hereinafter referred to as the "**Lands**";

AND WHEREAS 2562982 Ontario Limited warrants it is the registered owner of the Lands outlined in Schedule "A";

AND WHEREAS, in this Agreement the "**Owner**" includes an individual, an association, a partnership or corporation and, wherever the singular is used therein, it shall be construed as including the plural;

AND WHEREAS the Official Plan in effect in Amherstburg designated parts of the area covered by the Official Plan, including the Lands, as a Site Plan Control area;

AND WHEREAS the Owner intends to develop the Lands for the purpose manufacturing building with associated office space, covered storage area, open storage area with diesel filing station and separate storage building in accordance with the Site Plan attached hereto as Schedule "B", and hereinafter referred to as the "Site Plan";

AND WHEREAS the Corporation as a condition of development of the Lands requires the Owner to enter into a Development Agreement;

WHEREAS the lands affected by this Agreement are described in Schedule "A" attached hereto, and are hereinafter referred to as the "said lands";

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the premises, along with the sum of FIVE ($5.00) DOLLARS of lawful money of Canada, now paid by each of the Parties hereto to each of the other parties hereto, the receipt and sufficiency of which are hereby acknowledged, the Owner hereby covenants and agrees with the Corporation as follows:

1. The following Schedules attached hereto, are hereby made a part of this Agreement as fully and to all intents and purposes as though recited in full herein:

2. Schedule "A" hereto describes the Lands.

3. Schedule "B" (the "Site Plan") hereto shows:

   (a) The location of all buildings and structures;
   (b) The location and provision of off-street vehicular parking facilities and access driveways including driveways for emergency vehicles;
   (c) The location of service roads and parking areas.
   (d) The location of the diesel filling station.

4. Schedule "C" hereto shows:

   (a) Site Plan Details and Notes

5. Schedule "D" hereto shows:

   (a) Stormwater Management Plan

6. Schedule "E" hereto shows:

   (a) Drainage Details and Notes

7. Schedule "F" hereto shows:

   (a) Stormwater Management Report

8. Schedule "G" hereto shows:

   (a) Elevations

9. The Owner shall be responsible for consulting with and obtaining any necessary approvals from Essex Power regarding any matters that relate to services for the Development Lands to be provided by Essex Power. In addition, the Owner shall be responsible for any costs associated with the reconstruction, relocation or changes to the hydro system resulting from this development.

10. The Owner shall be responsible for consulting with and obtaining any necessary approvals from Union Gas and Bell Canada regarding any matters that relate to services to be provided by Union Gas and Bell Canada. In addition, the Owner shall be responsible for any costs associated with the reconstruction, relocation or changes to these services resulting from this development.

11. The Owner shall be responsible for consulting with and obtaining any necessary approval or permits from the Ministry of the Environment, Conservation and Parks, the County of Essex and/or the Essex Region Conservation Authority (E.R.C.A.).

12. If any curbs, sidewalks, boulevards or highway surfaces of the Corporation are damaged during the development by the Owner, such damage shall be repaired or replaced by the Owner.

13. Snow removal from the parking or loading areas and lanes, driveways and walkways shall be the responsibility of the Owner.

14. Stormwater Management/Drainage Issues

    The Owner agrees that prior to final approval:
    (a) the stormwater management analysis and site servicing plan shall be finalized to identify stormwater quality and quantity measures as necessary to control any increases in flows in the downstream watercourses, up to and including the 1:100 year design storm, to the satisfaction and approval of the Corporation, and the ERCA;
    (b) install the stormwater management measures as approved by the Corporation and the ERCA as part of the development of the Lands, which

measures shall then be carried out to the satisfaction of the Corporation and ERCA;

(c) obtain the necessary permits and/or clearances from all governmental authorities having jurisdiction prior to construction activities and/or site alterations commencing of the Lands.

(d) That a sufficient stormwater outlet be provided and registered on the title of the property either through an easement or lot addition prior to the issuance of an occupancy permit for the subject development.

15. The Owners shall, at their own expense, prepare a site grading plan and site drainage plan for this development, which plan shall be filed with the Corporation. The final elevations of all buildings and the final site grades relating thereto shall conform to the site grading and site drainage plan as filed. A Consulting Engineer, an Ontario Land Surveyor or a Certified Engineering Technologist shall certify or declare, upon completion of the construction of the building, if applicable, that the said site grading and site drainage plan has been complied with, and until such time as the said certification or declaration has been received by the Corporation, occupancy of the building on the subject lands shall not be granted.

16. Any garbage or refuse that is stored outside shall be stored in a non-combustible container and maintained so that the garbage or refuse does not blow or fall out of the container.

17. Any and all lighting shall be installed and maintained in accordance with the standards set out in the Town's Development Manual, and, so as to not, in the opinion of the Corporation, interfere with the use or enjoyment of adjacent properties or with the safe flow of traffic on abutting or adjacent streets.

18. The Town will monitor any increased noise resulting from the approval of the elevations and site plan as proposed by this development. The developer shall comply with all provisions of the Town's Noise By-law 2001-43, as amended from time to time. The Town reserves the right to engage the developer to make improvements and modifications to the satisfaction of the Town necessary to relieve noise emissions which are found to be in contravention of MOECC Noise Guidelines and/or the Town's Noise By-law, when measured from the subject lands to neighbouring sensitive land uses. The Town may impose reasonable timelines for the rectification of excessive noise emissions before the remedies contained elsewhere in this Agreement are sought. The Town will work with the developer in the spirit of cooperation to achieve a positive result.

19. The Owner agrees that any Municipal property, including without limiting the generality of the foregoing, curbs, gutters, pavements, sidewalks, or landscaped areas on the public highway and any property belonging to a third party, which are damaged during construction or otherwise, shall be restored to the satisfaction of the Town. The Owner shall keep the subject lands in a state of good repair (including the cutting of weeds) and upon written notice from the Town shall correct deficiencies in the state of repair within ten (10) days thereof.

20. The Owner agrees that the site will be inspected on an annual basis and any deficiencies will require immediate correction in accordance with the approved site plan.

21. All driveways for emergency vehicles shall:

(1) Be connected with a public thoroughfare;

(2) Be designed and constructed to support expected loads imposed by firefighting equipment;

(3) Be surfaced with concrete, asphalt or other material capable of permitting accessibility under all climatic conditions;

(4) Have a clear width of 6 metres at all times;

(5) Be located not less than 3 metres and not more than 15.2 metres measured horizontally and at right angles from the face of the building;
(6) Have an overhead clearance not less than 4.5 metres;
(7) Have a change in gradient of not more than 1 in 12.5 over a minimum distance of 15.2 metres; and
(8) Have approved signs displayed to indicate the emergency route.

22. If the Ontario Building Code requires that an architect or professional engineer or both shall be responsible for the field review of any new building or extension provided for in this Agreement, the Owner shall not occupy or use or permit to be occupied or used any said new building or extension until after an architect or professional engineer has given to the Corporation a letter addressed to the Corporation and signed by him certifying that all services on or in the said lands, required for this development or redevelopment, newly installed by the Owner in connection with this development or redevelopment and not contained within a building, have been installed and completed in a manner satisfactory to the architect or professional engineer.

23. The Corporation through its servants, officers and agents including its building inspector, plumbing inspector, fire chief, public works head and municipal engineer may from time to time and at any time enter on the Lands to inspect:
(1) The progress of development;
(2) The state of maintenance as provided for in this Agreement.

24. In the event of any servant, officer or agent of the Corporation determining upon inspection that the development is not proceeding in strict accord with the plans and specifications filed with the Corporation, such servant, officer or agent shall forthwith place a notice requiring all work to be stopped upon the Lands, and shall forward a copy by registered mail to the Owner at his last address as shown by the revised assessment rolls, and the Owner shall forthwith correct the deficiency or deviation or appeal to Council of the Corporation as hereinafter provided.

25. In the event of any servant, officer or agent of the Corporation upon inspection being of the opinion that the state of maintenance is not satisfactory, such servant, officer or agent shall forthwith forward notice of such opinion to the Owner by registered mail at his last address as shown from the revised assessment rolls, and the Owner shall forthwith correct the deficiency or appeal to Council of the Corporation as hereinafter provided.

26. In the event that an Owner should disagree with the opinion of the servant, officer or agent of the Corporation as to the progress of the development or as to the state of maintenance, such Owner shall appear before Council of the Corporation, which after hearing the Owner, shall be permitted to express its position as to whether such progress or maintenance is satisfactory, following which Council of the Corporation shall make a decision, by resolution, as to whether to lift or sustain the prior decision of the Corporation's servant, officer or agent, which shall constitute a final determination of the matter.

27. In the event that an Owner should fail to obey a stop work order issued under Section 24 hereof, in addition to any other remedy, the Owner recognizes the right of the Corporation to apply to the Court for an Order granting injunctive relief, both interlocutory and permanent. The Owner acknowledges and admits that its failure to obey a stop work order constitutes irreparable harm to the Corporation and that the balance of convenience favours granting such injunctive relief without further proof thereof by the Corporation. The Owner shall be liable to the Corporation for all costs in relation to obtaining such an Order, including all legal costs. The costs shall be deemed to be municipal taxes and to be recoverable in accordance with Section 33 of this Agreement.

28. In the event that an Owner should fail to correct a deviation or deficiency after notice pursuant to Sections 25 or 26 or after notice of an opinion, which Council of the Corporation determines is correct under Section 26, the Council of the Corporation may by law direct or default of the matter or thing being done by the Owner, after two (2) weeks notice to it by registered mail at the last shown address of the Owner pursuant to the revised assessment rolls of passage of such by-law, that such matter or thing be done by the Corporation at the expense of the Owner, which expense may be recovered by action or like manner as municipal taxes and to be recoverable in accordance with Section 33 of this Agreement.

29. In the event of an Owner wishing to change at any time any of the buildings, structures or facilities described in the plans annexed or referred to in Section 3 hereof, it shall make application to Council of the Corporation for approval and shall not proceed with such change until approval is given by such Council, or in default by the Ontario Municipal Board, under the procedure set out in Section 41 of the Planning Act, R.S.O. 1990 here before referred to.

30. This Agreement and the provisions thereof do not give to the Owner or any person acquiring any interest in the said lands any rights against the Corporation with respect to the failure of the Owner to perform or fully perform any of its obligations under this Agreement or any negligence of the Owner in its performance of the said obligations or any act or omission of the Corporation under this Agreement.

31. In the event that no construction on the Lands has commenced on or before the expiry of one (1) year from the date of registration of this Agreement, the Corporation may subsequently, at its option, on one month's written notice to the Owner, terminate this Agreement, whereupon the Owner acknowledges that agrees that it will not be able to undertake any development construction on the Lands (or any further development or construction) on the Lands.

32. The owner shall, at their own expense, ensure compliance with this Agreement and site plan through inspections to be completed by a Consulting Engineer or Certified Engineering Technologist. A Consulting Engineer or Certified Engineering Technologist shall certify, or declare, upon completion of the construction of the building, if applicable, that the said site plan has been complied with, and until such time as said certification of declaration has been received by the Corporation, occupancy of the building on the subject lands shall not be granted.

33. All facilities and matters required by this Agreement shall be provided and maintained by the Owner at its sole risk and expense to the satisfaction of the Corporation and in accordance with the standards determined by the Corporation and in default thereof and without limiting other remedies available to the Corporation, the provisions of Section 446 of the Municipal Act shall apply.

34. A financial guarantee (certified cheque or irrevocable letter of credit – self renewing without burden of proof) for FIFTY PERCENT (50%) of the value of on-site improvements of this development, exclusive of buildings and structures, is required to be paid and/or posted with the Corporation, in addition to further financial security in the amount of ONE HUNDRED PERCENT (100%) for all off-site works required as part of this development.

The Owner's engineer is required to provide a certified estimate of the cost of the on-site and off-site work for consideration by the Town's Director of Engineering and Infrastructure for his/her approval, with any decision by the Town's Director of Engineering and Infrastructure in this regard to be final and binding upon the Owner. Once the Town has inspected and approved the construction of the on-site and off-site works, the Owner will be required to provide security for a ONE (1) year maintenance period in the amount of FIFTEEN PERCENT (15%) of the cost of on-site and off-site improvements.

35. This Agreement shall be registered against the land to which it applies, at the expense of the Owner, and the Corporation shall be entitled, subject to the provisions of the Registry Act and the Land Titles Act, to enforce its provisions against the Owner named herein and any and all subsequent owners of the lands.

36. This Agreement shall ensure to the benefit of and be binding upon the Parties hereto and their respective heirs, executors, administrators, successors and permitted assigns.

37. This Agreement shall be governed by, and interpreted according to, the laws of the Province of Ontario and the laws of Canada applicable therein, and shall be treated in all respects as an Ontario Contract.

38. If any provision or part thereof of this Agreement be illegal or unenforceable, it or they shall be considered separate and severable from the Agreement, and the remaining provisions of the Agreement shall remain in force and effect and shall be binding upon the Parties hereto as though the said provision or part thereof had never been including in this Agreement; provided that the severance of the provision or part does not fundamentally impair the rights of the Corporation in which case the Corporation may declare, without the consent of the Owner, this Agreement void, and all development and construction shall cease pending the execution of a new Agreement by the parties.

39. The division of this Agreement into Articles, sections and subsections and the insertion of headings are for convenience of reference only and shall not affect the construction or interpretation hereof.

40. This Agreement may be executed in several counterparts, each of which when so executed shall be deemed to be an original, and such counterparts together shall constitute one and the same instrument and shall be effective as of the date set out above.

41. Words importing the singular number include the plural and vice versa; words importing the masculine gender include the feminine and neutral genders.

42. Schedules and other documents attached or referred to in this Agreement are an integral part of this Agreement, and are hereby incorporated into this Agreement by reference.

43. This Agreement constitutes the entire agreement among the Parties and except as herein stated and in the instruments and documents to be executed and delivered pursuant hereto, contains all of the representations and warranties of the respective Parties. There are no oral representations or warranties among the Parties of any kind. This Agreement may not be amended or modified in any respect except by written instrument signed by both Parties.

IN WITNESS WHEREOF the Owner and the Corporation (the latter under the hands and seals of its officers duly authorized in this regard), have executed this Agreement as of the date first above written.

OWNER: 2562982 ONTARIO LIMITED

Per Ken Harris, President

I have authority to bind the Corporation

THE CORPORATION OF THE TOWN OF AMHERSTBURG

Per Aldo DiCarlo, Mayor

Per Paula Parker, Clerk

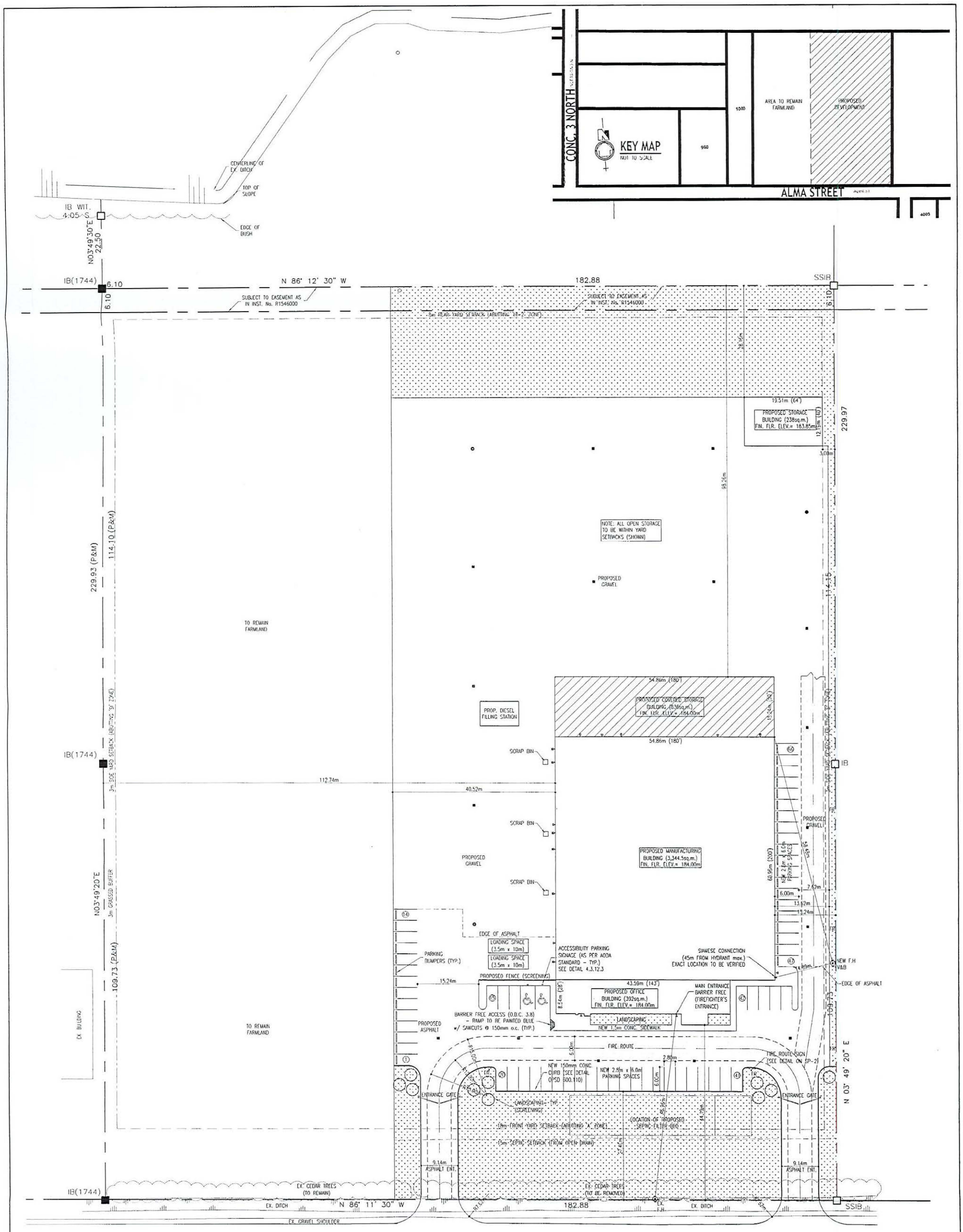
We have authority to bind the Corporation

Authorized and approved by By-law No. 2018-82 enacted the 24th day of September, 2018.

SCHEDULE "A"

The following is a description of the land to which this instrument applies:

Concession 3, Part of Lot 1,
RP 12R-26876, Parts 1 and 2
in the Town of Amherstburg,
County of Essex,
Province of Ontario



SITE PLAN

SCALE: 1:400

DOOR SCHEDULE
△ – MANDOOR
△ – OVERHEAD DOOR

LIGHTING NOTES:
- ALL EXTERIOR LIGHTING FULL CUT-OFF AND "DARK SKY" COMPLIANT

SPECIAL INDUSTRIAL ZONE (SI) ZONING BY-LAW REQUIREMENTS		
BUILDING	REQUIREMENT	PROPOSED
LOT AREA (min.)	1,100sq.m.	42,045sq.m.
LOT FRONTAGE (min.)	30.0m	182.88m
FRONT YARD DEPTH (min.)	18.0m	44.19m
EAST INT. SIDE YARD (min.)	3.0m	15.24m 3.00m (Shed)
WEST INT. SIDE YARD (min.)	3.0m	112.75m
REAR YARD DEPTH (min.)	8.0m	98.27m 28.16m (Shed)
LOT COVERAGE (max.)	60%	11.44%
LANDSCAPED SPACE (max.)	10.0%	55.6%
BUILDING HEIGHT (max.)	12.0m	9.14m (max.)

PARKING REQUIREMENTS	
BUILDING USE	PARKING SPACE REQUIREMENTS
OFFICE	1.0 SPACES/40 sq.m. =392 sq.m./40 sq.m. =9.8 (10 SPACES)
MANUFACTURING	1.0 SPACES/100 sq.m. = 3,345 sq.m./100 sq.m. = 33.4 (34 SPACES)
TOTAL SPACES REQUIRED = 44 SPACES TOTAL SPACES PROVIDED = 64 SPACES	
BARRIER FREE PARKING REQUIRED = 2	
B.F. PARKING SPACES PROVIDED = 2	

SCHEDULE "B" TO BY-LAW 2018-82

2562982 ONTARIO LIMITED

Ken Harris, President

TOWN OF AMHERSTBURG

Mayor- Aldo DiCarlo

Clerk- Paula Parker

REVISIONS	ISSUED FOR	DATE
	OWNER APPROVAL	APR. 5/18
	OWNER APPROVAL/PRELIMINARY SITE PLAN REVIEW	MAY 8/18
	REVISED AS PER OWNER	JUNE 15/18
	SITE PLAN APPROVAL	JULY 10/18

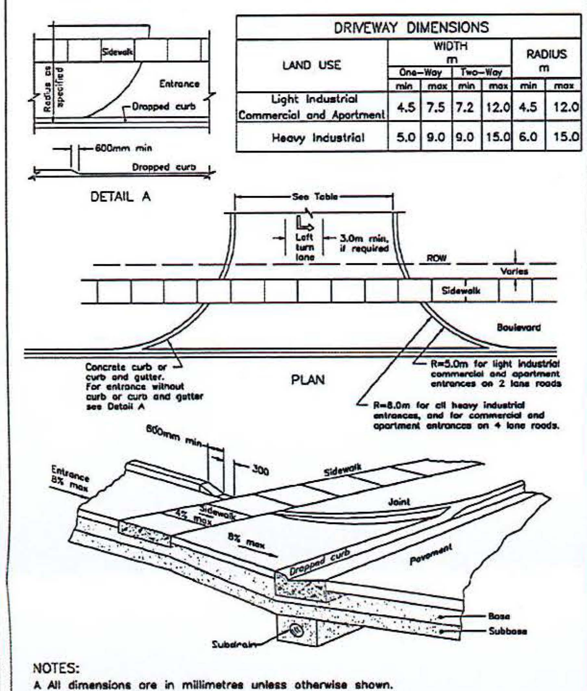
PROJECT:
PROPOSED TRUSS PLANT AND OFFICES
FOR
SUPERIOR ENGINEERED WOOD PRODUCTS
1500 ALMA STREET AMHERSTBURG, ONTARIO

SHEET TITLE:
SITE PLAN

LICENSED PROFESSIONAL ENGINEER
07/10/18
M.K.MCFADDEN
100098313
PROVINCE OF ONTARIO

Y.C. LIU ENGINEERING

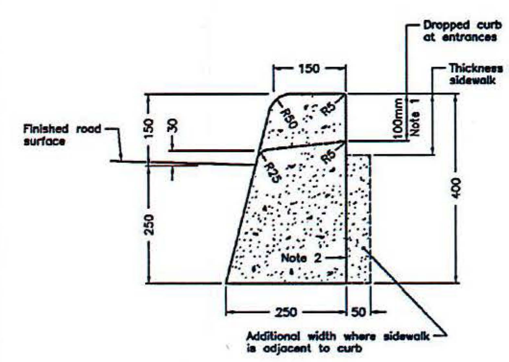
DRAWN	CHECKED	FILE NO.	DWG. NO.
M.M.	C.L.	17-111	1
BCIN	FIRM BCIN	DATE	SHEET NO.
20529	29635	JUNE/17	SP-1 of 4



DRIVEWAY DIMENSIONS						
LAND USE	WIDTH m				RADIUS m	
	One–Way		Two–Way			
	min	max	min	max	min	max
Light Industrial Commercial and Apartment	4.5	7.5	7.2	12.0	4.5	12.0
Heavy Industrial	5.0	9.0	9.0	15.0	6.0	15.0

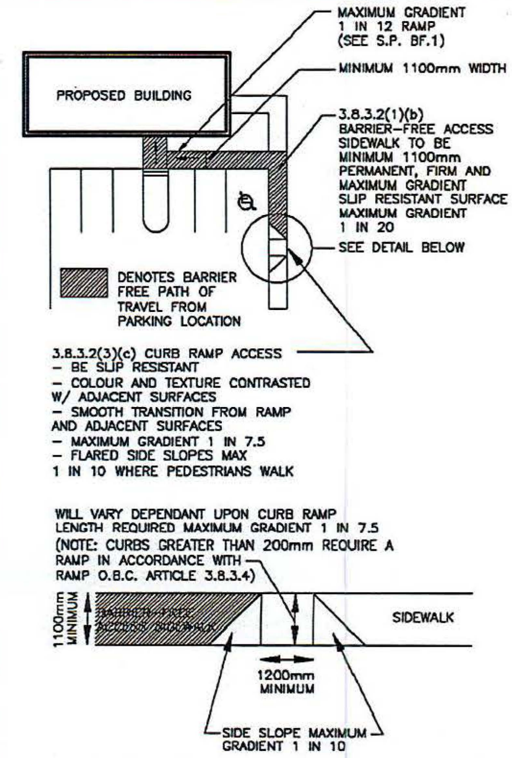
NOTES:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	April 1999 Rev
URBAN INDUSTRIAL, COMMERCIAL AND APARTMENT ENTRANCES	----------
	OPSD – 350.010



NOTES:
1 Where sidewalk is continuously adjacent, reduce the dropped curb at entrances to 75mm.
2 For slipforming procedure, a 5% batter is acceptable.
A Treatment at entrances shall be according to OPSD 351.010.
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006 Rev 1
CONCRETE BARRIER CURB	----------
	OPSD 600.110



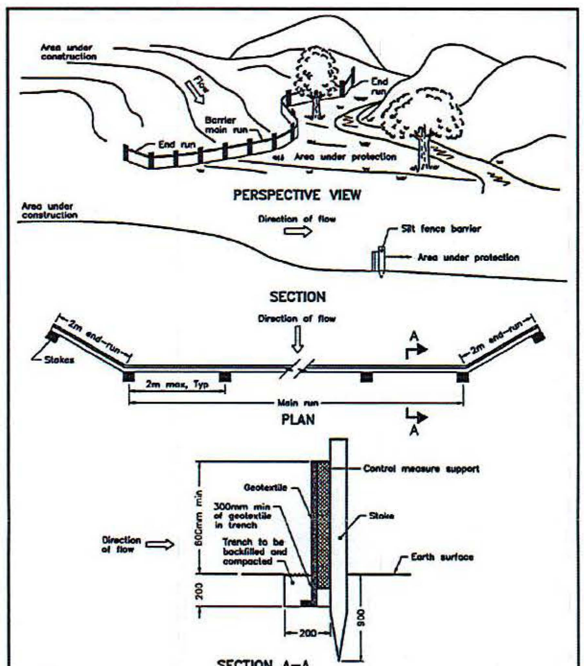
BARRIER–FREE ACCESS SIDEWALK (O.B.C. 3.8)

nts

Disabled Parking Permit	Rb-93

Sign No. & Cut Image Ref.	Blank	Special Notes
Rb-93 (0300 x 0450)	B-7	-Must comply with HTA and Regulations. -For Bilingual version, see Rb-93 (B).

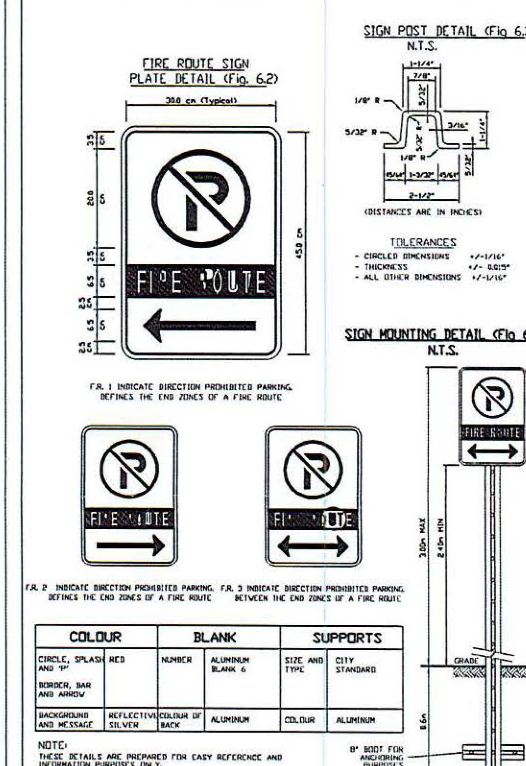
Sign Element	Colour	Min. Refl (ASTM)	Font	All dimensions are shown in mm.
Background Border Inner / Outer Text Symbol	White Black / White Black Black / Red / Blue	Type I None / Type I None None / Type I / Type I	Series "C"	Ontario Ministry Of Transportation



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

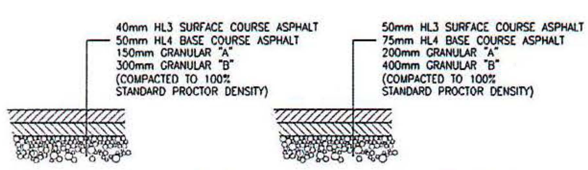
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006 Rev 1
HEAVY–DUTY SILT FENCE BARRIER	----------
	OPSD 219.130

FIRE ROUTE SIGN DETAILS (FR)



COLOUR		BLANK		SUPPORTS	
CIRCLE, SPLASH AND 'P' BORDER, BAR AND ARROW	RED	NUMBER	ALUMINUM BLANK 6	SIZE AND TYPE	CITY STANDARD
BACKGROUND AND MESSAGE	REFLECTIVE SILVER	COLOUR OF BACK	ALUMINUM	COLOUR	ALUMINUM

NOTE:
THESE DETAILS ARE PREPARED FOR EASY REFERENCE AND INFORMATION PURPOSES ONLY.



ASPHALT PAVENT (TYP.)
LIGHT DUTY TRAFFIC AREAS
SCALE: N.T.S.

ASPHALT PAVENT (TYP.)
HEAVY DUTY TRAFFIC AREAS
SCALE: N.T.S.

CONSTRUCTION NOTES:

1. GENERAL
- SITE PLAN PROVIDED BY Y.C. LIU ENGINEERING
- LEGAL SURVEY PROVIDED BY VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC. (FILE NO. E-AND-3-1)
- ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS, AND THE MINISTRY OF THE ENVIRONMENT AND ENERGY GUIDELINES (LATEST EDITION)
- THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION
- CONTRACTOR RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO THE START OF CONSTRUCTION

2. EROSION CONTROL MEASURE NOTES:
- PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION
- ALL EROSION CONTROL MEASURES ARE TO BE IN PLACE BEFORE STARTING CONSTRUCTION AND REMAIN UNTIL RESTORATION IS COMPLETE
- MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
- ALL COLLECTED SEDIMENT MUST BE DISPOSED OF AT AN APPROVED LOCATION
- PROTECT ALL CB'S, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE (TERRAFIX 270R)
- KEEP ALL SUMPS CLEAN DURING CONSTRUCTION
- PREVENT WIND BLOWN DUST
- OBTAIN APPROVAL FROM E.R.C.A PRIOR TO CONSTRUCTION FOR WORKS WHICH ARE IN, OR ADJACENT TO FLOODLINES, FILL LINES, AND HAZARDOUS SLOPES
- STRAW BALES TO BE USED IN LOCALIZED AREAS AND AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION FOR THE WORKS WHICH ARE IN OR ADJACENT TO FLOODLINES, FILL LINES, AND HAZARDOUS SLOPES
- STRAW BALES TO BE TERMINATED BY ROUNDING BALES TO CONTAIN AND FILTER RUNOFF
- OBTAIN APPROVAL FROM ERCA PRIOR TO CONSTRUCTION FOR WORKS WHICH ARE IN, OR ADJACENT TO FLOODLINES, FILL LINES, AND HAZARDOUS SLOPES
- ALL SILT FENCING AND DETAILS, ALL OF THE ABOVE NOTES AND ANY SEDIMENT & EROSION CONTROL MEASURES ARE AT THE MINIMUM TO BE IN ACCORDANCE WITH THE M.N.R. GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES

3. FIRE ROUTES (O.B.C SUBSECTION 3.2.5.)
- LOCATED NOT LESS THAN 3m (9'-10") AND NOT MORE THAN 15m (49'-3") FROM THE BUILDING
- FIRE HYDRANT TO BE MAX. 45m (147'-8" TO THE FIRE DEPARTMENT CONNECTION AND 90m (295'-3") TO PRINCIPLE ENTRANCE WHEN NO FIRE CONNECTIONS ARE REQUIRED
- OVERHEAD CLEARANCE NOT LESS THAN 5m (16'-5")
- CHANGE IN GRADIENT NOT MORE THAN 1 IN 12.5m OVER A MINIMUM DISTANCE OF 15m
- MUST BE DESIGNED TO SUPPORT THE EXPECTED LOADS IMPOSED BY FIRE FIGHTING EQUIPMENT AND BE SURFACED WITH CONCRETE, ASPHALT, OR OTHER MATERIAL DESIGNED TO PERMIT ACCESSIBILITY UNDER ALL CLIMATIC CONDITIONS
- HAVE TURNAROUND FACILITIES FOR ANY DEAD-END PORTION OF THE ACCESS ROUTE MORE THAN 90m (295'-3") LONG
- HAVE ACCESS OPENINGS EVERY 15m (49'-3") ON WALLS REQUIRED TO FACE A FIRE ROUTE UNLESS BUILDING IS SPRINKLERED
- FIRE ROUTE SIGNS TO BE MOUNTED 3m IN HEIGHT MEASURED FROM THE TOP LIMIT OF THE SIGN TO THE GRADE OF THE FIRE ROUTE SURFACE ADJACENT TO THE FIRE ROUTE SIGN
- SIGNS TO BE SPACED NOT MORE THAN 30m (100ft.) BETWEEN SIGNS LOCATED ON THE SAME SIDE OF THE FIRE ROUTE AND SPACED SUCH THAT AT LEAST TWO SIGNS ARE CLEARLY VISIBLE AND LETTERING IS LEGIBLE FROM ALL LOCATIONS WITHIN THE FIRE ROUTE
- THE PROPERTY OWNER IS RESPONSIBLE TO ENSURE THAT PHYSICAL OBSTRUCTIONS ARE NOT PLACED OR CONSTRUCTED IN LOCATIONS THAT INTERFERE WITH THE VISIBILITY AND/OR LEGIBILITY OF ANY FIRE ROUTE SIGN AND TO ENSURE SUFFICIENT MAINTENANCE OF VEGETATION SUCH THAT UNOBSTRUCTED VIEWS FROM ALL FIRE ROUTE SIGNS ARE MAINTAINED AT ALL TIMES AND UNDER ALL CIRCUMSTANCES

4. RECOMMENDED MINIMUM PAVEMENT STRUCTURE FOR ASPHALT SURFACES:
LIGHT DUTY:
- 150mm GRANULAR 'A' COMPACTED TO 100% S.P.M.D.D.
- 300mm GRANULAR 'B' COMPACTED TO 100% S.P.M.D.D.
- 40mm HL3 SURFACE ASPHALT COMPACTED TO 92-97% M.R.D.
- 50mm HL4 BINDER ASPHALT COMPACTED TO 92-97% M.R.D.

HEAVY DUTY:
- 200mm GRANULAR 'A' COMPACTED TO 100% S.P.M.D.D.
- 400mm GRANULAR 'B' COMPACTED TO 100% S.P.M.D.D.
- 50mm HL3 SURFACE ASPHALT COMPACTED TO 92-97% M.R.D.
- 75mm HL4 BINDER ASPHALT COMPACTED TO 92-97% M.R.D.

SCHEDULE "C" TO BY-LAW 2018-82

2562982 ONTARIO LIMITED

[illegible]
Ken Harris, President

TOWN OF AMHERSTBURG

[illegible]
Mayor- Aldo DiCarlo

[illegible]
Clerk- Paula Parker

REVISIONS	ISSUED FOR	DATE
	OWNER APPROVAL	APR. 5/18
	OWNER APPROVAL/PRELIMINARY SITE PLAN REVIEW	MAY 8/18
	REVISED AS PER OWNER	JUNE 15/18
	SITE PLAN APPROVAL	JULY 10/18

PROJECT:
PROPOSED TRUSS PLANT AND OFFICES
FOR
SUPERIOR ENGINEERED WOOD PRODUCTS

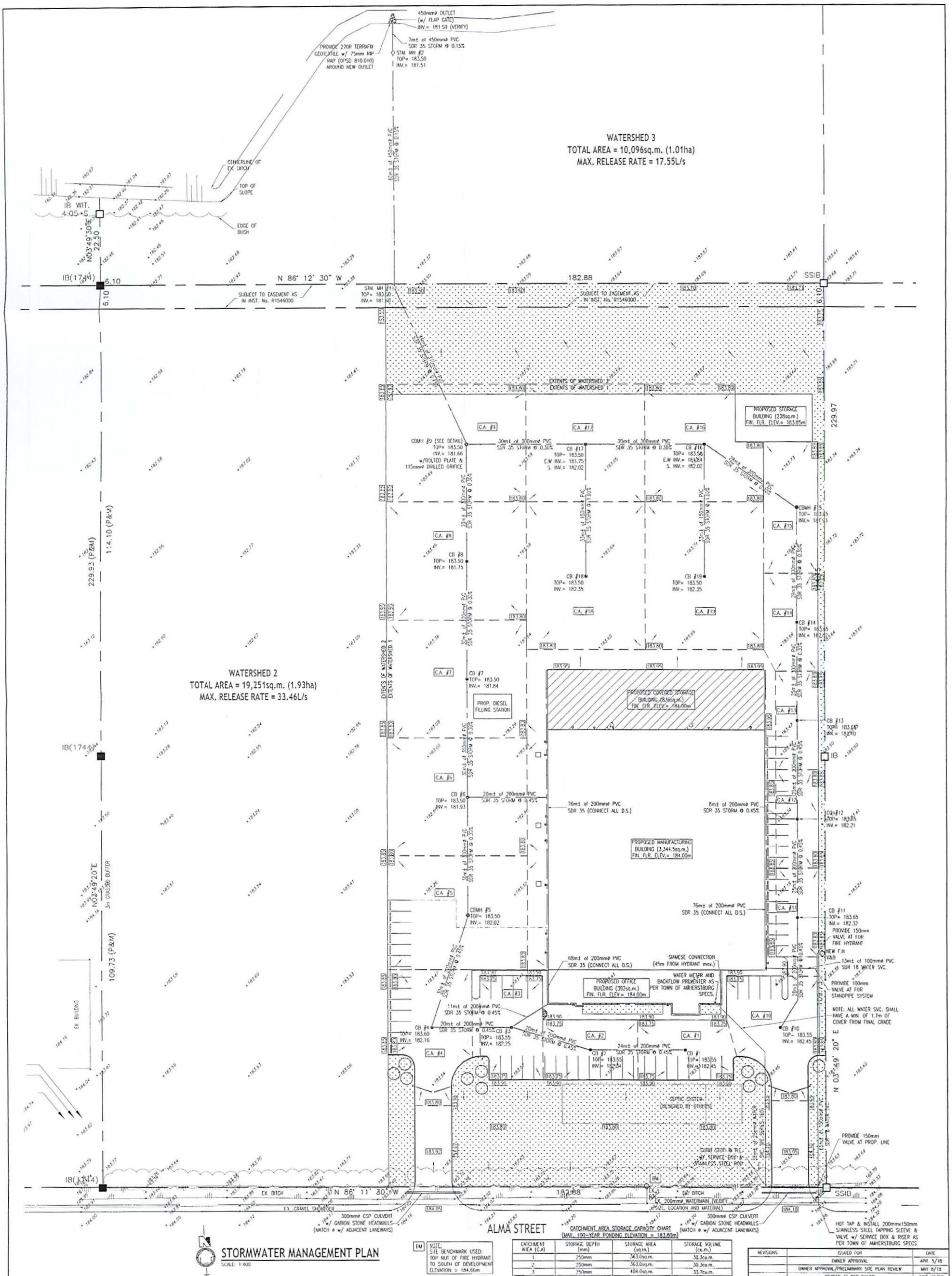
1500 ALMA STREET AMHERSTBURG, ONTARIO

SHEET TITLE:
SITE PLAN DETAILS AND NOTES

LICENSED PROFESSIONAL ENGINEER
07/10/18
M.K.MCFADDEN
100098313
PROVINCE OF ONTARIO

Y.C. LIU ENGINEERING

DRAWN	CHECKED	FILE NO.	DWG. NO.
M.M.	C.L.	17-111	2
BCIN	FIRM BCIN	DATE	SHEET NO.
20529	29635	JUNE/17	SP-2 of 4



STORMWATER MANAGEMENT PLAN

SCALE: 1:400

BM NOTE: SITE BENCHMARK USED: TOP NUT OF FIRE HYDRANT TO SOUTH OF DEVELOPMENT ELEVATION = 184.66m

CATCHMENT AREA STORAGE CAPACITY CHART
(MAX. 100-YEAR PONDING ELEVATION = 183.80m)

CATCHMENT AREA (C.A)	STORAGE DEPTH (mm)	STORAGE AREA (sq.m.)	STORAGE VOLUME (cu.m.)
1	250mm	363.0sq.m.	30.3cu.m.
2	250mm	363.0sq.m.	30.3cu.m.
3	250mm	404.0sq.m.	33.7cu.m.
4	200mm	595.0sq.m.	39.7cu.m.
5	300mm	1,018.0sq.m.	101.8cu.m.
6	300mm	1,058.0sq.m.	105.8cu.m.
7	300mm	1,058.0sq.m.	105.8cu.m.
8	300mm	1,058.0sq.m.	105.8cu.m.
9	300mm	1,058.0sq.m.	105.8cu.m.
10	250mm	575.0sq.m.	47.9cu.m.
11	150mm	243.0sq.m.	12.2cu.m.
12	150mm	270.0sq.m.	13.5cu.m.
13	150mm	270.0sq.m.	13.5m.
14	150mm	335.0sq.m.	16.8cu.m.
15	150mm	456.0sq.m.	22.8cu.m.
16	300mm	796.0sq.m.	79.6cu.m.
17	300mm	900.(sq.m.	90.0cu.m.
18	300mm	1,125.0sq.m.	112.5cu.m.
19	300mm	1,125.0sq.m.	112.5cu.m.
		PIPE STORAGE CAPACITY	25.1cu.m.
		TOTAL STORAGE CAPACITY	1,205.1cu.m.
		TOTAL STORAGE REQUIRED	1,112cu.m.

SCHEDULE "D" TO BY-LAW 2018-82

2562982 ONTARIO LIMITED

Ken Harris, President

TOWN OF AMHERSTBURG

Mayor: Aldo DiCarlo

Clerk: Paula Parker

REVISIONS	ISSUED FOR	DATE
	OWNER APPROVAL	APR. 5/18
	OWNER APPROVAL/PRELIMINARY SITE PLAN REVIEW	MAY 8/18
	REVISED AS PER OWNER	JUNE 15/18
	SITE PLAN APPROVAL	JULY 10/18

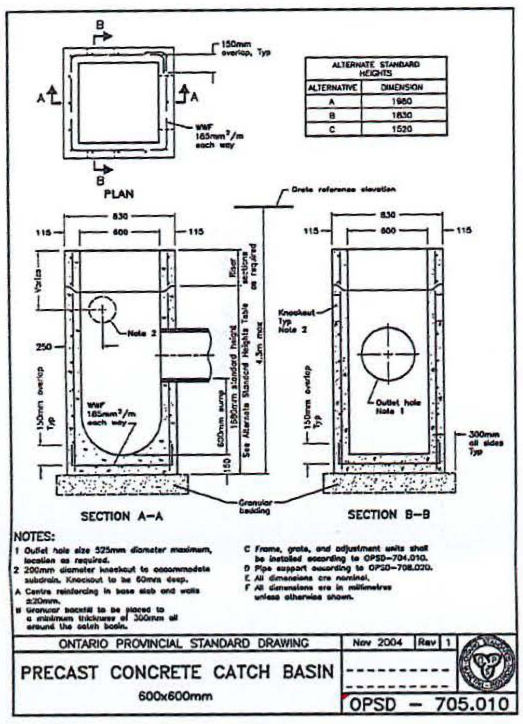
PROJECT:
PROPOSED TRUSS PLANT AND OFFICES
FOR
SUPERIOR ENGINEERED WOOD PRODUCTS
1500 ALMA STREET AMHERSTBURG, ONTARIO

SHEET TITLE:
STORMWATER MANAGEMENT PLAN

LICENSED PROFESSIONAL ENGINEER
07/10/18
M.K.MCFADDEN
100098313
PROVINCE OF ONTARIO

Y.C. LIU ENGINEERING
TEL: (519) 351-9112
FAX: (519) 351-5600

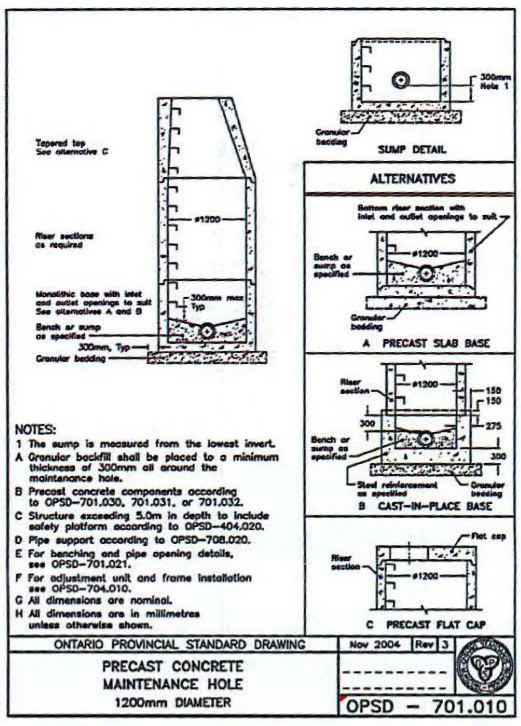
DRAWN	CHECKED	FILE NO.	DWG. NO.
M.M.	C.L.	17-111	3
BCIN	FIRM BCIN	DATE	SHEET NO.
20529	29635	JUNE/17	SP-3 of 4



ALTERNATE STANDARD HEIGHTS	
ALTERNATIVE	DIMENSION
A	1980
B	1630
C	1520

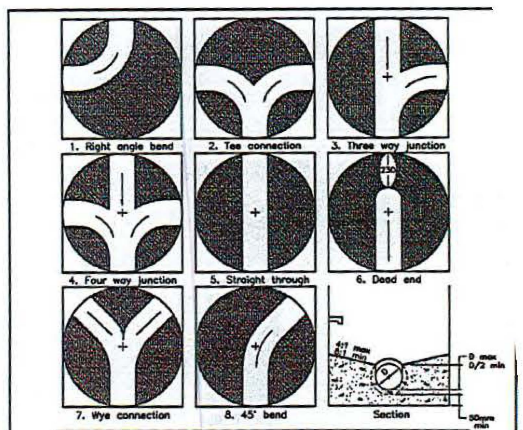
NOTES:
1 Outlet hole size 525mm diameter maximum, location as required.
2 200mm diameter knockout to accommodate subdrain. Knockout to be 60mm deep.
A Centre reinforcing in base slab and walls @20mm.
B Granular backfill to be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD-704.010.
D Pipe support according to OPSD-708.020.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2004	Rev 1
PRECAST CONCRETE CATCH BASIN 600x600mm		OPSD – 705.010



NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components according to OPSD-701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth to include safety platform according to OPSD-404.020.
D Pipe support according to OPSD-708.020.
E For benching and pipe opening details, see OPSD-701.021.
F For adjustment unit and frame installation see OPSD-704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

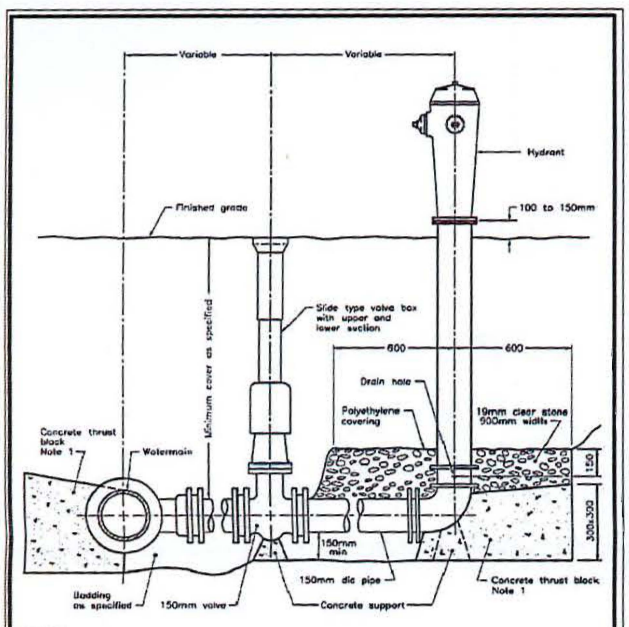
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2004	Rev 3
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		OPSD – 701.010



MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS					
Maintenance Hole Diameter	No. 1–4	No. 5 & 6	No. 8	No. 7	
				Inlet Hole	Outlet Hole
1200	700	860	780	700	860
1500	860	1220	960	860	1170
1800	1220	1485	1220	1220	1485
2400	1485	2020	1760	1485	2020
3000	1930	2450	2300	1930	2450
3600	2185	3085	2730	2185	3085

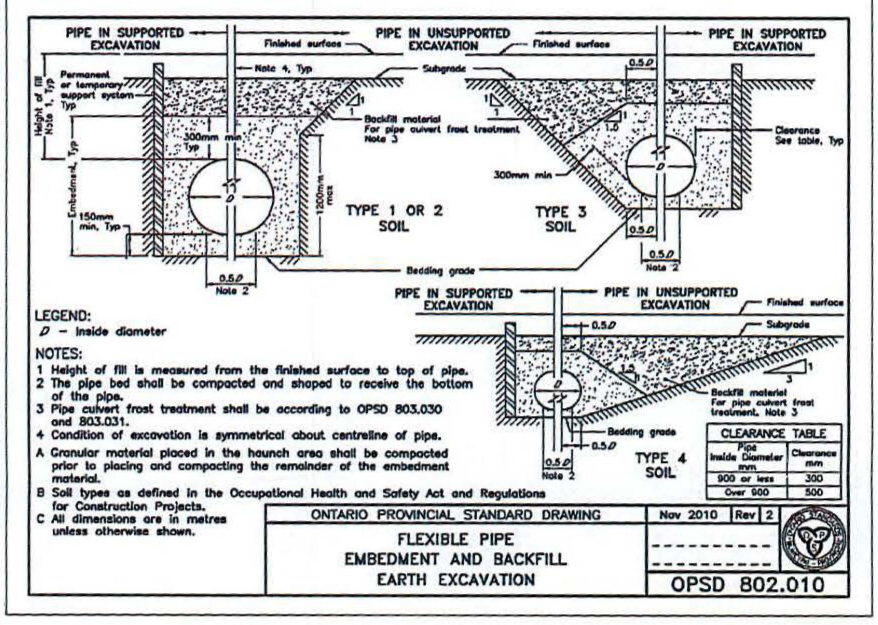
NOTES:
A Concrete for benching to be 30MPa.
B Benching to be given wood float finish, channel to be given steel trowel finish.
C Benching slope and height to be as specified.
D All dimensions are nominal.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2004	Rev 2
MAINTENANCE HOLE BENCHING AND PIPE OPENING DETAILS		OPSD – 701.021



NOTES:
1 All concrete thrust blocks to be poured against undisturbed ground.
A Bond breaker to be used between the concrete and the fittings and appurtenances.
B Bolts and nuts for buried flange to flange connections are to be stainless steel.
C When required, flange of standpipe extensions not to be in frost zone.
D This OPSD is to be read in conjunction with OPSD 1103.010 and 1103.020.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1
HYDRANT INSTALLATION		OPSD 1105.010



LEGEND:
D – Inside diameter

NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4 Condition of excavation is symmetrical about centreline of pipe.
A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C All dimensions are in metres unless otherwise shown.

CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2010	Rev 2
FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION		OPSD 802.010

SCHEDULE "E" TO BY-LAW 2018-82

2562982 ONTARIO LIMITED

Ken Harris, President

TOWN OF AMHERSTBURG

Mayor- Aldo DiCarlo

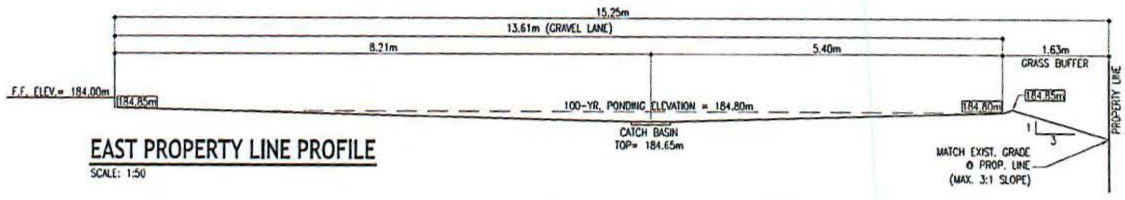
Clerk- Paula Parker

WATERSHED 2
TOTAL AREA = 19,251sq.m. (1.92ha)
MAX. RELEASE RATE = 33.44L/s

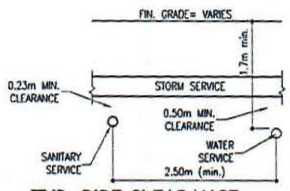
WATERSHED 3
TOTAL AREA = 10,157sq.m. (1.02ha)
MAX. RELEASE RATE = 17.65L/s

WATERSHED 1
TOTAL AREA = 22,592sq.m. (2.26ha)
MAX. RELEASE RATE = 39.26L/s
ACTUAL RELEASE RATE = 38.5L/s

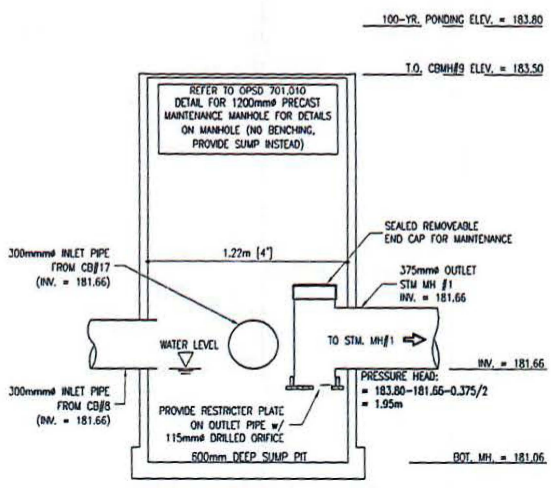
ALLOWABLE RELEASE RATES
SCALE: 1:1000



EAST PROPERTY LINE PROFILE
SCALE: 1:50



TYP. PIPE CLEARANCE
SCALE: 1:50



OUTLET CBMH #9 DETAIL
SCALE: 1:20

SERVICING NOTES:

1. SEWERS
- BACKFILL AND SEWER BEDDING AS PER OPSD 802.010, 802.013, 802.014
- ALL BEDDING AND COVER MATERIAL TO BE GRANULAR 'A' OR 19mm CRLS COMPACTED TO 95% SPMDD
- CB LEADS TO BE ONE OF CONCRETE OR PVC THROUGHOUT
- STORM SEWER PIPE TO BE PVC SDR 35 OR BOSS 2000
- SANITARY SEWER PIPE TO BE PVC SDR 28

2. MANHOLES/CATCHBASINS
- STORM MANHOLES AS OPSD 701.010 WITH FRAME AND COVER
- PRECAST CATCHBASINS AS PER OPSD 705.010 WITH FRAME AND GRATE
- MINIMUM HORIZONTAL CLEARANCE BETWEEN SEWER AND WATER SERVICE IS 2.5m. WHERE THE WATERMAIN PASSES OVER THE SEWER, MINIMUM VERTICAL CLEARANCE IS 0.15m AND 0.50m WHERE THE WATERMAIN PASSES UNDER THE SEWER

3. WATERMAINS
- WATERMAINS/SERVICES MIN. COVER 1.7M BELOW FINISHED GRADE
- WATER SERVICE TO BE INSTALLED AS PER TOWN STANDARDS WITH GRANULAR 'A' BEDDING AND COVER
- PVC WATERMAIN IN SIZES 100mm THROUGH TO 300mm SHALL BE CLASS 150 DR18 CONFORMING TO AWWA C900. TRACER WIRE (10AWG min.) SHALL BE INSTALLED ON PVC WATERMAIN WITHIN THE ROAD ALLOWANCE
- CORROSION PROTECTION MEASURES FOR METAL WATER MAIN COMPONENTS TO INCLUDE DENSO MASTIC/TAPE AND SAC CAPS
- MINIMUM HORIZONTAL CLEARANCE BETWEEN SEWER AND WATER SERVICE IS 2.5m. WHERE THE WATERMAIN PASSES OVER THE SEWER, MINIMUM VERTICAL CLEARANCE IS 0.15m AND 0.50m WHERE THE WATERMAIN PASSES UNDER THE SEWER
- ALL WATERWORKS CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS OF THE MUNICIPALITY OF LEAMINGTON ENGINEERING DEPARTMENT

4. GRADING NOTES
- EXISTING GROUND ELEVATIONS TO BE MAINTAINED ALONG PERIMETER OF SITE UNLESS SPECIFIED OTHERWISE
- ALL DISTURBED AREAS TO BE REINSTATED TO EXISTING CONDITIONS OR BETTER. LANDSCAPE AREAS TO BE RESTORED WITH 100mm TOPSOIL AND No. 1 NURSERY SOD
- EMBANKMENTS MAXIMUM SLOPE OF 3:1
- GRASS SURFACE MINIMUM SLOPE 1.5%
- ASPHALT PAVEMENT/CONCRETE SURFACES MINIMUM SLOPE 1.0%
- ALL SURFACE DRAINAGE SHALL BE SELF CONTAINED, COLLECTED, AND DISCHARGED AT A LOCATION TO BE APPROVED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT
- DRAINAGE OF ABUTTING PROPERTIES SHALL NOT BE ADVERSELY AFFECTED

REVISIONS	ISSUED FOR	DATE
	OWNER APPROVAL	APR. 5/18
	OWNER APPROVAL/PRELIMINARY SITE PLAN REVIEW	MAY 8/18
	REVISED AS PER OWNER	JUNE 15/18
	SITE PLAN APPROVAL	JULY 10/18

PROJECT:
PROPOSED TRUSS PLANT AND OFFICES
FOR
SUPERIOR ENGINEERED WOOD PRODUCTS
1500 ALMA STREET AMHERSTBURG, ONTARIO

SHEET TITLE:
DRAINAGE DETAILS AND NOTES

LICENSED PROFESSIONAL ENGINEER
07/10/18
M.K.MCFADDEN
100098313
PROVINCE OF ONTARIO

Y.C. LIU ENGINEERING

DRAWN	CHECKED	FILE NO.	DWG. NO.
M.M.	C.L.	17-111	4
BCIN	FIRM BCIN	DATE	SHEET NO.
20529	29635	JUNE/17	SP-4 of 4

STORMWATER MANAGEMENT REPORT

SUPERIOR ENGINEERED WOOD PRODUCTS

1500 Alma Street

Town of Amherstburg

Y. C. LIU ENGINEERING
39 McNaughton Ave. West, Chatham Ontario N7L 1R2
TEL: (519) 351-9612
FAX : (519) 351-5526

10-July-2018
File: 17-111

SCHEDULE "F" TO BY-LAW 2018-82

2562982 ONTARIO LIMITED

Ken Harris, President

TOWN OF AMHERSTBURG

Mayor- Aldo DiCarlo

Clerk- Paula Parker

Y.C. LIU ENGINEERING
(c.o.b. 1147055 Ontario Inc.)
Engineered Solutions

39 McNaughton Ave. W., Chatham, Ontario Canada N7L 1R2 Bus: 519-351-9612 • Fax: 519-351-5526

10 July 2018 File No: 17-111

Mr. Shane McVitty,
Drainage Superintendent/Engineering Coordinator
Town of Amherstburg
512 Sandwich St. South
Amherstburg, ON
N9V 3R2

RE: **Stormwater Management Plan for a new 3,736.5sq.m Office and Truss Manufacturing Building + 836sq.m. Covered Storage Area for Superior Engineered Wood Products, located 1500 Alma Street, Amherstburg Ontario.**

Dear Sir,

This report presents the results of a stormwater management assessment carried out for a new 3,736.5sq.m office and truss manufacturing building and a 836sq.m. Covered Storage area for Superior Engineered Wood Products, on a 5.20 hectare property at the above-referenced site.

The site is currently un-developed farmland. The parcel of land that is being severed is approximately 5.2 hectares, however only 2.26 hectares is being developed. The parcel has been divided into 3 separate watersheds. Watershed 1 (2.26 ha) is the area that is being developed, watershed 2 (1.92ha) is the area to the West of the proposed development that is remaining farmland, and finally watershed 3 (1.02ha) is the area to the North of the proposed development that is also remaining farmland. This storm water management report deals strictly with watershed 1 as it is the only area being developed at this point in time. The outlet pipe for the parcel has been designed for the entire 5.2 hectares, so if the other two watersheds are ever developed in the future, a separate storm water management design will be required before tying into the outlet pipe.

The proposed changes to watershed 1 is to construct a new truss manufacturing building and office area (3,736.5sq.m.) as well as a covered storage area to the North (836sq.m.). There is also a small storage building proposed (238sq.m.). The area to the South of the proposed building will be asphalted parking lot, while the remainder of the area surrounding the building will be graveled laneways and outdoor storage. For the purpose of this storm water management design, it was assumed that all gravel area on site is hard surface in case any of this is ever asphalted in the future. The remainder of the area will be converted to grassed area and landscaping (2,657sq.m.). Based on run-off coefficients for grassed and impervious areas (asphalt, building, concrete, etc.) of 0.25, 0.90 respectively, the weighted run-off coefficient was calculated to be 0.82. As per the Design and Construction Guidelines (Second Edition) dated June 1986, for return periods of more than 10 years, this value has to be increased by 25% to a maximum of 0.95. Therefore, for Watershed A, the post developed run-off coefficient actually used is c=0.95.

There is an existing Municipal drain (Daraugh Drain) located to the North of the property. This is the drain that the parcel is assessed to. It is proposed to install a new storm pipe running North that will direct all water from the entire property into this drain. Each of the three watersheds will have their own storm water management systems that will release the run-off at a rate below that of the 2-year pre-development flow rate for each respective area. This storm water management plan is strictly for watershed 1.

Drawing SP-1 to SP-4 in Appendix B provides a Site Plan, Stormwater Management Plan, and Details of the property and the proposed development.

1. Introduction

The purpose of this assessment was to provide drainage of the site in accordance with municipal requirements. It was also necessary to provide temporary on-site storage of appropriate storm water detention volumes.

The Town of Amherstburg requires that the storm sewer system be designed to the 2-year return period. The excess volume from the 100-year storm versus the 2-year flow capacity must be stored on site.

The stormwater management system requirements are summarized in this report.

2. Procedure

The procedure included the following steps:

1. Review of Site elevation survey and data collection
2. Review of Site Plan and determination of land use/cover before and after development
3. Assessment of local rainfall Intensity Duration and Frequency data/equations
4. Calculation of peak 2-year pre-development flows using the "Rational Method"
5. Sizing of outflow pipes and slopes
6. Estimating required detention storage volume using the "Modified Rational Method"
7. Design of proposed grades and elevations relating to construction.
8. Preparation of report

3. Findings

3.1 General Site Conditions

The existing site is relatively flat with an average slope of 0.50%. The site appears to slope towards the North to the Daraugh Drain. For this site, the FAA method was used to determine the time of concentration. For the entire parcel, assuming a flow path length of 315m, a slope of 0.50%, and a run-off coefficient of 0.25, the time of concentration was determined to be approximately 60 minutes. This resulted in a pre-developed flow rate of 90.35L/s, or 17.38L/s/ha. This flow rate is for the entire 5.20 hectare property.

Based on this above information, the maximum allowable release rates for each watershed is summarized in the table below:

Watershed	Area (ha)	Max. Release Rate (L/s)
1	2.26	39.26
2	1.92	33.44
3	1.02	17.65
Total	5.20	90.35

The outlet pipe for the entire parcel will be designed to accommodate the maximum release rate, however each of the watersheds will be required to restrict the flows to below the release rates indicated for the respective watershed area. This will ensure the release rate for the entire parcel is kept below the 2-year pre-developed flow rate as required. If the watershed areas change (or are divided further) before being developed, the maximum allowable release rate must be calculated using 17.38L/s/ha.

3.2 Calculations

The attached spreadsheet in Appendix A documents the calculations used and identify the requirements of construction to meet the stormwater management plan. The spreadsheets are summarized as follows:

1. Table 1 – presents the intensity/duration/frequency data that is relevant to this site. The data is in the form of the Windsor Airport AES Data, as developed for the City of Windsor.
2. Table 2 – documents the predevelopment and post development land cover factors and areas. All data is based on the site plan drawing.
3. Table 3 – documents the maximum outflow based on the 2-year predevelopment storm. It also calculates the proposed Restriction device in order to back flows up that exit the containment area.
4. Table 4 – documents the pipe sections and capacities of each section of pipe based on the flow it is receiving from the catchment areas
5. Tables 5, and 6 – are applications of the modified rational method to determine the maximum required storage capacity under 2-year and 100-year storm conditions, respectively.
6. Table 7 – provides a design of the catchment areas including depths, areas and total storage volumes.

The required drainage and grading details are shown on Drawing SP-1 to SP-4 in Appendix B.

4. Conclusions

Drainage of this watershed will be accommodated by 19 catchbasins, with a 200mm-375mm diameter PVC-SDR35 storm pipe that will connect the catchbasins and outlet the stormwater run-off into the Municipal Drain (Daraugh Drain) running along the North of the property.

A restrictor plate will be used to control the volume of water that exits the watershed via the storm pipes. This restrictor plate will be located on the 375mm diameter PVC outlet of Catch Basin Manhole #9. Provisions should be made for maintenance of all storm pipes on site, at least twice a year, as well as after all major storm events, by the property Owner. The proposed stormwater management system provides peak

flow attenuation for the 100-year post development flow. A 115mm diameter restrictor plate on last CBMH#9 will back up flows to those that exceed the 2-year pre-development flow of 39.26L/s. The orifice restrictor plate will have a capacity of 38.5L/s.

The stormwater design is to use the new asphalt and gravel areas as water storage. The catchbasins will collect the water and direct it towards the last Storm CBMH#1. This last CBMH will be equipped with the orifice restrictor plate mentioned above. Catchbasins 1-3, as well as 10 will be located at an elevation of 183.55m, while Catchbasin 4 will be located at an elevation of 183.60m. Catchbasins 5-9, and 16-19 will be located at an elevation of 183.50, while catchbasins 11-15 will be located at an elevation of 183.65m. The maximum 100-year ponding elevation will be 183.80 while the finished floor elevation of the building will be 184.00, creating a freeboard of 200mm.

Below is a table outlining the catchment areas and their corresponding depths, areas, and volumes:

Catchment Area	*Depth (mm)*	*Area (sq. m.)*	*Volume (cu.m.)*
1	250	363.0	30.3
2	250	363.0	30.3
3	250	404.0	33.7
4	200	595.0	39.7
5	300	1,018.0	101.8
6	300	1,058.0	105.8
7	300	1,058.0	105.8
8	300	1,058.0	105.8
9	300	1,058.0	105.8
10	250	575.0	47.9
11	150	243.0	12.2
12	150	270.0	13.5
13	150	270.0	13.5
14	150	335.0	16.8
15	150	456.0	22.8
16	300	796.0	79.6
17	300	900.0	90.0
18	300	1,125.0	112.5
19	300	1,125.0	112.5
		Pipe Storage	25.1
		Total Storage Volume	***1,205.1m³***

This total volume of 1,205m³ meets that required for the 100-year post-development design storm of 1,112m³.

5.0 Water Quality

All catchbasins will be equipped with 600mm deep sump pits. These sumps will collect sediment that has been washed off the surface of the surrounding asphalt area on site. It is the responsibility of the owner to maintain all catchbasins and manholes on-site with respect to sediment. The 600mm deep sumps should be maintained on at least a by-annual basis to prevent clogging and blockage of the pipes. These sumps should also be inspected after all major storm events to ensure maintenance is not required.

The last catchbasin manhole will also be equipped with an inverted 'T'. This will help prevent floating oils and debris from entering the municipal storm main.

The use of the above-mentioned sump pits and inverted 'T' would greatly increase the overall quality of the water travelling off the site and into the Municipal Drain, while the restrictor plate will control the quantity of water travelling off the site.

If any questions are to arise from this Stormwater Management Report, please do not hesitate to contact our office at your convenience.

Respectfully Submitted,

Y.C. LIU ENGINEERING

Mark McFN

Mark McFadden, P.Eng
Project Engineer

Encls/ - Appendix A – Watershed A Calculations – Tables 1 to 7 (6 pages)
- Appendix B – Drawings SP-1 to SP-4

APPENDIX A – Calculations

(Tables 1 to 7)

TABLE 1 - IDF CURVE DATA -WINDSOR AIRPORT AES DATA

WINDSOR AIRPORT AES DATA

Using the equation: R=aT^b

Return Period	Coefficients	
	a	b
2-Yr	25.0	-0.712
5-Yr	32.0	-0.712
10-Yr	36.7	-0.712
25-Yr	42.6	-0.712
50-Yr	47.0	-0.712
100-YR	51.4	-0.712

Time (min)	Time (T) (hrs)	Rainfall Intensity (R) (mm/hr)					
		2-Yr	**5-Yr**	**10-Yr**	**25-Yr**	**50-Yr**	**100-Yr**
5	0.08	146.7	187.7	215.3	249.9	275.7	301.5
10	0.17	89.5	114.6	131.4	152.6	168.3	184.1
15	0.25	67.1	85.9	98.5	114.3	126.1	137.9
20	0.33	54.7	70.0	80.2	93.1	102.8	112.4
30	0.50	41.0	52.4	60.1	69.8	77.0	84.2
35	0.58	36.7	47.0	53.9	62.5	69.0	75.4
40	0.67	33.4	42.7	49.0	56.9	62.7	68.6
45	0.75	30.7	39.3	45.0	52.3	57.7	63.1
50	0.83	28.5	36.4	41.8	48.5	53.5	58.5
55	0.92	26.6	34.0	39.0	45.3	50.0	54.7
60	1	25	32	36.7	42.6	47	51.4

TABLE 2 : C- Factor Weighting and Areas (Watershed 1)

PRE-DEVELOPMENT - assuming no existing development

Runoff Coefficient (C_g):		*0.25*	*unitless*
Total Area (m^2):		*22592*	*m^2*
Total Area (ha):		*2.26*	*ha*

POST-DEVELOPMENT

Grass Area (A_{g1}):		*2657*	*m^2*
Grass Runoff Coefficient (C_g):		*0.25*	*unitless*
Impervious (ie.Asphalt,Building,Concrete) Area (A_{i1}):		*19935*	*m^2*
Impervious Runoff Coefficient (C_i):		*0.90*	*unitless*
Gravel Area (A_{gr1}):		*0*	*m^2*
Gravel Runoff Coefficient (C_{gr}):		*0.70*	*unitless*
Weighted Runoff Coefficient (C1):	$C_1=(A_{g1}*C_g+A_{gr1}*C_{gr}+A_{i1}*C_i)/(A_{g1}+A_{gr1}+A_{i1})$	*0.82*	*unitless*
Total Area (m^2):		*22592*	*m^2*
Total Area (ha):		*2.26*	*ha*

ADD ADDITIONAL 25% (TO MAX. OF 0.95) TO WEIGHTED RUNOFF COEFFICIENT IF DESIGNING FOR 100-YEAR STORM = 0.82 x 1.25 = 1.03 ***(USE 0.95)***

TABLE 3 - PREDEVELOPMENT FLOW REQUIREMENTS (2-YR) & PIPE/ORIFICE SIZE

Using the 2-year Windsor Airport AES Data from Table 1

COMPOSITE AREA - PRE DEVELOPMENT (C =0.25) Runoff Coefficient = 0.25

DURATION	*INTENSITY (mm/hr)*	*QPRE A x C(COMPOSITE) (ha)*	*QPRE A x C x I (L/s)*	*QPRE A x C x I (L/s/ha)*
5	147	1.3	*530.04*	*101.93*
10	90	1.3	*323.57*	*62.23*
15	67	1.3	*242.43*	*46.62*
20	55	1.3	*197.53*	*37.99*
25	47	1.3	*168.51*	*32.41*
30	41	1.3	*148.00*	*28.46*
35	37	1.3	*132.62*	*25.50*
40	33	1.3	*120.59*	*23.19*
45	31	1.3	*110.89*	*21.32*
50	28	1.3	*102.87*	*19.78*
55	27	1.3	*96.12*	*18.49*
60	25	1.3	*90.35*	*17.38*
65	24	1.3	*85.34*	*16.41*
70	22	1.3	*80.96*	*15.57*
75	21	1.3	*77.08*	*14.82*
80	20	1.3	*73.62*	*14.16*
85	20	1.3	*70.51*	*13.56*

TIME OF CONCENTRATION Using FAA Method

$Tc=3.26(1.1-C)L^{0.5}/(100*S)^{0.333}$

L (longest flow path) =	*315*	*m*
C =	*0.25*	
Slope =	*0.005*	*ft/ft or m/m*
tc =	*61.9*	*min.*

Assume Duration = Time of Concentration=60min, THEN, BASED ON ABOVE CHART, LIMIT OUTFLOW TO 90.35 L/s or less (for the entire parcel) Since this SWM design is addressing only 2.26ha (Watershed 1), the maximum allowable release rate for the development is 39.26L/s

PROPOSED RESTRICTION - Orifice on outlet of CATCHBASIN MANHOLE #9

Cd =	0.6 unitless	
Dia. =	115 mm	MIN VALUE
Area =	10386.9 mm^2	
Area =	0.0104 m^2	
g =	9.81 m/s^2	
H =	1.95 m	<- MID of Pipe to 1:100yr Storm Elev.
Q =	0.04 m^3/s	
Q =	38.5 L/s	

The orificed outlet capacity is 38.5 L/s

Main Trunk Pipe Design:

Diameter:	***0.450***	*m*
Slope:	***0.150***	*%*
Mannings "n" (SDR36-PVC):	***0.012***	*unitless*
X-sectional Area (A):	***0.159***	m^2
Wetted Perimeter (P):	***1.414***	*m*
Hydraulic Radius (R):	***0.113***	*m*
Flow Capacity (Q=1/nA(R^0.667)(S^0.5)):	***0.120***	m^3/s
Flow Capacity:	***119.5***	*L/s*
Velocity (Full Flow)	***0.75***	*m/s*

TABLE 4 : PIPE SIZING AND DESIGN

Manhole/Downspout		Area		"C"	AC		Tc	2-Year Intensity	Peak Flow	Dia.	Pipe		Cap.	% Capacity	Velocity Full Flow
From	To	Incr.			Incr.	Cumm.		Incr.			Slope	Length			
		m^2	hectares				min.	mm/hr.	L/s	mm	%	m	L/s		m/s
CB 1	CB 2	826.0	0.08	0.25	0.021	0.02	60.00	25.0	1.44	200.00	0.45	24.00	23.8	6.0	0.76
CB 2	CB 3	467.0	0.05	0.25	0.012	0.03	60.00	25.0	2.25	200.00	0.45	20.00	23.8	9.4	0.76
CB 3	CB 4	486.0	0.05	0.25	0.012	0.04	60.00	25.0	3.09	200.00	0.45	20.00	23.8	13.0	0.76
CB 4	CBMH 5	692.0	0.07	0.25	0.017	0.06	60.00	25.0	4.29	200.00	0.45	30.00	23.8	18.0	0.76
CBMH 5	CB 6	3230.0	0.32	0.25	0.081	0.14	60.00	25.0	9.91	300.00	0.30	30.00	57.3	17.3	0.81
CB 6	CB 7	1215.0	0.12	0.25	0.030	0.17	60.00	25.0	12.02	300.00	0.30	30.00	57.3	21.0	0.81
CB 7	CB 8	1182.0	0.12	0.25	0.030	0.20	60.00	25.0	14.07	300.00	0.30	30.00	57.3	24.6	0.81
CB 8	CBMH 9	1058.0	0.11	0.25	0.026	0.23	60.00	25.0	15.91	300.00	0.30	30.00	57.3	27.8	0.81
CB 10	CB 11	936.0	0.09	0.25	0.023	0.02	60.00	25.0	1.63	200.00	0.45	28.00	23.8	6.8	0.76
CB 11	CB 12	2460.0	0.25	0.25	0.062	0.08	60.00	25.0	5.90	200.00	0.45	25.00	23.8	24.8	0.76
CB 12	CB 13	383.0	0.04	0.25	0.010	0.09	60.00	25.0	6.57	200.00	0.45	25.00	23.8	27.6	0.76
CB 13	CB 14	381.0	0.04	0.25	0.010	0.10	60.00	25.0	7.23	300.00	0.30	25.00	57.3	12.6	0.81
CB 14	CBMH 15	377.0	0.04	0.25	0.009	0.11	60.00	25.0	7.88	300.00	0.30	29.00	57.3	13.8	0.81
CBMH 15	CB 16	780.0	0.08	0.25	0.020	0.13	60.00	25.0	9.24	300.00	0.30	28.00	57.3	16.1	0.81
CB 19	CB 15	1282.0	0.13	0.25	0.032	0.03	60.00	25.0	2.23	150.00	1.00	33.00	16.5	13.5	0.93
CB 16	CB 17	796.0	0.08	0.25	0.020	0.18	60.00	25.0	12.85	300.00	0.30	30.00	57.3	22.4	0.81
CB 18	CB 17	1245.0	0.12	0.25	0.031	0.03	60.00	25.0	2.16	150.00	1.00	33.00	16.5	13.1	0.93
CB 17	CBMH 9	900.0	0.09	0.25	0.023	0.24	60.00	25.0	16.58	300.00	0.30	30.00	57.3	28.9	0.81
								Restricted Flow							
CBMH 9	STM MH #1	1058.0	0.11	0.25	0.026	0.49	60.00	25.0	38.50	375.00	0.15	44.00	73.5	52.4	0.67
STM MH #1	STM MH #2	52000.0	5.20	0.25	1.300	1.30	60.00	25.0	90.35	450.00	0.15	60.00	119.5	75.6	0.75
STM MH #2	OUTLET	52000.0	5.20	0.25	1.300	1.30	60.00	25.0	90.35	450.00	0.15	7.00	119.5	75.6	0.75

Manning's Formula for Outlet Pipe Size:

Diameter:	*0.150*	*m*	*0.200*	*m*	*0.300*	*m*	*0.375*	*m*	*0.450*	*m*
Slope:	*1.000*	*%*	*0.450*	*%*	*0.300*	*%*	*0.150*	*%*	*0.150*	*%*
Mannings "n" (SDR36-PVC):	*0.012*	*unitless*	*0.012*	*unitless*	*0.012*	*unitless*	*0.012*	*unitless*	*0.012*	*unitless*
X-sectional Area (A):	*0.018*	m^2	*0.031*	m^2	*0.071*	m^2	*0.110*	m^2	*0.159*	m^2
Wetted Perimeter (P):	*0.471*	*m*	*0.628*	*m*	*0.942*	*m*	*1.178*	*m*	*1.414*	*m*
Hydraulic Radius (R):	*0.038*	*m*	*0.050*	*m*	*0.075*	*m*	*0.094*	*m*	*0.113*	*m*
Flow Capacity (Q=1/nA(R^0.667)(S^0.5)):	***0.016***	m^3/s	***0.024***	m^3/s	***0.057***	m^3/s	***0.074***	m^3/s	***0.120***	m^3/s
Flow Capacity:	***16.5***	*L/s*	***23.8***	*L/s*	***57.3***	*L/s*	***73.5***	*L/s*	***119.5***	*L/s*

TABLE 5 - FLOW STORAGE REQUIREMENTS (2 -YR)

COMPOSITE AREA - POST DEVELOPMENT (C =0.95)

DURATION	INTENSITY (mm/hr)	QPOST A x C(COMPOSITE) (ha)	QPOST A x C x I (L/s)	STORM VOLUME (L)	OUTFLOW RATE (L/s)	RELEASE VOLUME (L)	REQUIRED STORAGE (L)	REQUIRED STORAGE m^3
5	147	2.147	882	264501.7	38.5	11550	252951.7	253.0
10	90	2.147	538	322942.4	38.5	23100	299842.4	299.8
15	67	2.147	403	362943.7	38.5	34650	328293.7	328.3
20	55	2.147	329	394295.4	38.5	46200	348095.4	348.1
25	47	2.147	280	420466.8	38.5	57750	362716.8	362.7
30	41	2.147	246	443134.9	38.5	69300	373834.9	373.8
35	37	2.147	221	463251.3	38.5	80850	382401.3	382.4
40	33	2.147	201	481413.5	38.5	92400	389013.5	389.0
45	31	2.147	184	498024.0	38.5	103950	394074.0	394.1
50	28	2.147	171	513367.5	38.5	115500	397867.5	397.9
55	27	2.147	160	527654.3	38.5	127050	400604.3	400.6
60	25	2.147	150	541044.0	38.5	138600	402444.0	402.4
65	24	2.147	142	553661.2	38.5	150150	403511.2	403.5
70	22	2.147	135	565605.0	38.5	161700	403905.0	403.9
75	21	2.147	128	576956.0	38.5	173250	403706.0	403.7
80	20	2.147	122	587780.2	38.5	184800	402980.2	403.0
85	20	2.147	117	598132.9	38.5	196350	401782.9	401.8
90	19	2.147	113	608060.6	38.5	207900	400160.6	400.2
95	18	2.147	108	617603.0	38.5	219450	398153.0	398.2
100	17	2.147	104	626794.3	38.5	231000	395794.3	395.8

TABLE 6 - FLOW STORAGE REQUIREMENTS (100 -YR)

COMPOSITE AREA - POST DEVELOPMENT (C =0.95)

DURATION	INTENSITY (mm/hr)	QPOST A x C(COMPOSITE) (ha)	QPOST A x C x I (L/s)	STORM VOLUME (L)	OUTFLOW RATE (L/s)	RELEASE VOLUME (L)	REQUIRED STORAGE (L)	REQUIRED STORAGE m^3
5	302	2.147	1813	543815.4	38.5	11550	532265.4	532.3
10	184	2.147	1107	663969.5	38.5	23100	640869.5	640.9
15	138	2.147	829	746212.3	38.5	34650	711562.3	711.6
20	112	2.147	676	810671.3	38.5	46200	764471.3	764.5
25	96	2.147	576	864479.8	38.5	57750	806729.8	806.7
30	84	2.147	506	911085.3	38.5	69300	841785.3	841.8
35	75	2.147	454	952444.6	38.5	80850	871594.6	871.6
40	69	2.147	412	989786.2	38.5	92400	897386.2	897.4
45	63	2.147	379	1023937.2	38.5	103950	919987.2	920.0
50	59	2.147	352	1055483.6	38.5	115500	939983.6	940.0
55	55	2.147	329	1084957.2	38.5	127050	957907.2	957.8
60	51	2.147	309	1112386.5	38.5	138600	973786.5	973.8
65	49	2.147	292	1138327.4	38.5	150150	988177.4	988.2
70	46	2.147	277	1162883.9	38.5	161700	1001183.9	1001.2
75	44	2.147	264	1186221.5	38.5	173250	1012971.5	1013.0
80	42	2.147	252	1208476.1	38.5	184800	1023676.1	1023.7
85	40	2.147	241	1229761.2	38.5	196350	1033411.2	1033.4
90	39	2.147	232	1250172.6	38.5	207900	1042272.6	1042.3
95	37	2.147	223	1269791.8	38.5	219450	1050341.8	1050.3
100	36	2.147	215	1288689.0	38.5	231000	1057689.0	1057.7
105	35	2.147	207	1306925.0	38.5	242550	1064375.0	1064.4
110	33	2.147	201	1324552.7	38.5	254100	1070452.7	1070.5
115	32	2.147	194	1341618.7	38.5	265650	1075968.7	1076.0
120	31	2.147	189	1358184.4	38.5	277200	1080984.4	1081.0
125	30	2.147	183	1374226.2	38.5	288750	1085476.2	1085.5
130	30	2.147	178	1389836.8	38.5	300300	1089536.8	1089.5
135	29	2.147	173	1405025.7	38.5	311850	1093175.7	1093.2
140	28	2.147	169	1419819.1	38.5	323400	1096419.1	1096.4
145	27	2.147	165	1434241.0	38.5	334950	1099291.0	1099.3
150	27	2.147	161	1448313.0	38.5	346500	1101813.0	1101.8
155	26	2.147	157	1462054.8	38.5	358050	1104004.8	1104.0
160	26	2.147	154	1475484.6	38.5	369600	1105884.6	1105.9
165	25	2.147	150	1488618.8	38.5	381150	1107468.8	1107.5
170	24	2.147	147	1501472.6	38.5	392700	1108772.6	1108.8
175	24	2.147	144	1514060.0	38.5	404250	1109810.0	1109.8
180	24	2.147	141	1526393.9	38.5	415800	1110593.9	1110.6
185	23	2.147	139	1538486.2	38.5	427350	1111136.2	1111.1
190	23	2.147	136	1550347.9	38.5	438900	1111447.9	1111.4
195	22	2.147	134	1561989.5	38.5	450450	1111539.5	1111.5
200	22	2.147	131	1573420.4	38.5	462000	1111420.4	1111.4
205	21	2.147	129	1584649.6	38.5	473550	1111099.6	1111.1
210	21	2.147	127	1595685.5	38.5	485100	1110585.5	1110.6
215	21	2.147	125	1606535.8	38.5	496650	1109885.8	1109.9
220	20	2.147	123	1617207.9	38.5	508200	1109007.9	1109.0
225	20	2.147	121	1627706.6	38.5	519750	1107956.8	1108.0

Therefore 1,112 cubic meters of storage must be provided for th 1:100 year storm.

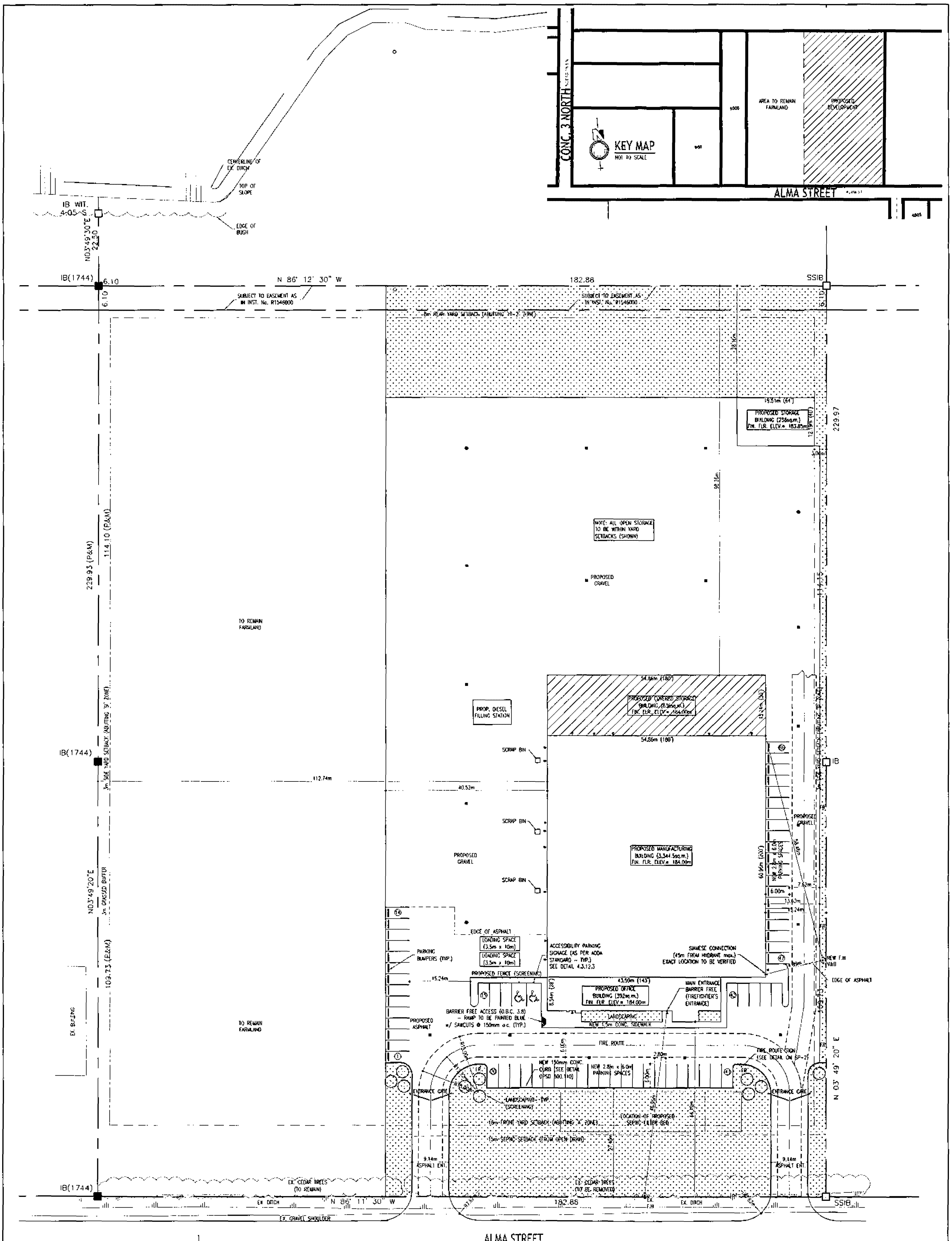
TABLE 7 - STORAGE AVAILABILITY (PONDING TO ELEVATION 183.80)

	Max. Pond Elevation m	T/G Elevation m	Elevation - Outlet Invert m	Max. Pipe Excav.Depth m	Min. Pipe Cover * m	Ponding Area m^2	Max. Pond Depth m	Division Factor** unitless	Ponding Volume m^3
CATCHMENT AREA 1	183.80	183.55	182.45	1.35	1.10	363.0	0.25	3	30.3
CATCHMENT AREA 2	183.80	183.55	182.34	1.46	1.21	363.0	0.25	3	30.3
CATCHMENT AREA 3	183.80	183.55	182.25	1.55	1.30	404.0	0.25	3	33.7
CATCHMENT AREA 4	183.80	183.60	182.16	1.64	1.44	595.0	0.20	3	39.7
CATCHMENT AREA 5	183.80	183.50	182.02	1.78	1.48	1018.0	0.30	3	101.8
CATCHMENT AREA 6	183.80	183.50	181.93	1.87	1.57	1058.0	0.30	3	105.8
CATCHMENT AREA 7	183.80	183.50	181.84	1.96	1.66	1058.0	0.30	3	105.8
CATCHMENT AREA 8	183.80	183.50	181.75	2.05	1.75	1058.0	0.30	3	105.8
CATCHMENT AREA 9	183.80	183.50	181.66	2.14	1.84	1058.0	0.30	3	105.8
CATCHMENT AREA 10	183.80	183.55	182.45	1.35	1.10	575.0	0.25	3	47.9
CATCHMENT AREA 11	183.80	183.65	182.32	1.48	1.33	243.0	0.15	3	12.2
CATCHMENT AREA 12	183.80	183.65	182.21	1.59	1.44	270.0	0.15	3	13.5
CATCHMENT AREA 13	183.80	183.65	182.10	1.70	1.55	270.0	0.15	3	13.5
CATCHMENT AREA 14	183.80	183.65	182.02	1.78	1.63	335.0	0.15	3	16.8
CATCHMENT AREA 15	183.80	183.65	181.93	1.87	1.72	456.0	0.15	3	22.8
CATCHMENT AREA 16	183.80	183.50	181.84	1.96	1.66	796.0	0.30	3	79.6
CATCHMENT AREA 17	183.80	183.50	181.75	2.05	1.75	900.0	0.30	3	90.0
CATCHMENT AREA 18	183.80	183.50	182.35	1.45	1.15	1125.0	0.30	3	112.5
CATCHMENT AREA 19	183.80	183.50	182.35	1.45	1.15	1125.0	0.30	3	112.5
PIPE STORAGE						Pipe Area mm^2	Total Pipe Length m		Pipe Storage m^3
150mm PIPE						17671.4	66.0		1.2
200mm PIPE						31415.9	172.0		5.4
300mm PIPE						70685.8	262.0		18.5
MAX. TOTAL POND VOLUME									1205.1

* Minimum Pipe cover refers to difference between pipe invert and minimum final grade at catchbasin.
** Division Factor for pyramidal ponding = 3 and for triangular ponding = 2.5 and for side slopes = 1.15

Available storage is adequate to hold the excess flow from the 100 year post-development storm as per table 6.

APPENDIX B – Drawings SP-1 to SP-4



SITE PLAN
SCALE: 1:400

DOOR SCHEDULE
- △ - MANDOOR
- △ - OVERHEAD DOOR

LIGHTING NOTES
- ALL EXTERIOR LIGHTING FULL CUT-OFF AND "DARK SKY" COMPLIANT

SPECIAL INDUSTRIAL ZONE (SI) ZONING BY-LAW REQUIREMENTS

BUILDING	REQUIREMENT	PROPOSED
LOT AREA (min.)	1,100sq.m.	42,045sq.m.
LOT FRONTAGE (min.)	30.0m	182.88m
FRONT YARD DEPTH (min.)	18.0m	44.19m
EAST INT. SIDE YARD (min.)	3.0m	15.24m 3.00m (Shed)
WEST INT. SIDE YARD (min.)	3.0m	112.75m
REAR YARD DEPTH (min.)	8.0m	98.27m 28.16m (Shed)
LOT COVERAGE (max.)	60%	11.44%
LANDSCAPED SPACE (min.)	10.0%	55.6%
BUILDING HEIGHT (max.)	12.0m	9.14m (max.)

PARKING REQUIREMENTS

BUILDING USE	PARKING SPACE REQUIREMENTS
OFFICE	1.0 SPACES/40 sq.m. =392 sq.m./40 sq.m. =9.8 (10 SPACES)
MANUFACTURING	1.0 SPACES/100 sq.m. = 3,345 sq.m./100 sq.m = 33.4 (34 SPACES)
TOTAL SPACES REQUIRED = 44 SPACES TOTAL SPACES PROVIDED = 64 SPACES	
BARRIER FREE PARKING REQUIRED = 2	
B.F. PARKING SPACES PROVIDED = 2	

REVISIONS	ISSUED FOR	DATE
	OWNER APPROVAL	APR. 5/18
	OWNER APPROVAL/PRELIMINARY SITE PLAN REVIEW	MAY 8/18
	REVISED AS PER OWNER	JUNE 15/18
	SITE PLAN APPROVAL	JULY 10/18

PROJECT

PROPOSED TRUSS PLANT AND OFFICES FOR SUPERIOR ENGINEERED WOOD PRODUCTS

1500 ALMA STREET — AMHERSTBURG, ONTARIO

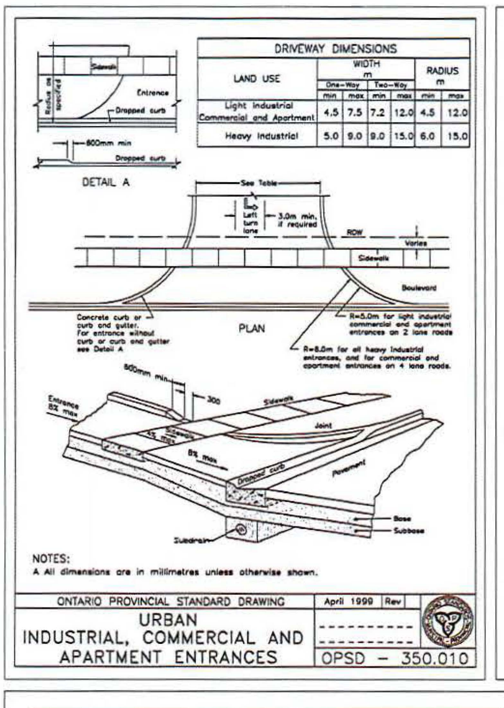
SHEET TITLE

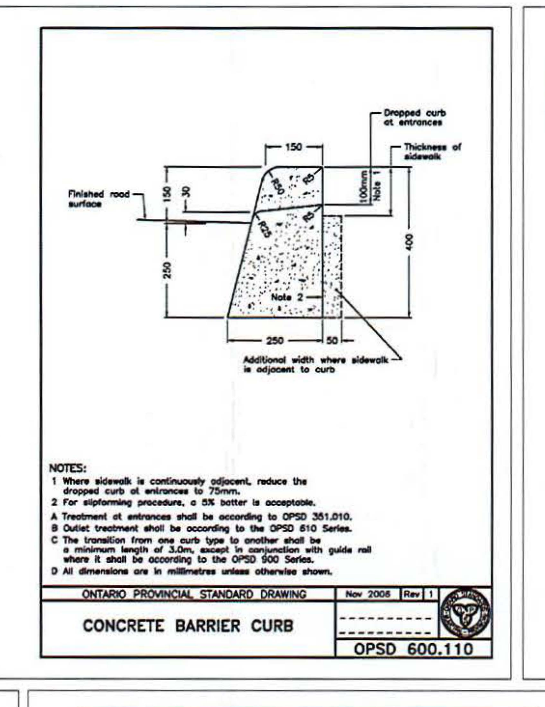
SITE PLAN

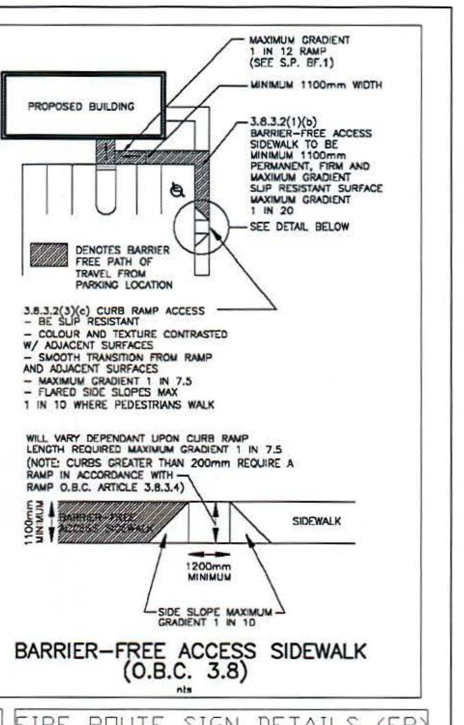
LICENSED PROFESSIONAL ENGINEER — 07/10/18 — M.K.MCFADDEN — 100098313 — PROVINCE OF ONTARIO

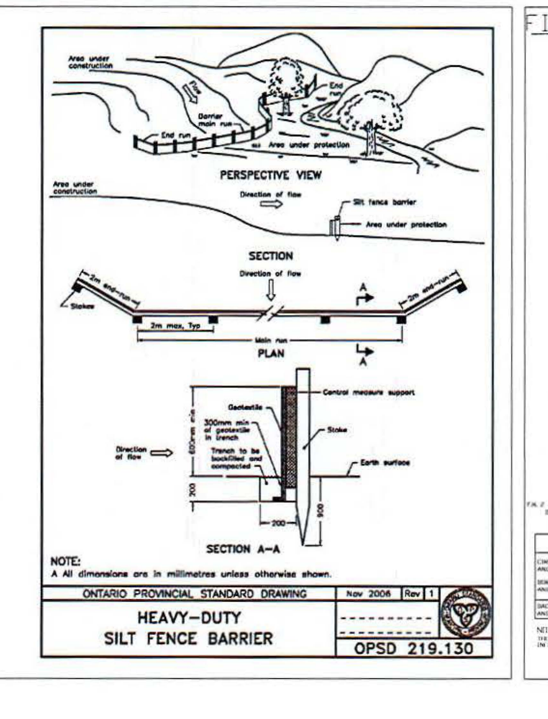
Y.C. LIU ENGINEERING

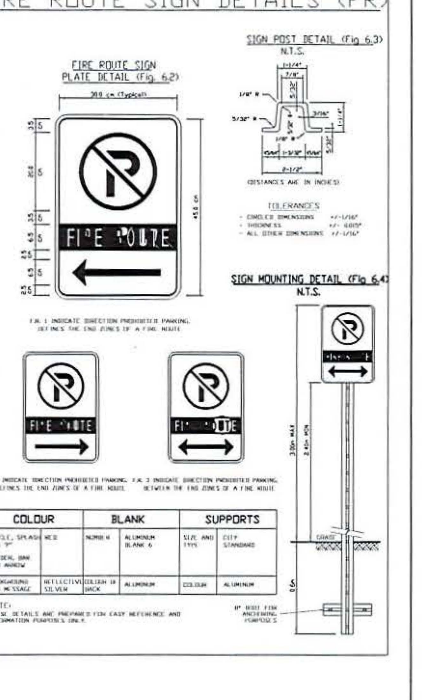
DRAWN	CHECKED	FILE NO.	DWG. NO.
M.M.	C.L.	17-111	1
BCIN	FIRM BCIN	DATE	SHEET NO.
20529	29635	JUNE/17	SP-1 of 4

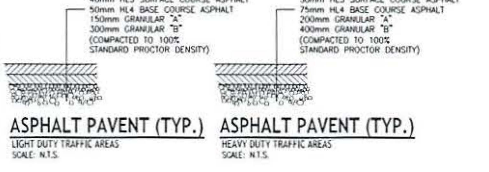












ASPHALT PAVENT (TYP.)
LIGHT DUTY TRAFFIC AREAS
SCALE: N.T.S.

ASPHALT PAVENT (TYP.)
HEAVY DUTY TRAFFIC AREAS
SCALE: N.T.S.

CONSTRUCTION NOTES:

1. GENERAL
- SITE PLAN PROVIDED BY Y.C. LIU ENGINEERING
- LEGAL SURVEY PROVIDED BY VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC. (FILE NO. E-AND-3-1)
- ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS, AND THE MINISTRY OF THE ENVIRONMENT AND ENERGY GUIDELINES (LATEST EDITION)
- THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION
- CONTRACTOR RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO THE START OF CONSTRUCTION

2. EROSION CONTROL MEASURE NOTES:
- PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION
- ALL EROSION CONTROL MEASURES ARE TO BE IN PLACE BEFORE STARTING CONSTRUCTION AND REMAIN UNTIL RESTORATION IS COMPLETE
- MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
- ALL COLLECTED SEDIMENT MUST BE DISPOSED OF AT AN APPROVED LOCATION
- PROTECT ALL CB'S, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE (TERRAFIX 270R)
- KEEP ALL SUMPS CLEAN DURING CONSTRUCTION
- PREVENT WIND BLOWN DUST
- OBTAIN APPROVAL FROM E.R.C.A PRIOR TO CONSTRUCTION FOR WORKS WHICH ARE IN, OR ADJACENT TO FLOODLINES, FILL LINES, AND HAZARDOUS SLOPES
- STRAW BALES TO BE USED IN LOCALIZED AREAS AND AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION FOR THE WORKS WHICH ARE IN OR ADJACENT TO FLOODLINES, FILL LINES, AND HAZARDOUS SLOPES
- STRAW BALES TO BE TERMINATED BY ROUNDING BALES TO CONTAIN AND FILTER RUNOFF
- OBTAIN APPROVAL FROM ERCA PRIOR TO CONSTRUCTION FOR WORKS WHICH ARE IN, OR ADJACENT TO FLOODLINES, FILL LINES, AND HAZARDOUS SLOPES
- ALL SILT FENCING AND DETAILS, ALL OF THE ABOVE NOTES AND ANY SEDIMENT & EROSION CONTROL MEASURES ARE AT THE MINIMUM TO BE IN ACCORDANCE WITH THE M.N.R. GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES

3. FIRE ROUTES (O.B.C SUBSECTION 3.2.5.)
- LOCATED NOT LESS THAN 3m (9'-10") AND NOT MORE THAN 15m (49'-3") FROM THE BUILDING
- FIRE HYDRANT TO BE MAX. 45m (147'-8" TO THE FIRE DEPARTMENT CONNECTION AND 90m (295'-3") TO PRINCIPLE ENTRANCE WHEN NO FIRE CONNECTIONS ARE REQUIRED
- OVERHEAD CLEARANCE NOT LESS THAN 5m (16'-5")
- CHANGE IN GRADIENT NOT MORE THAN 1 IN 12.5m OVER A MINIMUM DISTANCE OF 15m
- MUST BE DESIGNED TO SUPPORT THE EXPECTED LOADS IMPOSED BY FIRE FIGHTING EQUIPMENT AND BE SURFACED WITH CONCRETE, ASPHALT, OR OTHER MATERIAL DESIGNED TO PERMIT ACCESSIBILITY UNDER ALL CLIMATIC CONDITIONS
- HAVE TURNAROUND FACILITIES FOR ANY DEAD-END PORTION OF THE ACCESS ROUTE MORE THAN 90m (295'-3") LONG
- HAVE ACCESS OPENINGS EVERY 15m (49'-3") ON WALLS REQUIRED TO FACE A FIRE ROUTE UNLESS BUILDING IS SPRINKLERED
- FIRE ROUTE SIGNS TO BE MOUNTED 3m IN HEIGHT MEASURED FROM THE TOP LIMIT OF THE SIGN TO THE GRADE OF THE FIRE ROUTE SURFACE ADJACENT TO THE FIRE ROUTE SIGN
- SIGNS TO BE SPACED NOT MORE THAN 30m (100ft.) BETWEEN SIGNS LOCATED ON THE SAME SIDE OF THE FIRE ROUTE AND SPACED SUCH THAT AT LEAST TWO SIGNS ARE CLEARLY VISIBLE AND LETTERING IS LEGIBLE FROM ALL LOCATIONS WITHIN THE FIRE ROUTE
- THE PROPERTY OWNER IS RESPONSIBLE TO ENSURE THAT PHYSICAL OBSTRUCTIONS ARE NOT PLACED OR CONSTRUCTED IN LOCATIONS THAT INTERFERE WITH THE VISIBILITY AND/OR LEGIBILITY OF ANY FIRE ROUTE SIGN AND TO ENSURE SUFFICIENT MAINTENANCE OF VEGETATION SUCH THAT UNOBSTRUCTED VIEWS FROM ALL FIRE ROUTE SIGNS ARE MAINTAINED AT ALL TIMES AND UNDER ALL CIRCUMSTANCES

4. RECOMMENDED MINIMUM PAVEMENT STRUCTURE FOR ASPHALT SURFACES:
LIGHT DUTY:
- 150mm GRANULAR 'A' COMPACTED TO 100% S.P.M.D.D.
- 300mm GRANULAR 'B' COMPACTED TO 100% S.P.M.D.D.
- 40mm HL3 SURFACE ASPHALT COMPACTED TO 92-97% M.R.D.
- 50mm HL4 BINDER ASPHALT COMPACTED TO 92-97% M.R.D.

HEAVY DUTY:
- 200mm GRANULAR 'A' COMPACTED TO 100% S.P.M.D.D.
- 400mm GRANULAR 'B' COMPACTED TO 100% S.P.M.D.D.
- 50mm HL3 SURFACE ASPHALT COMPACTED TO 92-97% M.R.D.
- 75mm HL4 BINDER ASPHALT COMPACTED TO 92-97% M.R.D.

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	SITE PLAN APPROVAL	JULY 10/18

PROJECT
PROPOSED TRUSS PLANT AND OFFICES
FOR
SUPERIOR ENGINEERED WOOD PRODUCTS

1500 ALMA STREET — AMHERSTBURG, ONTARIO

SHEET TITLE
SITE PLAN DETAILS AND NOTES

LICENSED PROFESSIONAL ENGINEER
07/10/18
M.K.MCFADDEN
100098313
PROVINCE OF ONTARIO

Y.C. LIU ENGINEERING

DRAWN	CHECKED	FILE NO.	DWG. NO.
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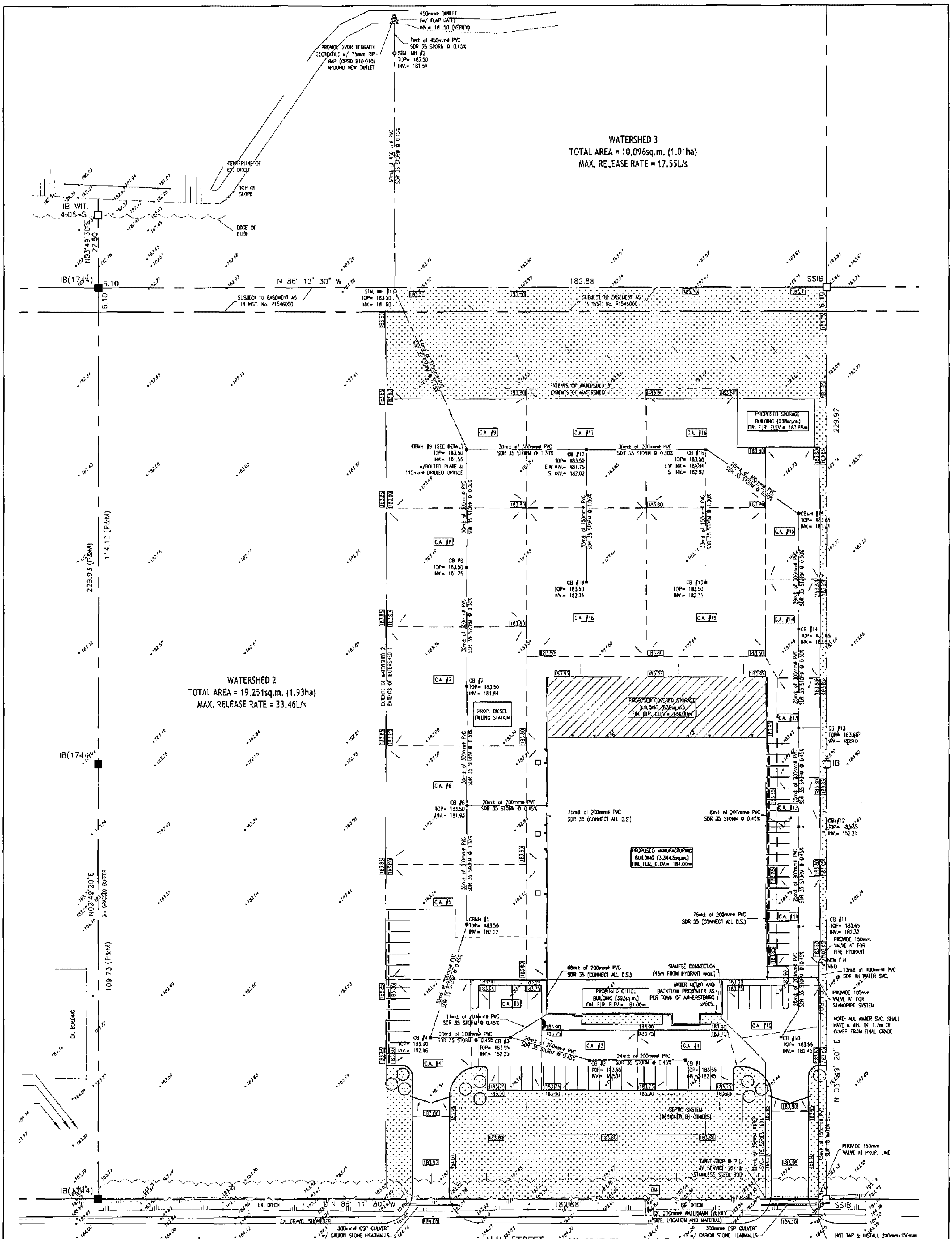
20529	29635	JUNE/17	SP-2 of 4



STORMWATER MANAGEMENT PLAN

SCALE: 1:400

BM NOTE: SITE BENCHMARK USED, TOP NUT OF FIRE HYDRANT TO SOUTH OF DEVELOPMENT ELEVATION = 184.66m

CATCHMENT AREA STORAGE CAPACITY CHART
(MAX. 100-YEAR PONDING ELEVATION = 183.80m)

CATCHMENT AREA (C.A)	STORAGE DEPTH (mm)	STORAGE AREA (sq.m.)	STORAGE VOLUME (cu.m.)
1	250mm	363.0sq.m.	30.3cu.m.
2	250mm	363.0sq.m.	30.3cu.m.
3	250mm	404.0sq.m.	33.7cu.m.
4	200mm	595.0sq.m.	39.7cu.m.
5	300mm	1,018.0sq.m.	101.8cu.m.
6	300mm	1,058.0sq.m.	105.8cu.m.
7	300mm	1,058.0sq.m.	105.8cu.m.
8	300mm	1,058.0sq.m.	105.8cu.m.
9	300mm	1,058.0sq.m.	105.8cu.m.
10	250mm	575.0sq.m.	47.9cu.m.
11	150mm	243.0sq.m.	12.2cu.m.
12	150mm	270.0sq.m.	13.5cu.m.
13	150mm	270.0sq.m.	13.5m.
14	150mm	335.0sq.m.	16.8cu.m.
15	150mm	456.0sq.m.	22.8cu.m.
16	300mm	796.0sq.m.	79.6cu.m.
17	300mm	900.0sq.m.	90.0cu.m.
18	300mm	1,125.0sq.m.	112.5cu.m.
19	300mm	1,125.0sq.m.	112.5cu.m.
		PIPE STORAGE CAPACITY	25.1cu.m.
		TOTAL STORAGE CAPACITY	1,205.1cu.m.
		TOTAL STORAGE REQUIRED	1,112cu.m.

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PROJECT

PROPOSED TRUSS PLANT AND OFFICES
FOR
SUPERIOR ENGINEERED WOOD PRODUCTS

1501 ALMA STREET — AMHERSTBURG, ONTARIO

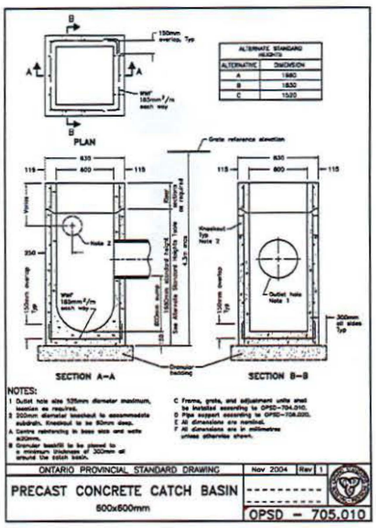
SHEET TITLE

STORMWATER MANAGEMENT PLAN

LICENSED PROFESSIONAL ENGINEER 07/10/18 M.K.MCFADDEN 100098313 PROVINCE OF ONTARIO

Y.C. LIU ENGINEERING

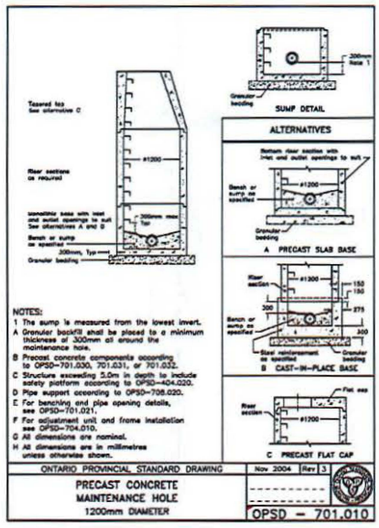
DRAWN	CHECKED	FILE NO.	DWG. NO.
M.M.	C.L.	17-111	3
BCIN	FIRM BCIN	DATE	SHEET NO.
20529	29635	JUNE/17	SP-3 of 4



ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2004 | Rev 1

PRECAST CONCRETE CATCH BASIN
600x600mm

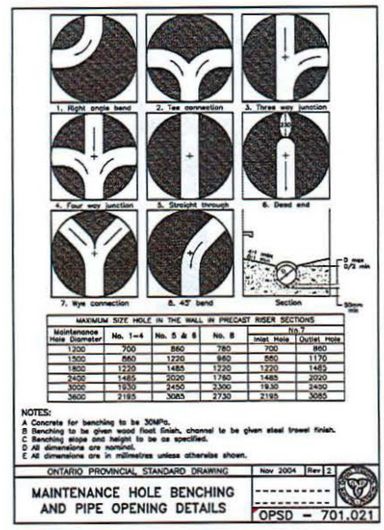
OPSD – 705.010



ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2004 | Rev 3

PRECAST CONCRETE MAINTENANCE HOLE
1200mm DIAMETER

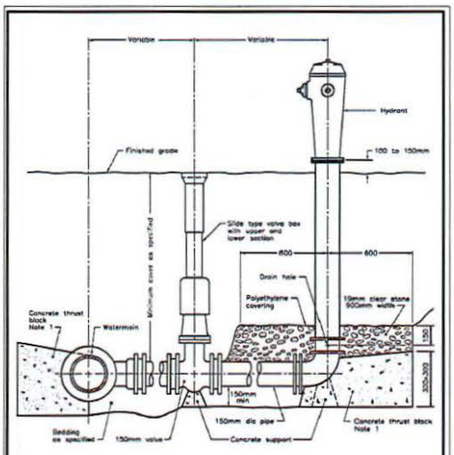
OPSD – 701.010



ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2004 | Rev 2

MAINTENANCE HOLE BENCHING AND PIPE OPENING DETAILS

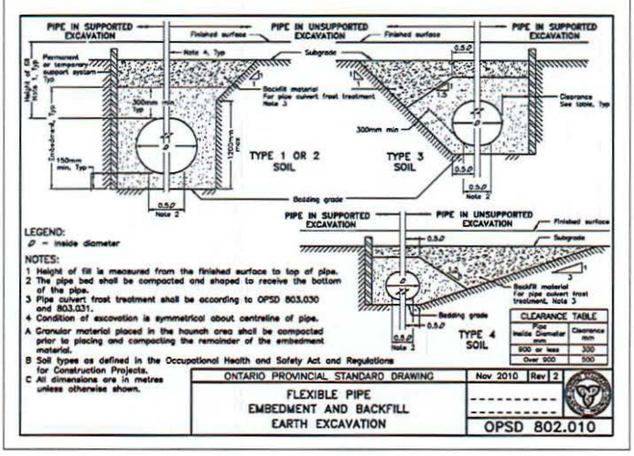
OPSD – 701.021



ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2006 | Rev 1

HYDRANT INSTALLATION

OPSD 1105.010



ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2010 | Rev 2

FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION

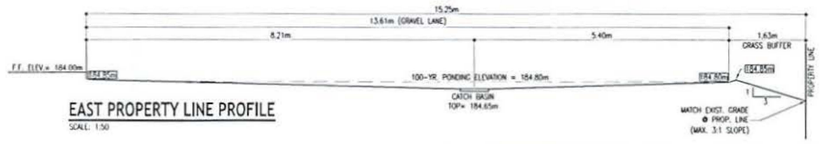
OPSD 802.010

WATERSHED 3
TOTAL AREA = 10,157sq.m. (1.02ha)
MAX. RELEASE RATE = 17.65L/s

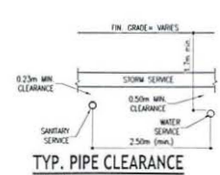
WATERSHED 2
TOTAL AREA = 19,251sq.m. (1.92ha)
MAX. RELEASE RATE = 33.44L/s

WATERSHED 1
TOTAL AREA = 22,592sq.m. (2.26ha)
MAX. RELEASE RATE = 39.26L/s
ACTUAL RELEASE RATE = 38.5L/s

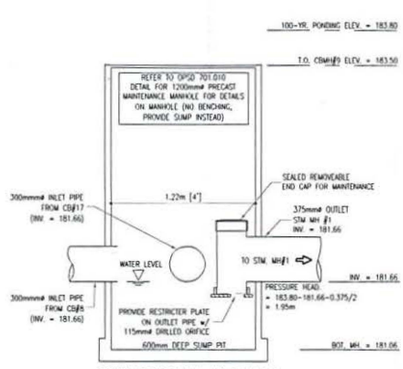
ALLOWABLE RELEASE RATES
SCALE: 1:1000



EAST PROPERTY LINE PROFILE
SCALE: 1:50



TYP. PIPE CLEARANCE
SCALE: 1:50



OUTLET CBMH #9 DETAIL
SCALE: 1:20

SERVICING NOTES:

1. SEWERS
- BACKFILL AND SEWER BEDDING AS PER OPSD 802.010, 802.013, 802.014
- ALL BEDDING AND COVER MATERIAL TO BE GRANULAR 'A' OR 19mm CRLS COMPACTED TO 95% SPMDD
- CB LEADS TO BE ONE OF CONCRETE OR PVC THROUGHOUT
- STORM SEWER PIPE TO BE PVC SDR 35 OR BOSS 2000
- SANITARY SEWER PIPE TO BE PVC SDR 28

2. MANHOLES/CATCHBASINS
- STORM MANHOLES AS OPSD 701.010 WITH FRAME AND COVER
- PRECAST CATCHBASINS AS PER OPSD 705.010 WITH FRAME AND GRATE
- MINIMUM HORIZONTAL CLEARANCE BETWEEN SEWER AND WATER SERVICE IS 2.5m. WHERE THE WATERMAIN PASSES OVER THE SEWER, MINIMUM VERTICAL CLEARANCE IS 0.15m AND 0.50m WHERE THE WATERMAIN PASSES UNDER THE SEWER

3. WATERMAINS
- WATERMAINS/SERVICES MIN. COVER 1.7M BELOW FINISHED GRADE
- WATER SERVICE TO BE INSTALLED AS PER TOWN STANDARDS WITH GRANULAR 'A' BEDDING AND COVER
- PVC WATERMAIN IN SIZES 100mm THROUGH TO 300mm SHALL BE CLASS 150 DR18 CONFORMING TO AWWA C900. TRACER WIRE (12GAUGE min.) SHALL BE INSTALLED ON PVC WATERMAIN WITHIN THE ROAD ALLOWANCE
- CORROSION PROTECTION MEASURES FOR METAL WATER MAIN COMPONENTS TO INCLUDE DENSO MASTIC/TAPE AND SAC CAPS.
- MINIMUM HORIZONTAL CLEARANCE BETWEEN SEWER AND WATER SERVICE IS 2.5m. WHERE THE WATERMAIN PASSES OVER THE SEWER, MINIMUM VERTICAL CLEARANCE IS 0.15m AND 0.50m WHERE THE WATERMAIN PASSES UNDER THE SEWER
- ALL WATERWORKS CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS OF THE MUNICIPALITY OF LEAMINGTON ENGINEERING DEPARTMENT

4. GRADING NOTES
- EXISTING GROUND ELEVATIONS TO BE MAINTAINED ALONG PERIMETER OF SITE UNLESS SPECIFIED OTHERWISE
- ALL DISTURBED AREAS TO BE REINSTATED TO EXISTING CONDITIONS OR BETTER. LANDSCAPE AREAS TO BE RESTORED WITH 100mm TOPSOIL AND No. 1 NURSERY SOD
- EMBANKMENTS MAXIMUM SLOPE OF 3:1
- GRASS SURFACE MINIMUM SLOPE 1.5%
- ASPHALT PAVEMENT/CONCRETE SURFACES MINIMUM SLOPE 1.0%
- ALL SURFACE DRAINAGE SHALL BE SELF CONTAINED, COLLECTED, AND DISCHARGED AT A LOCATION TO BE APPROVED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT
- DRAINAGE OF ADJUTING PROPERTIES SHALL NOT BE ADVERSELY AFFECTED

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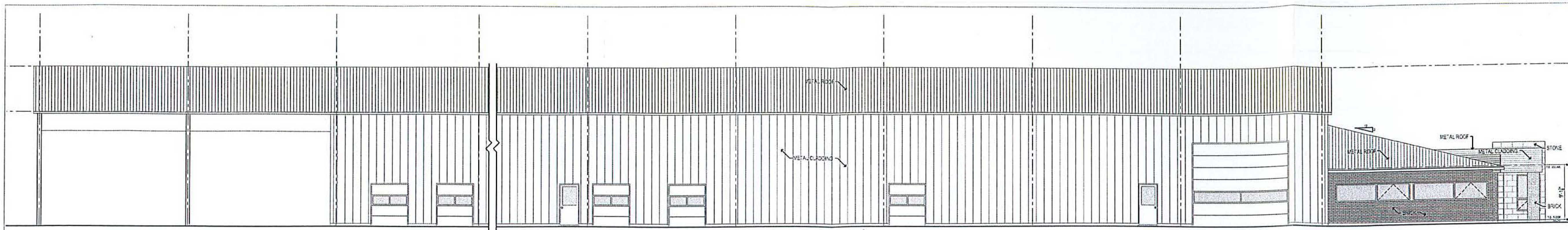
PROJECT:
PROPOSED TRUSS PLANT AND OFFICES
FOR
SUPERIOR ENGINEERED WOOD PRODUCTS
1500 ALMA STREET, LEAMINGTON, ONTARIO

DRAWING TITLE:
DRAINAGE DETAILS AND NOTES

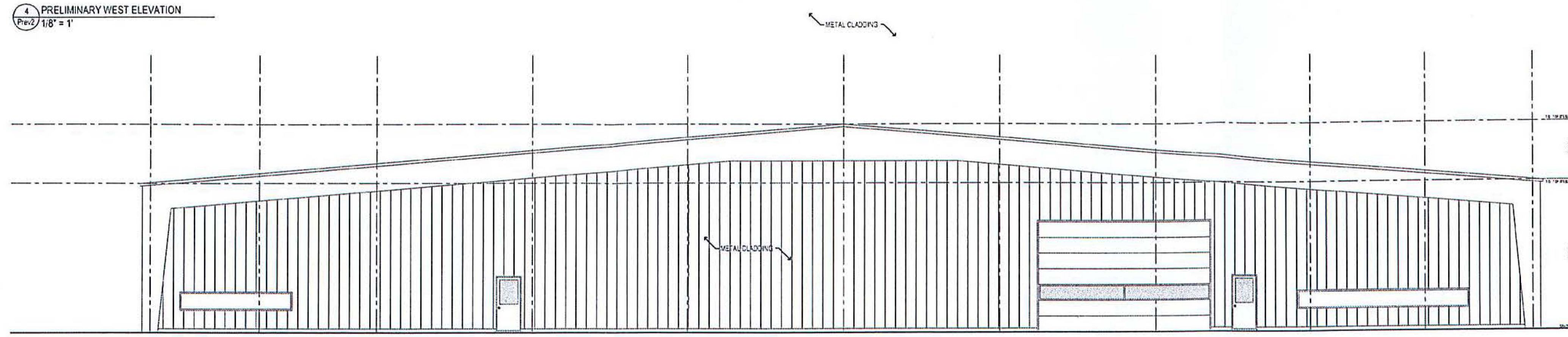
LICENSED PROFESSIONAL ENGINEER — 07/10/18 — M.K.MCFADDEN — 100098313 — PROVINCE OF ONTARIO

Y.C. LIU ENGINEERING

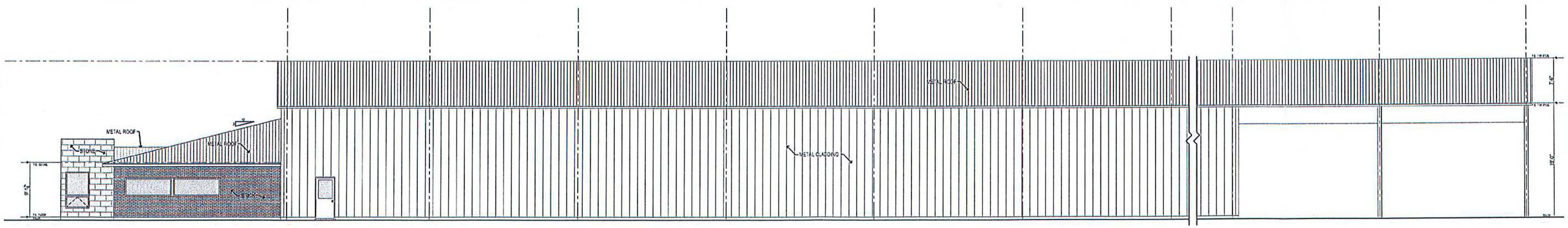
DRAWN	CHECKED	FILE NO.	DWG. NO.
M.M.	C.L.	17-111	4
RON	FRM. RON	DATE	SHEET NO.
20529	29635	JUNE/17	SP-4 of 4



4 PRELIMINARY WEST ELEVATION
Prev2 1/8" = 1'



3 PRELIMINARY NORTH ELEVATION
Prev2 1/8" = 1'



2 PARTIAL PRELIMINARY EAST ELEVATION
Prev2 1/8" = 1'

SCHEDULE "G" TO BY-LAW 2018-82

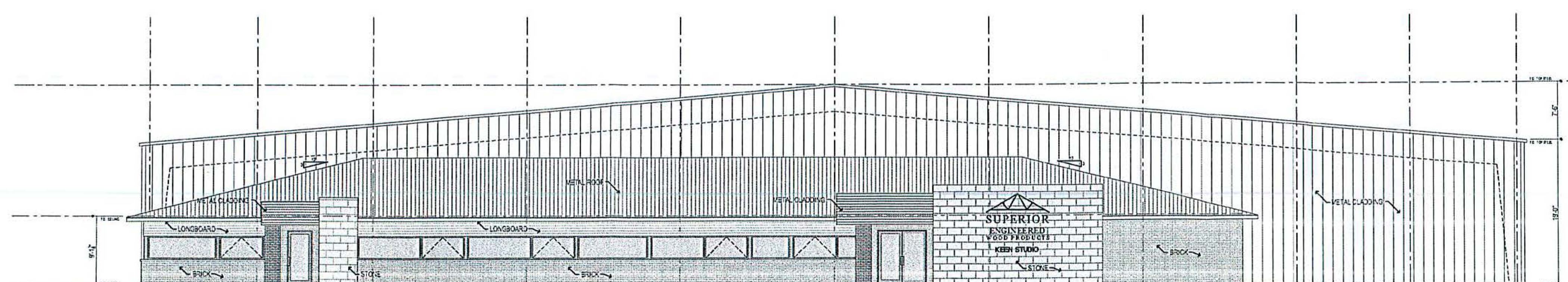
2562982 ONTARIO LIMITED

Ken Harris, President

Joseph Mikhail

TOWN OF AMHERSTBURG

Mayor- Aldo DiCarlo



1 PRELIMINARY SOUTH ELEVATION
Prev2 1/8" = 1'

NOTE: EXISTING GRADING / NEW GRADING TO BE COORDINATED BY OWNER / G.C.

PREVIEW - ELEVATIONS
16002 - SUPERIOR SHOP/OFFICE
1500 Alma St., Amherstburg, ON
Lot XX
May 10, 2018

KEEN STUDIO design + drafting