City of Mississauga
Agenda

Heritage Advisory Committee

Date
2017/10/17

Time
9:30 AM

Location
Civic Centre, Council Chamber,
300 City Centre Drive, Mississauga, Ontario, L5B 3C1 Ontario

Members
Councillor George Carlson, Ward 11 (Chair)
Rick Mateljan, Citizen Member (Vice-Chair)
Councillor Carolyn Parrish, Ward 5
Michael Battaglia, Citizen Member
Elizabeth Bjarnason, Citizen Member
Robert Cutmore, Citizen Member
Lindsay Graves, Citizen Member
James Holmes, Citizen Member
Cameron McCuaig, Citizen Member
Melissa Stolarz, Citizen Member
Matthew N. Wilkinson, Citizen Member

Contact
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NOTE: To support corporate waste reduction efforts the large appendices in this agenda can be viewed at:
http://www.mississauga.ca/portal/cityhall/ heritageadvisory.ca

Find it Online
http://www.mississauga.ca/portal/cityhall/heritageadvisory

1. CALL TO ORDER

2. APPROVAL OF AGENDA

3. DECLARATION OF CONFLICT OF INTEREST

4. MINUTES OF PREVIOUS MEETING

4.1. Approval of Minutes of September 5, 2017 Meeting

5. DEPUTATIONS

5.1. Port Credit Harbour West Parks - Jill Goldie, Parks Development and Ian Dance/Mark Hillmer, Dillon Consulting Limited

6. PUBLIC QUESTION PERIOD - 15 Minute Limit (*In accordance with Section 43 of the City of Mississauga Procedure By-law 0139-2013, persons who wish to address the Heritage Advisory Committee about a matter on the Agenda may ask their question limiting it to 5 minutes, as the public question period total limit is 15 minutes.)*

7. MATTERS TO BE CONSIDERED

7.1. Request to Alter 915 North Service Road (Ward 1)

7.2. Request to Demolish a Heritage Listed Property: 29 Plainsman Road (Ward 11)

7.3. New Construction on Listed Property: 1216 and 1222 Mississauga Road

8. SUBCOMMITTEE UPDATES

8.1. Heritage Designation Sub-Committee

8.2. Public Awareness Sub-Committee

9. INFORMATION ITEMS

10. OTHER BUSINESS

11. DATE OF NEXT MEETING - November 14, 2017

12. ADJOURNMENT

City of Mississauga
Minutes

MISSISSAUGA

Heritage Advisory Committee

Date
2017/09/05
Time
9:30 AM
Location
Civic Centre, Council Chamber,
300 City Centre Drive, Mississauga, Ontario, L5B 3C1 Ontario

Members Present
Councillor George Carlson, Ward 11 (Chair)
Councillor Carolyn Parrish, Ward 5 (left 11:03am)
Elizabeth Bjarnason, Citizen Member
Robert Cutmore, Citizen Member
James Holmes, Citizen Member
Cameron McCuaig, Citizen Member
Melissa Stolarz, Citizen Member
Matthew N. Wilkinson, Citizen Member

Members Absent
Michael Battaglia, Citizen Member
Rick Mateljan, Citizen Member (Vice-Chair)
Lindsay Graves, Citizen Member

Staff Present
Paul Damaso, Director, Culture Division
Paula Wubbenhorst, Senior Heritage Coordinator, Culture Division
Mumtaz Alikhan, Legislative Coordinator

Find it online
http://www.mississauga.ca/portal/cityhall/heritageadvisory

1. CALL TO ORDER – 9:32 am

2. APPROVAL OF AGENDA

APPROVED (M. Wilkinson)

3. DECLARATION OF CONFLICT OF INTEREST – Nil.

4. MINUTES OF PREVIOUS MEETING

4.1. Approval of Minutes - July 11, 2017
APPROVED (R. Cutmore)

5. DEPUTATIONS

5.1. Advisory Group on Land Use of Erindale Village Association - Brad Schneller and Terry Murphy

Brad Schneller and Terry Murphy, members of the Advisory group on Land Use of Erindale Village Association, addressed the Committee citing the Erindale Village community's unanimous opposition to the proposed EV Royale Condominiums development to be located at 1646 Dundas Street East. Mr. Schneller also distributed a letter dated September 4, 2017 from Rudy Mendez, Resident, on the matter. Mr. Schneller spoke to the inappropriate height and massing of the proposed development and its impact on the nearby heritage designated Erindale Village Hall. He said it does not conform with Mississauga's Official Plan Policies and the proposal does not fit into the neighbourhood.

The Committee commented as follows:

- The proposed development must go through the planning process;
- The proposal is massive and the feelings of the community as a whole are as important as the preservation of the heritage aspects;
- How will the proposed development benefit the community;
- A Heritage Conservation District Designation of Erindale Village could provide better heritage protection.

Councillor Carlson thanked Messrs. Schneller and Murphy and said that there is very little the Committee can do at this time. However, he advised residents to contact their local Councillor. Councillor Parrish suggested residents also make a deputation to Members of Council to apprise them of their concerns.

RECOMMENDATION
HAC-0059-2017

1. That the deputation from Brad Schneller and Terry Murphy, Advisory Group on Land Use of Erindale Village Association, to the Heritage Advisory Committee dated September 5, 2017, be received.

2. That the letter dated September 4, 2017 from Rudy Mendez, Resident, be received for information.

RECEIVED (Councillor C. Parrish)

5.2 Video Presentation AVRO CF-100 Canuck

Councillor Parrish presented a video prepared by a resident with respect to the restoration of the AVRO CF-100 Canuck Aircraft in Malton for the Committee's information. All the restoration is totally authentic and she spoke to designating the aircraft in the near future.

RECOMMENDATION

HAC-0060-2017

That the video presentation from Councillor C. Parrish with respect to the restoration of the AVRO CF-100 Canuck aircraft in Malton be received for information.

RECEIVED (J. Holmes)

6. PUBLIC QUESTION PERIOD – Nil.

7. MATTERS TO BE CONSIDERED

7.1. Request to Alter a Heritage Designated Property: 7089 Second Line West (Ward 11)

Peter Jordano, Architect, David Small Designs, representing the Owners, spoke to the eight modifications that were requested and advised that they have complied with six. However, he requested the Committee's consideration to allow the Owner to keep to keep the awning on the front window on the north section and retain the awning over the main entrance. The Committee agreed to allow the requested two elements to be retained.

RECOMMENDATION

HAC-0061-2017

That the request to alter the property at 7089 Second Line West, as per Appendix1 - Heritage Impact Assessment contained in the Corporate Report dated August 2, 2017 from the Commissioner of Community Services be approved with the following conditions:

1) That the garage height be reduced to comply with the Zoning by-law;

2) That the garage width be reduced so that the driveway width does not exceed six metres, the typical width of a two car garage;

3) That final building permit drawings be submitted to Heritage Planning noting all material information, including window materials;

4) That if any changes result from other City review and approval requirements such as but not limited to building permit, committee of adjustment or site plan

approval, a new heritage permit may be required. The applicant is required to contact heritage planning at that time to review the changes prior to obtaining other approvals and commencing construction;

5) That the stone facing be eliminated;

6) That the sidelights on either side of the front door on the front elevation be reduced to one single pane column on each side.

APPROVED (J. Holmes)

7.2. Request to Alter a Heritage Designated Property: 1066 Old Derry Road (Ward 11)

Alex Blanchard, Strickland Mateljan Design & Architects, shared revised drawings with the Committee showing a side door and different garage door to the original drawings submitted under Appendix 3 of the Corporate Report dated August 3, 2017 from the Commissioner of Community Services.

Mr. Holmes said that he did not have concerns to the side door addition but the garage door should reflect the original drawings. The Committee was in agreement.

RECOMMENDATION
HAC-0062-2017
That the Corporate Report dated August 3, 2017 from the Commissioner of Community Services be approved subject to the following:

1) That the request to revise the materials of the exterior finishes to modern materials be approved on an exceptional basis on the condition that any remaining unpainted wood trims be painted;

2) That the request to enclose the rear porch be approved on the condition that the rear wall elevation be revised to match the previously approved (HAC-0043-2015) rear wall elevation, specifically, the horizontal siding, pair of traditional doors and traditional sash window;

3) That the addition of a side door be approved;

4) That the garage door reflect the original drawings submitted under Appendix 3;

5) That revised drawings of the enclosure, cited in recommendation 2, are subject to approval by the Director of the Culture Division before the heritage permit is issued.

6) That if any changes result from other City review and approval requirements such as but not limited to building permit, committee of adjustment or site plan approval, a new heritage permit may be required. The applicant is required to contact heritage planning at that time to review the changes prior to obtaining other approvals and commencing construction.

APPROVED (J. Holmes)

Councillor Carlson felt that the visibility from the public realm rule outlined in the Meadowvale Village Heritage Conservation District guidelines seems to be an ongoing issue with every proposal and directed staff to review this further and report back to the Meadowvale Village Heritage Conservation District Advisory Sub-Committee.

7.3. Request to Alter a Heritage Designated Property: 41 Bay Street (Ward 1)

R. Cutmore noted that the work has already been undertaken prior to the Committee's consideration of the request. He advised however that the owners have done a good job. Ms. Wubbenhorst responded that Heritage staff are updating the heritage by-law to ensure this type of situation does not occur again.

RECOMMENDATION
HAC-0063-2017
That the proposed alteration to 41 Bay Street, as per the Corporate Report from the Commissioner of Community Services, dated August 3, 2017, be approved.

APPROVED (R. Cutmore)

7.4. Request to Alter a Heritage Designated Property: 1507 Clarkson Road North (Ward 2)

RECOMMENDATION
HAC-0064-2017
That the proposal for the property at 1507 Clarkson Road North, which is designated under Part IV of the Ontario Heritage Act, to: replace the cedar shingle roof, conserve the cupola and fascia of the barn; replace the cedar shingle roof, soffit, fascia, siding and sill beam; and conserve the doors and windows of the potting shed; as outlined in the report from the Commissioner of Community Services, dated August 10, 2017, be approved.

APPROVED (Councillor C. Parrish)

7.5. Request to Demolish a Heritage Listed Property: 2130 Mississauga Road (Ward 8)

In response to Mr. McCuaig's question with regard to an inventory of properties in the City's cultural landscapes, Mr. Damaso advised that evaluating every listed property is funding dependent. He said the City will be looking at strengthening the planning tools for preservation purposes.

RECOMMENDATION
HAC-0065-2017
That the property at 2130 Mississauga Road, which is listed on the City of Mississauga's Heritage Register, is not worthy of heritage designation, and consequently, that the owner's request to demolish proceed through the applicable process.

APPROVED (C. McCuaig)

7.6. Old Port Credit Heritage Conservation District (HCD) Plan Review – Issues Analysis Report

Ms. Wubbenhorst spoke to the Issues Analysis Report.

Cameron McCuaig spoke to the vision of the area 10 to 20 years into the future and the possibility of the grant program being utilized to stimulate proactive improvements. Mr. Damaso responded that the HCD will guide redevelopment and that Port Credit is eclectic in that it does not have the density of stock in one place that creates a feel of heritage as in the Town of Oakville or the City of Ottawa.

RECOMMENDATION
HAC-0066-2017
That the Old Port Credit Heritage Conservation District Plan Review, Issues Analysis Report, as per the Memorandum dated August 23, 2017 form Paul Damaso, Director, Culture Division, be received for information.

RECEIVED (R. Cutmore)

Councillor Parrish left the meeting at 11:03 am

8. SUBCOMMITTEE UPDATES

8.1. Draft Minutes of the Meadowvale Village Heritage Conservation District Advisory Sub-Committee Report dated August 1, 2017 and Approval of Recommendations therein

RECOMMENDATION
HAC-0067-2017
1. That the draft Minutes of the Meadowvale Village Heritage Conservation District Advisory Sub-Committee (Sub-Committee) Report dated August 1, 2017 be received;

2. That the following two Recommendations from the August 1, 2017 Meeting of the Sub-Committee, be approved:

MVCHDA-03-2017
That the Meadowvale Heritage Conservation District Advisory Subcommittee supports the following conditions with respect to the request to alter the property at 7089 Second Line West:
1. That the garage height be reduced to comply with the Zoning by-law;
2. That the garage width be reduced so that the driveway width does not exceed six metres, the typical width of a two car garage;
3. That final building permit drawings be submitted to Heritage Planning noting all material information, including window materials;
4. That if any changes result from other City review and approval requirements such as but not limited to building permit, committee of adjustment or site plan approval, a new heritage permit may be required

and that the applicant is required to contact heritage planning at that time to review the changes prior to obtaining other approvals and commencing construction;

5. That the stone facing be eliminated;
6. That the awning on the front window on the north section be eliminated;
7. That the sidelights on either side of the front door on the front elevation be reduced to one single pane column on each side;
8. That the awning over the main entrance be revised to a pitched roof over the porch.

MVCHDA-04-2017
That the Meadowvale Heritage Conservation District Advisory Subcommittee supports the following conditions with respect to the request to alter the property at 1066 Old Derry Road be approved, as described in the Memorandum dated July 20, 2017 from Mark Warrack, Manager, Culture and Heritage Planning, Culture Division.

APPROVED (J. Holmes)

8.2. Heritage Designation Sub-Committee

Nil

8.3. Public Awareness Sub-Committee

Nil

9. INFORMATION ITEMS

10. OTHER BUSINESS

10.1 Resignation of David Dodaro, Citizen Member

Councillor Carlson expressed appreciation for Mr. Dodaro's contributions and input to the Committee over the past several years.

RECOMMENDATION
HAC-0068-2017
That the resignation letter dated September 5, 2017 from David Dodaro, from the Heritage Advisory Committee be received and that a replacement is not required for the remainder of the Committee's Term.

RECEIVED (C. McCuaig)

Mr. Wilkinson noted that with Mr. Dodaro's resignation, a vacancy exists on the Grants Sub-Committee. Beth Bjarnason expressed interest in serving on the Sub-Committee.

RECOMMENDATION
HAC-0069-2017
That Beth Bjarnason, Citizen Member of the Heritage Advisory Committee, be appointed to serve on the Grants Sub-Committee until November 2018, or until a successor is appointed.

APPROVED (M. Wilkinson)

10.2 Mr. Wilkinson spoke to several up-coming events in the City, including *Doors Open* on September 23, 2017 and *The Credit* Awards on October 12, 2017.

10.3 Mr. McCuaig advised that he will be attending a 2nd meeting of the Lakeshore Technical Advisory Community on behalf of the Committee. He also spoke to being proactive with the preservation of the Mississaugua Golf and Country Club given the situation with the Glen Abbey Golf Course that the Town of Oakville is currently grappling with.

11. DATE OF NEXT MEETING - October 17, 2017

12. ADJOURNMENT- 11:22 am

City of Mississauga
Corporate Report

MISSISSAUGA

Date: 2017/09/21	Originator's files:
To: Chair and Members of Heritage Advisory Committee	
From: Paul Mitcham, P. Eng, MBA, Commissioner of Community Services	Meeting date: 2017/10/17

Subject
Request to Alter 915 North Service Road (Ward 1)

Recommendation
That the Corporate Report dated September 21, 2017, from the Commissioner of Community Services requesting consent to restore/repair/replicate windows, storm windows, doors, millwork, fireplaces; alter kitchen, interior layout and exterior openings of the William Hedge House; and construct a detached two car garage; as per the Conservation Plan attached as Appendix 1, be approved, subject to the following conditions:

1. That the approval is without prejudice to charges that are still pending before the courts related to this property;

2. That the restoration contractors referenced in the report are employed to carry out the work or that other contractors are subject to approval by the Director, Culture Division;

3. That final building permit drawings be submitted to Heritage Planning;

4. That if any changes result from other City review and approval requirements, such as but not limited to building permit, committee of adjustment or site plan approval, a new heritage permit application will be required. The applicant is required to contact heritage planning at that time to review the changes prior to obtaining other approvals and commencing construction; and

5. That the letter of credit be submitted before the heritage permit is released for the demolition of the outbuildings and construction of the new garage.

Report Highlights

- Owner received conditional approval to subdivide the subject heritage designated property, demolish outbuildings and build a new garage
- Owner now presents building permit drawings of proposed garage and conservation plan for Hedge House
- House has suffered extensive damage and theft; however, the proposal is to restore or replicate, if necessary, most of the heritage attributes, including windows and millwork
- Interior layout changes are also proposed, including new kitchen
- Proposed alterations to the exterior are limited to newer portions of the house
- Staff recommend that conditional approval be granted in order to ensure that conservation work is carried out in accordance with the attached plan

Background

William Hedge built the farmhouse on the subject property in 1928. The City provided heritage designation on the property under Part IV of the Ontario Heritage Act under by-law 021-2016. Section 33 of the Act requires Council permission to alter. This past summer, the owner submitted a heritage permit application to alter the property by demolishing two garage structures, subdividing the property into three parcels and constructing two new detached homes facing Ribston Road, while conserving the Hedge Farmhouse in situ, for continued use as a residence. The proposal is described in the July 2017 Heritage Advisory Committee agenda. The report is available as item 7.1 here: https://www7.mississauga.ca/documents/committees/heritage/2017/2017_07_11_HAC_Agenda.pdf. The following recommendation was made (HAC-0051-2017) and endorsed by Council (0151-2017):

1. That the request to alter the heritage designated property located at 915 North Service Road, as outlined in the Corporate Report dated June 19, 2017, from the Commissioner of Community Services entitled *Request to Alter a Heritage Designated Property: 915 North Service Road (Ward 1),* be approved, subject to the following conditions:

    a. That the approval is without prejudice to charges that are pending before the courts related to this property;

    b. That, prior to the issuance of the heritage permit for the subject proposal, the owner is to submit a heritage permit application for the conservation work to the Hedge farmhouse, accompanied by a detailed Heritage Management Conservation Plan, building permit drawings for the Hedge farmhouse and the proposed new detached garage shown on Appendix D of the amended HIA report submitted (Appendix 3);

c. That staff send comments to the Committee of Adjustment noting that, if the severance is approved by the Committee of Adjustment, conditions be imposed and the City enter into appropriate agreements with the owner in order to ensure the following:

(i) That prior to the approval of the severance, the heritage designation by-law be amended to reflect the new property boundary and that the owner provide the City with a survey and land description of the new lot boundaries to this end;

(ii) That the building permit drawings for the new lots be circulated to Heritage Planning for review and comment.

2. That if any changes result from other City review and approval requirements, such as but not limited to building permit, committee of adjustment or site plan approval, a new heritage permit application will be required. The applicant is required to contact heritage planning at that time to review the changes prior to obtaining other approvals and commencing construction.

3. That a Letter of Credit from the Owner in the amount of $250,000 be held until completion of the project and until an occupancy permit is issued for the William Hedge Farmhouse.

In 2015, the current owner undertook a series of alterations to the heritage designated property prior to seeking a heritage permit. The owner of the property has pled guilty to the charge of altering a property designated under the Ontario Heritage Act without Council consent. The matter was adjourned for a sentencing hearing. The information in this report, appendices and recommendation are without prejudice to the case.

As per the recommendation above, a heritage permit is required for the conservation work for the Hedge Farmhouse, including building permit drawings for the house and garage. This information is attached as Appendix 1 as a Conservation Plan by Megan Hobson, M.A., Dipl. Heritage Conservation.

Comments

The current application finalizes the request to construct a detached 2-car garage on the east side of the house. Additionally, the following work, which is likely to affect the property's heritage attributes, is proposed:

- Kitchen renovation
- Layout changes

- Repair and restore interior woodwork, including trim, wainscoting, oak panelling in front hall, wooden staircase, crown moulding
- Repair and restore all original windows and surviving storms
- Remove interior storms with metal frames that are not original and replace with reproduction wood storms to match surviving original wood storms
- Repair fireplaces
- Restore/replicate fireplace mantels
- Repair/replicate flooring and doors as needed
- A new door, including opening, on the north end of the east elevation (marked "north elevation" in drawings) – depicted inaccurately as "existing"
- The filling of two non-original windows on the west addition elevation (marked "south elevation" in drawings)

The Conservation Plan cites a burst pipe from March 2015, and the removal of lathe and plaster to prevent mold growth as reasons that many of the interior features are damaged. Furthermore, in August 2017, the owner's consultant reported that trim and doors were stolen from the house. As such, in addition to conservation work, much "like for like" replication work is also required.

The Conservation Plan lays out all of the work to be done. Most of the original heritage attributes will be conserved or replicated. The built in book cases are lost and the kitchen is not proposed to be replicated/conserved. Because the kitchen is directly below the burst pipe, it suffered extensive damage. New cabinets would have "a similar style and wood finish to the cabinets that were removed but fitted to the new layout." Walls are proposed for removal to create a larger kitchen and an open concept between it and the family and dining rooms. It should also be noted that the gravel driveway is proposed to be paved to the proposed new garage.

The "built in book case," "interior layout with centre hall plan" and "original kitchen shaker style stained oak cabinetry, sink, plumbing fixtures and hardware of the style" are heritage attributes included in the designation by-law. The consultant reports that the "leaded glass doors" of the bookcases "would be difficult to replicate accurately." The open concept changes would impact the interior layout; however, the centre hall concept would remain. The kitchen attributes would be lost.

All of the proposed conservation and replication work is based on Parks Canada's Standards & Guidelines. All changes are to be "like for like." Alterations to the exterior are in newer parts of the building (i.e. not part of architect Dixie Cox Cotton's original design). Modifications to the interior layout and kitchen are reasonable given the circumstances, lack of public accessibility and the fact that the some documentation of the original features exists. Heritage Planning supports the proposal with the conditions at the outset of this report and the previous Heritage Advisory Committee conditions that were endorsed by Council.

Financial Impact

Not applicable

Conclusion

The owners of the subject property now propose final drawings for the two-car garage that was recommended for conditional approval at the July 2017 Heritage Advisory Committee meeting. Additionally, the owners have now submitted a conservation plan requesting consent to restore/repair/replicate windows, storm windows, doors, millwork, and fireplaces; and alter the kitchen, interior layout and exterior openings of the William Hedge House. The proposal includes alterations to some heritage attributes; however, it also includes conservation/replication work to most of the property's heritage attributes. As such, the proposal should be approved subject to conditions.

Attachments

Appendix 1: Conservation Plan

Paul Mitcham, P. Eng, MBA, Commissioner of Community Services

Prepared by: P. Wubbenhorst, Senior Heritage Coordinator

CONSERVATION PLAN

WILLIAM HEDGE HOUSE

915 NORTH SERVICE ROAD
MISSISSAUGA

08 SEP 2017

TABLE OF CONTENTS

1.0 INTRODUCTION

This *Conservation Plan* is a requirement of a *Heritage Permit Application* for the restoration and renovation of the Hedge House, a c. 1928 Arts & Crafts stone dwelling designed by Dixie Cotton Cox that is designated under *Part IV* of the *Ontario Heritage Act*.

This application is related to a Heritage Permit application that was supported by Heritage Staff and the Heritage Committee at the meeting on July 11th, 2017 that included a *Revised Heritage Impact Assessment* for a proposal to demolish 2 non-historic outbuildings on the property and sever the rear portion of the lot to create 2 residential lots fronting on Ribston Road. As part of the earlier submission, the applicant provided designs for the Ribston Road houses to demonstrate to the Committee that they would be compatible with the historic Hedge House and with the surrounding neighbourhood. The consultant supported the compatibility of the proposed houses in the *Revised Heritage Impact Assessment Report*. The committee offered support for the proposal on the condition that the applicant submit a separate *Heritage Permit Application* for repairs and alterations proposed for the Hedge House and construction of a new garage that the applicant proposed to build adjacent to the Hedge House. The Heritage Committee also requested that the applicant provide a detailed *Conservation Plan* outlining conservation work related to the repair and restoration of heritage attributes including, wood windows and interior oak trim and oak paneling that was damaged since the applicant acquired the property. Final approval for the lot severance and a demolition permit for the outbuildings has been deferred until all of these conditions are met by the applicant.

The preparation of this *Conservation Plan* was undertaken by heritage consultant Megan Hobson with assistance from heritage staff, heritage restoration expert Tom Murison of Murison Restoration and heritage architect Alex Temporale of ATA Architects in Oakville. Photographs of the interior in 2015, prior to flooding and gutting of the 1st floor, were provided by William Oughtred & Associates. This report fulfills requirements in the City of Mississauga's *Terms of Reference for Heritage Management Conservation Plan* (2016).

2.0 PROJECT DESCRIPTION

The proposed alterations will allow for ongoing use of this historic home as a private residence. The house will be retained *in situ* on a large double-size lot, preserving the existing frontage on the North Service Road. The large rear yard will be reduced through a severance of the rear portion of the lot. Two non-historic outbuildings located behind the Hedge House, including an existing 2-car garage and a wooden shed, will be demolished. A new detached 2-car garage will be constructed beside the house accessed by the existing driveway from the North Service Road. The new garage will compliment the scale, material and architectural of the Hedge House. The interior of the Hedge House will be restored and updated with a new kitchen and bathroom. The applicant proposes to do the following:

- construct of a new detached garage in a complimentary Arts & Crafts style in the large side yard on the east side of the property
- renovate the interior including:
    - renovation of the existing kitchen on the 1st floor
    - removal of a pantry & closet behind the main stairs and removal of a wall between the kitchen and family room to create a more open and spacious layout in this part of the house
    - enlargement of an existing opening between the kitchen and the dining room to create a more open and spacious layout
    - installation of new drywall throughout the 1st floor and basement level to replace plaster and lathe that was removed after flooding occurred
    - renovations to an existing bathroom on the 2nd floor
    - construction of a laundry area in an existing closet in a bedroom on the 2nd floor
    - replacement of damaged hardwood flooring on the 1st and 2nd floors with oak hardwood flooring
- repair and restore the wooden staircase and remaining oak paneling in the front hall
- repair and restore all oak trim around windows and doors
- repair and restore all of the original wood windows including 23 double hung sash and 4 casement windows
- repair 3 original wood storms that have survived
- remove interior storms with metal frames that are not original and replace with reproduction wood storms to match the surviving original wood storms

The applicant plans to carry out this work as soon as the necessary approvals have been obtained so that the house can be ready for occupancy as soon as possible. Architectural drawings of the proposed garage are included in as an APPENDIX C2. Architectural drawings of the proposed interior renovations to the Hedge House are included in APPENDIX C3. Details of the proposed conservation work to repair and restore the original windows, storm windows and interior woodwork are provided in SECTION 9.0 of this report.

General specifications and a cost estimate for the proposed conservation work prepared by Tom Mursion, owner of Murison Restoration in Oakville, are included in APPENDIX D of this report. Tom Murison is a recognized heritage restoration contractor with expertise in the repair and restoration of historic windows and historic woodwork. Minor masonry repairs to the fireplaces will be carried by Peter Devine of Devine Masonry, Mississauga. Peter Devine is a recognized heritage mason who specializes in the repair and restoration of historic fireplaces. Devine Masonry and Murison Restoration have worked together on numerous restoration projects and they are both included in the 2017 directory *Heritage Building Contractors* prepared by Heritage Planning Staff at the City of Mississauga, *and the* 2014 directory *Tradespeople & Companies Specializing in Heritage Projects in Southwestern Ontario* prepared by Heritage Planning Staff at the Town of Oakville.

3.0 PROPERTY DESCRIPTION

This property is a remnant of a former farmstead fronting on what was historically the Middle Road. The context has changed dramatically since the house was built in 1928 and the house now fronts on the North Service Road and faces a high sound barrier wall along the north side of the Queen Elizabeth Highway. There are no surviving landscape elements associated with earlier agricultural activities in this area.

The stone farmhouse built for William Hedge in 1928 to designs by local architect Dixie Cotton Cox is intact, but is now surrounded by a post-WWII residential suburb. The house sits in the centre of a large lot that extends through the block and has large frontages on the North Service Road and Ribston Road. The house sits on a lot that is approximately four times the size of adjacent lots in the subdivision.

3.1 BUILT HERITAGE RESOURCES – WILLIAM HEDGE FARMHOUSE, C. 1928

The Hedge House generally retains its original form but has undergone some alterations over the years including the addition of two dormers in the front, construction of a large 2-storey addition at the back that required alterations to the roofline and original exterior wall, addition of a detached garage behind the house and construction of a small covered portico over the east side entrance. The interior was intact until very recently and a number of original interior features are included as heritage attributes in the *Designation By-law*. Interior features on the 1st floor were damaged by flooding that occurred after the services were disconnected and further damage was done when the plaster and lathe was removed as a precaution to prevent mold growth. The current condition of the interior after the flooding was documented in the *Heritage Impact Assessment Amendment (2017)* and a conservation strategy for repairing and restoring significant interior elements is outlined in SECTION 9.0 of this report.

4.0 HERITAGE SIGNIFICANCE & HERITAGE STATUS

The Hedge House is designated under Part IV of the Ontario Heritage Act in 2016. Prior to designation it was listed on the Municipal Heritage Register. It has architectural, historical and contextual significance. It is associated with the historic Middle Road and agricultural activities in this area in the early 20th century and was the home of a local fruit grower William Hedge. The house is a rare example in Mississauga of an Arts & Crafts style residence designed by Dixie Cox Cotton, a local architect who has significance to the community, and it is a representative example of his residential work in that style.

4.1 STATEMENT OF CULTURAL HERITAGE VALUE

The *Designation By-law* contains the following *Statement of Cultural Heritage Value*:

> The William Hedge Farmhouse's cultural heritage value lies in it being a rare example of the Craftsman Bungalow style within the City of Mississauga with buff, rough cut (rusticated) limestone cladding sourced in the vicinity of the municipality. It has interior features telling of the era including cabinetry and mill work, plumbing and heating fixtures. Built in 1928, its architectural form, style and detailing reflect the design work of a local architect: Port Credit born and raised, Dixie Cox Cotton.
>
> The Cultural Heritage Value also lies in its historic association with this architect. He was the grandson of area pioneer Robert Cotton and the nephew of Dr. Dixie Beaumont Cotton, after whom the village of Dixie was named. Dixie Cox Cotton was active in the community: he was maintenance Engineer for the St. Lawrence Starch Co. (a major locally based Canadian Industry) for over twenty years and is attributed for the design of various buildings in the community, reflecting the mainstream architectural design ideas of the time. These were based on references to vernacular and classical architecture within the British Empire, high quality craftsmanship and design, and integration of the arts and architecture as expressed in the Craftsman Bungalow, Edwardian, and Institutional and Commercial Period Revival buildings. Design ideas were carried into interior elements of the house displaying attention to detail in interior design and craftsmanship such as stonework and millwork. The house therefore demonstrates his work, the work of a significant architect to the community. The William Hedge house also has the potential to yield information to the understanding of a community. The farmhouse was built prior to the existence of the Queen Elizabeth Way as a highway, and was retained by the family within the Applewood subdivision of 1953, maintaining its orientation of its original frontage on Queen Elizabeth Highway, known as Middle Road at the time the house was designed.

4.2 CHARACTER DEFINING ELEMENTS

The *Designation By-law* identifies the following exterior and interior attributes as contributing to its value as a rare example of a Craftsman Bungalow style residence and a reflection of the work of architect D.C. Cotton:

a) 1 and half storey massing
b) almost square plan, with protruding bay windows on the south and west wall, protruding stout stone chimney on the west wall
c) relatively low floor to ceiling heights
d) low-slung gabled roof with dormers
e) front porch with thick stone columns
f) rusticated buff limestone exterior building material, laid in a split course bond, mortar joints that accentuate the bond pattern of the wall.
g) "punched" style masonry openings for windows, with segmental arch, key stone and straight cut voussoirs
h) exterior stone extends to the top of the 2nd floor window level and in all facades of the original portion of the house
i) stone is sourced from Milton
j) wood three over one pane sash style windows arranged in a variety of compositions: singles, pairs or threes
k) interior layout with centre hall plan with staircase in main hall
1) original kitchen shaker style stained oak cabinetry, sink, plumbing fixtures and hardware of the style
m) stained wood millwork such as wainscoting, mission style balustrade
n) limestone fireplaces and built in book case found in the house designed in an integrated way with the fireplace wall
o) orientation of the house on the lot

Since Designation, interior elements have been impacted by the following events:

- A burst pipe in the 2nd floor bathroom that was not discovered for 2 days and caused extensive water damage
- Removal of water-soaked plaster & lathe on the 1st floor by the owner's contractor to prevent mold growth
- A break-in by thieves targeting historic building materials that resulted in further loss of original wood trim and interior doors

As a result of these occurrences, some interior heritage elements included in the Designation have been removed, damaged or stolen including:

j) wood three over one pane sash style windows arranged in a variety of compositions: singles, pairs or threes – *the original wood windows remain but glazing in several of the 1st floor windows is smashed and one window has broken mullions*

1) original kitchen shaker style stained oak cabinetry, sink, plumbing fixtures

and hardware of the style – *the* original *kitchen cabinetry, plumbing fixtures and hardware have been removed*

m) stained wood millwork such as wainscoting, mission style balustrade – *a small section of wainscoting at the base of the stairs is damaged, all of the wainscoting in the dining room has been removed, some of the wainscoting in the front hall has been removed, some door trim and all window trim on the 1st floor has been removed, some of the window and door trim on the 2nd floor has been removed (baseboards and crown moulding throughout are intact and the mission style balustrade is intact*

n) limestone fireplaces and built in book case found in the house designed in an integrated way with the fireplace wall – *2 wood mantle pieces and 1 built-in book case with leaded glass windows have been removed and the limestone fireplace in the family room has been partially dismantled*

5.0 PLANNING CONTEXT

When the applicant purchased the property is was listed on the City's Municipal Heritage Register as a non-designated property of heritage interest. When the applicant applied to demolish the house, the City responded with a Part IV Designation. The house is currently vacant and boarded up and the applicant has revised the development proposal so that heritage values identified in the Designation by-law can be conserved.

This proposed development is consistent with planning policies in the City of Mississauga's *Official Plan* and will require only one minor zoning amendment to allow for a slightly reduced rear yard behind the Hedge House so that the Ribston Road lots are consistent with zoning regulations regarding set backs and lot coverage. Given that the Hedge House will remain on a double lot with a large front and side yards, a minor reduction in the rear yard will not have any negative impacts. After the proposed severance occurs, the *Designation By-law* will have to be amended to reflect the new boundary lines.

6.0 PROJECT OBJECTIVES & STATEMENT OF INTENT

The William Hedge Farmhouse, including the original portion of the house and the 2003 rear addition, will be restored and rehabilitated for ongoing use as a residential dwelling. Conservation work will be carried out to a high standard to repair heritage elements that were damaged due to flooding that occurred in March 2015 and to restore heritage elements that were stolen during a break-in in August 2017.

No changes are proposed to any exterior heritage attributes. All of the original 3 over 1 wood windows will be retained. These windows are currently boarded up but were photographed and inspected by the consultant prior to installation of the hoarding.


The applicant intends to retain and restore all of the original wood windows and storms.

The applicant's intent is to rehabilitate the William Hedge House so that it can continue to be used as a single-family dwelling and to retain, repair and restore interior heritage features that were damaged. The project therefore has the following objectives:

- construct an architecturally distinctive and complementary garage to replace the existing non-historic garage that will be demolished
- retain and restore all of the original wood windows
- retain and restore surviving wood storm windows and replace missing storms with accurate reproduction storms
- retain and restore original interior and exterior wood doors
- retain and restore interior woodwork including wood trim, wainscotting and 2 fireplace mantles
- make minor changes to the layout on the 1st floor to create a more spacious modern kitchen and open-concept 'great room'
- install a new kitchen in the same location as the existing kitchen
- make minor changes to the layout on the 2nd floor to create a small laundry area
- install a new bathroom in the same location as the existing bathroom

7.0 GARAGE

7.1 DEMOLITION OF EXISTING DETACHED GARAGE

There is an existing detached 2-car garage located behind the house. This building was constructed in 2003 when the rear addition was added. It is wood frame construction with stucco cladding. This building does not have heritage value and is not included in the *Designation By-law* as a heritage attribute. The demolition of this building is required so that the rear portion of the lot can be severed to create 2 new residential lots on Ribston Road.

Existing detached 2-car garage – to be demolished

7.2 PROPOSED DETACHED GARAGE

The proposed garage will be more compatible with the historic Hedge House than the existing garage, in terms of the materials and architectural style being proposed.

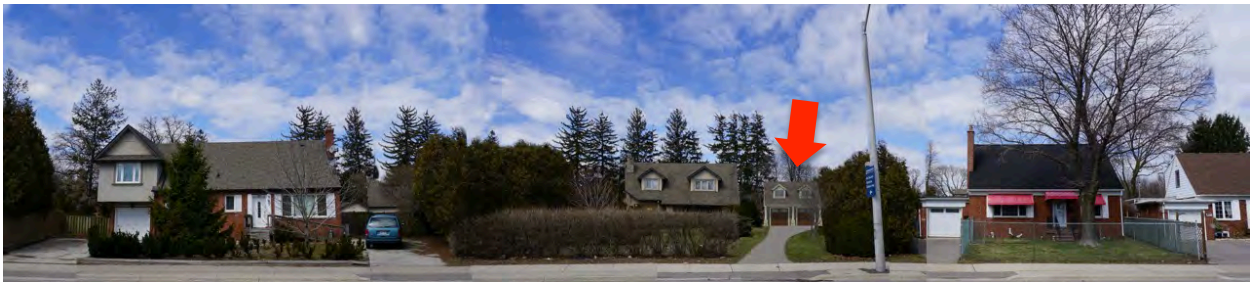
Proposed detached 2-car garage – to be constructed

The garage will be set back from the Hedge House and located in the northeast corner of the lot so that it will be subordinate to the historic house. The design of the garage and the materials proposed by Alex Temporale of ATA Architects are complementary to the Arts & Crafts style and stone construction of the Hedge House. The roof will have front facing

dormers, the garage doors will be Craftsman style wood doors and the stonework will match the stonework on the Hedge House.

Detached garage to be located in the north-east corner of the lot. The scale, design and materials are complementary to the historic house.

The garage will face the North Service Road and the existing entrance and driveway from the North Service Road will be retained. The site proposed for the garage does not contain any features that are included in the Designation By-law. The construction of the garage will have no direct impacts on the Hedge House because it will be fully detached and the building height and massing are appropriately scaled in relation to the house. Indirect impacts have been successfully mitigated by placing the garage well back from the main block of the house, proposing an appropriate height, scale and massing and through design measures that include selection of similar cladding materials and a complimentary architectural style. The orientation and configuration are consistent with the streetscape since adjacent properties have garages oriented towards the North Service Road.



North Service Road Streetscape showing the proposed garage

8.0 CONSERVATION WORK

8.1 GENERAL APPROACH

Conservation work is required to repair and restore damaged windows and interior woodwork and to replace wood trim and interior wood doors that were stolen. This work will be carried out by a heritage expert and monitored by the heritage consultant according to best practices outlined in the *Standards and Guidelines for Historic Places*. Every effort will be made to retain and repair original fabric. New work and new materials will be matched to the original. The interior trim is quarter-sawn oak and the wainscoting is constructed of a thin oak veneer on top of plywood.

8.2 CURRENT CONDITIONS

8.2.1 EXTERIOR

Masonry

The exterior masonry is generally in good condition and no conservation work is required. None of the proposed alterations will impact the exterior masonry.

Windows & Storms

The original wood windows are intact and are in fair to good condition but are in need of repairs and painting. The frames and sills are generally free of rot put the paint is peeling. With the exception of one pair of windows on the 1st floor, the mullions are intact and in good condition but will need scraping and painting. The windows are operational and have the original sash cords and weights. Much of the glass on the 1st floor has been smashed and the windows are currently covered up with plywood. There are 3 windows that have the original exterior wood storms in place. The other windows had interior sull sashes with metal frames that are not original, but these have been removed.

Exterior Doors

The front door with stained glass sidelights is in good condition and no conservation work is required. The side door in the kitchen has water damage but it is not warped or split. It will be retained and repaired.

8.2.2 INTERIOR

See previous *HIA (Oughtred 2015)* & *HIA Amendment (Hobson 2017)* for photographs of the interior before and after flooding that occurred in 2016.

After flooding occurred, the interior plaster and lathe throughout the 1st floor was removed as a precaution to prevent mold growth. The oak cabinets and fixtures in the kitchen were also removed at this time. The kitchen is directly below the bathroom where the pipe burst that caused the flooding.

Wood Trim & Wood Wainscoting

The plaster and lathe has been removed from walls on the 1st floor but the plaster ceilings and the oak crown molding are intact. The crown moulding appears to be in good condition. Some of the finish has been removed by streaks of water running over the surface.

The baseboards are buried under plaster and lathe debris but they appear to be intact and in salvageable condition throughout the 1st floor.

Oak wainscot paneling on one side of the hall has been removed, and all of the oak paneling in the dining room has been removed. Missing trim will be reproduced to match the original in quarter sawn oak. The oak paneling is plywood with a thin veneer of quarter sawn oak and can be reproduced using quarter sawn oak of a quarter sawn oak veneer on top of plywood. All wood will be finished with stain and varnish to match the existing woodwork. Photos of the interior that were taken before the damage will be used as a reference for the conservation of the wooden mantelpieces and the wood paneling in the dining room and hallway.

All of the window trim and some of the door trim on the 1st floor was removed when the dry-wall was removed after the flood. This material was salvaged but was subsequently stolen during a breaking this year. The thieves also removed and stole trim and doors form the 2nd floor.

Flooring

The historic house has hardwood flooring throughout that is a narrow plank oak floor. Flooring on the 2nd floor is in good condition, with the exception of the bedroom directly adjacent to the bathroom where the flooding originated. This floor has lifted and will require replacement. The condition of the flooring on the ground floor is unknown because it is covered with plaster and lathe debris. Due to the amount of flooding that occurred, it is likely that it is too damaged to repair and will require replacement.

Fireplaces

Two oak mantle pieces, in the Living Room and Family Room, have been dis-mantled and a built-in oak bookcase with leaded glass doors that was integrated in the Family Room fireplace has been removed. The masonry of the Family Room fireplace has been partially dismantled. The fireplaces will require masonry repairs. Wood mantle components were among items taken by thieves in a recent break-in and will require replacement.

Stairs

The wood components of the main stairs, including banister, newel post, railings and treads are intact and in good to fair condition. Some selective repairs to the treads will be required. Most of the wood paneling on the stairs is intact and in good condition with the exception of one section of paneling at the base of the stairs where the veneer is warped and separated due to water damage and will require replacement.

Interior Doors

Interior wood paneled doors and French doors have been removed from their hinges and are leaning up against walls. These doors appear to be in good condition and can be re-hung. Bedroom and closet doors in two of the bedrooms upstairs are missing. These were stolen during a break-in.

9.0 CONSERVATION STRATEGY & RECOMMENDED TREATMENT

9.1 WINDOWS & DOORS

PRIMARY TREATMENT: REPAIR ALL EXISTING 3 OVER 1 SASH & CASEMENT WINDOWS
REPAIR ALL EXISTING 1 OVER 1 STORMS
REPLACE MISSING 1 OVER 1 STORMS

The original wood windows are sash windows with a 3 over 1 configuration, with the exception of 2 windows on the west elevation that are casement windows with a 3 over 1 configuration. The dormer windows are not original, they were replaced by a previous owner. The original windows in the rear elevation and rear dormer were removed in 2003 when the rear addition was constructed. Some of the original wood storm widows with a 1 over 1 configuration remain but many have been removed and replaced with metal-framed interior sull sashes.

All remaining original wood windows will be retained and restored. All remaining original wood storms will be retained and restored. The non-historic metal-framed interior sull sashes will be removed and new wood storms to match the original storms will be made.

The original wood storms are missing, with the exception of 3 storms. The surviving wood storms will be used as a template to produce new storms. The original wood storm appears to have been replaced by fixed metal-framed sull sashes installed on the inside of the windows. The original wood storms have a similar configuration to the windows, with a smaller upper sash and a larger lower sash.


All original 3 over 1 wood windows will be retained. All existing 1 over 1 storm will be retained and missing storms will be replaced in kind.

New weather stripping will be installed and the windows will be primed and painted with two coats of paint in the workshop, prior to installation. Existing hardware, sash cords and weights will be retained and repaired if possible. If replacement is required they will be replaced in kind.

There are two original exterior doors that will be retained. The front door is in good condition and no conservation work is required. The side entry door into the kitchen is directly below the bathroom were a pipe burst. It will required minor repairs and re-finishing.
The doors that were stolen from the 2nd floor, including 2 bedroom doors and 2 closet doors, will be reproduced to match the original doors.



Left The side entry door in the kitchen was damaged by water and will be retained and restored
Centre: Interior doors that were taken off their hinges when the plaster and lathe was removed will be re-hung
Right: Bedroom doors stolen by thieves will be replaced with accurate reproductions.

An inspection of the current condition of the heritage elements was undertaken by Tom Murison, a heritage carpenter with considerable experience in restoration of historic buildings. Murison has provided an estimate and a description of the proposed conservation work that are included as an Appendix to this report. Murison's resume, including a select list of comparable projects, has also been provided. Conservation work proposed by Tom Murison follows best practices outlined in the *Standards & Guidelines for the Conservation of Historic Places in Canada* (2nd ed). Relevant Guidelines from *Section 4.3.5 Windows Doors & Storefronts* that will guide the window restoration include the following:

- Retain sound and repairable windows and doors, including hardware
- Repair windows and doors using a minimal intervention approach, such as patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods.
- Limited replacement in kind, of extensively deteriorated or missing parts of windows and doors, with a compatible substitute material.
- Repairs to match the existing work as closely as possible, both physically and visually.
- Replace in kind, missing storm windows, based on documentary and physical evidence.

9.2 INTERIOR WOOD TRIM & WAINSCOTING

PRIMARY TREATMENT: RETAIN & REPAIR ORIGINAL WOOD TRIM & WAINSCOTTING
REPAIR DAMAGED WOOD TRIM & WAINSCOTTING
REPLACE MISSING WOOD TRIM & WAINSCOTTING
ALL NEW WORK AND MATERIALS TO MATCH EXISTING

All of the window trim and some of the door trim on the 1st floor was removed when the plaster and lathe was taken down as a precaution to prevent mold growth after flooding occurred. The crown moulding and baseboard trim is intact but water has removed some of the original finish. Selective re-finishing of damaged areas will be undertaken and original finishes will be retained as much as possible.

The reproduction of missing trim and wainscot will be based on surviving components that can be salvaged, intact wainscot in the hall and intact window and door trim on the 2nd floor, and photos taken prior to damage caused by flooding, to ensure accuracy. The original quarter sawn oak wood grain with a medium dark stain and simple joinery will be reproduced as accurately as possible.

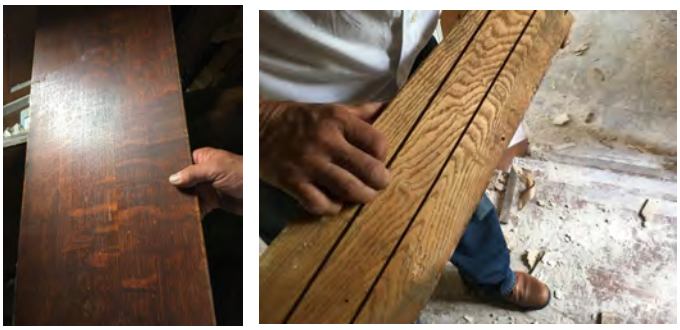
Living Room bay window – current condition (left) and condition in 2015

Bedroom window – current condition

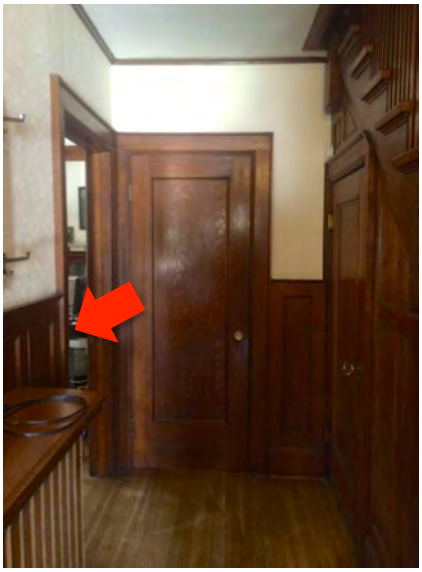
Living Room doorway (left) and Dining Room doorway (right) - current condition

The wood paneling that has not been removed will be repaired. There is one panel at the foot of the stairs that has warped and separated due to water damage. The panel is a thin oak veneer on top of plywood. A veneer with a similar grain will be matched to the existing and stained to match. The finish on some of the paneling below this area has been damaged and will need to be sanded down and re-stained to match.

Damaged section of wood paneling at base of stairs (left) and condition in 2015 (right)



Quarter-sawn oak with a medium brown stain

Paneling on the east wall of the main hall will be restored to the condition in 2015

All wood conservation work proposed by Tom Murison follows best practices outlined in the *Standards & Guidelines for the Conservation of Historic Places in Canada* (2nd ed). Relevant Guidelines that will guide the conservation of the interior woodwork from *Section 4.5.2 Wood and Wood Products* include the following:

- Retain all sound and repairable wood that contributes to heritage value
- Repair wood by patching, piecing-in-consolidating, or otherwise reinforcing the wood, using recognized conservation methods
- Replace in kind any irreparable wood elements, based on documentary and physical evidence
- Select replacement materials based on their physical and visual characteristics
- Match finishes of new work to existing

Interior heritage features, including the quarter sawn oak trim and paneling in the dining room, will be restored.

9.3 FIREPLACES

PRIMARY TREATMENT: REPAIR SALVAGEABLE MANTLE COMPONENTS
REPAIR MASONRY SURROUND
RESTORE MISSING COMPONENTS
ALL NEW WORK AND MATERIALS TO MATCH EXISTING

The wood mantle in the living room will be rebuilt. It was dismantled when the plaster and lathe. The components were salvaged but were subsequently stolen during a break-in this year. The rebuilding of the fireplace will be based on salvaged components and photos taken prior to the flooding to ensure accuracy. The living room fireplace will require some re-building of the masonry in addition to repair and restoration of the mantle piece. A matching limestone will be sourced and the new work will laid with a mortar to match the original work. Tom Murison has allowed for this work in the cost estimated included as an Appendix to this report. He works with heritage stone mason Peter Devine who has as special interest and expertise in historic fireplaces.



Living Room fireplace – current condition (left) and condition in 2015 (right)



Family Room fireplace – current condition (left) and condition in 2015 (right)

10.0 INTERIOR RENOVATIONS

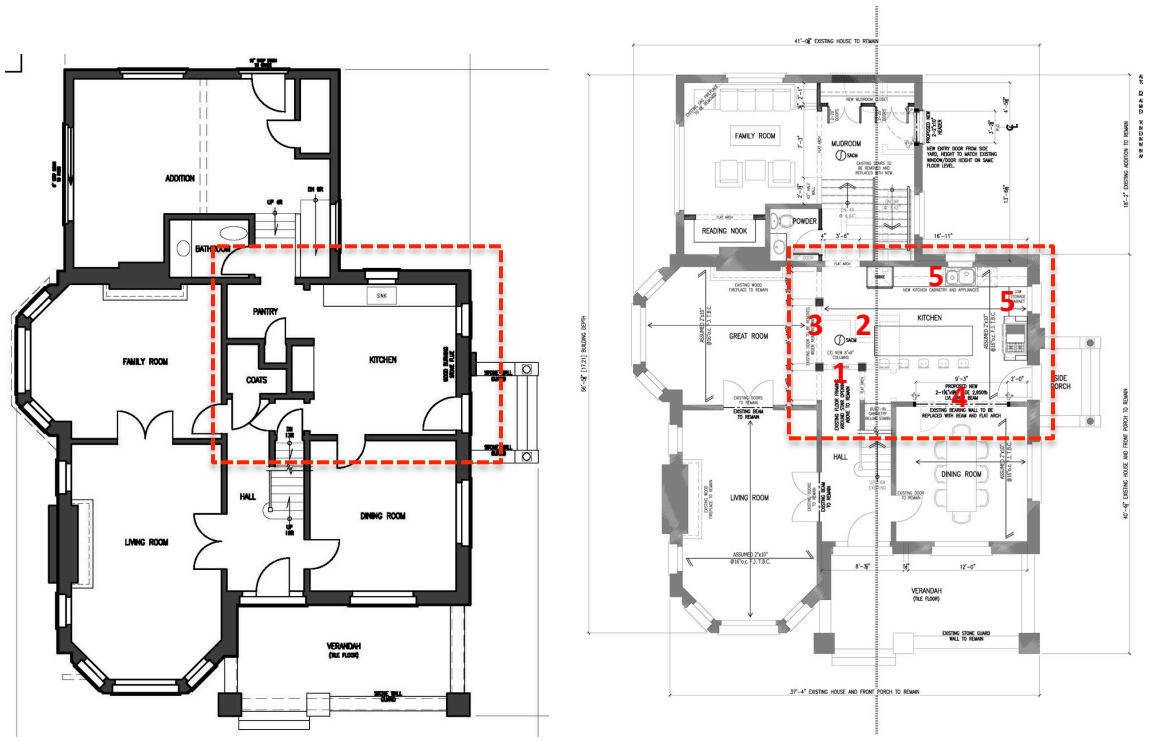
10.1 1ST FLOOR

The oak cabinets in the kitchen and the kitchen fixtures have been removed. This area was directly below the bathroom where the pipe burst. The flooding was not discovered for 2 days and did extensive damage in the kitchen. New kitchen cabinets will have a similar style and wood finish to the cabinets that were removed but will be fitted to the new layout that provides better storage and more counter space. The original kitchen dating from c. 1928 was very small and was not laid out to accommodate modern fixtures and appliances and was not well suited to informal eating and gathering associated with modern kitchens. It was not well connected with dining and living spaces and therefore not well suited to modern living or entertaining.

Kitchen cabinets before the flooding and a cabinet door that was salvaged and can be used as a template for new kitchen cabinets.

The kitchen area will be enlarged and openings between the kitchen and the adjoining rooms will be enlarge to create a more open and spacious plan and to make room for a kitchen island in the middle of the kitchen. An existing doorway between the kitchen and dining room will be enlarged. The wall between the kitchen and the family room will be removed to great a 'Great Room.

The proposed changes will have very minor impacts on heritage features. The original proposal has been revised to avoid and reduce impacts to heritage features based on input from the heritage consultant. A small portion of wall will be removed at the end of the hall on the 1st floor. Columns will be introduced here to avoid any impacts to the wood paneling and trim features of the stairs.



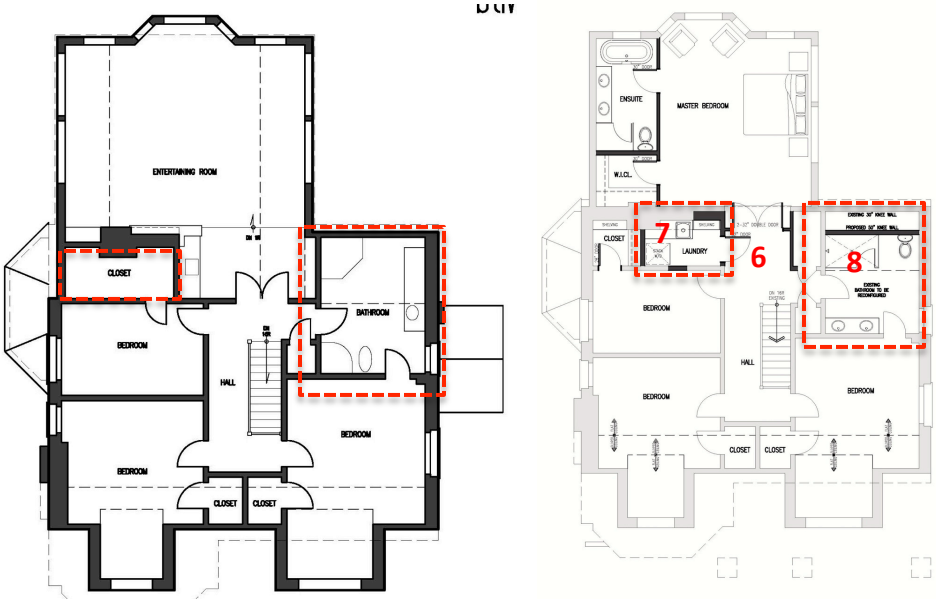
PROPOSED CHANGES TO 1ST FLOOR:

1. Remove a small section of wall between the hall and the kitchen
2. Remove the pantry to make room for a large centre island for informal eating
3. Remove wall between Kitchen and Family room to create a Great Room
4. Enlarge opening between Kitchen and Dining Room
5. Install new kitchen cabinets, counters and modern fixtures & appliances

IMPACT 1:	Proposed removal of the wall at the end of the 1st floor hall
RECCOMENDATION 1:	Removal of this wall will not have a significant impact on heritage values and are therefore supported by the consultant
ALTERNATIVE OPTION 1:	Retain the wall and doorway at the end of the 1st floor hall as well as the existing doorways into adjoining spaces and relocate or reduce the size of the proposed kitchen island.

10.2 2ND FLOOR

The 2nd floor is in good condition and there is only localized damage in the bathroom where the pipe burst and the wood floor of the adjoining bedroom has warped and needs replacing. Alterations to the 2nd floor will not have a significant impact on heritage value and include renovating and existing modern bathroom and introducing a small laundry area in an existing closet space.



PROPOSED CHANGES TO THE 2ND FLOOR:

6. Removal of the wall at the end of the hall and relocation of the French doors
7. Laundry area built into an existing closet
8. Reconfiguration of existing bathroom

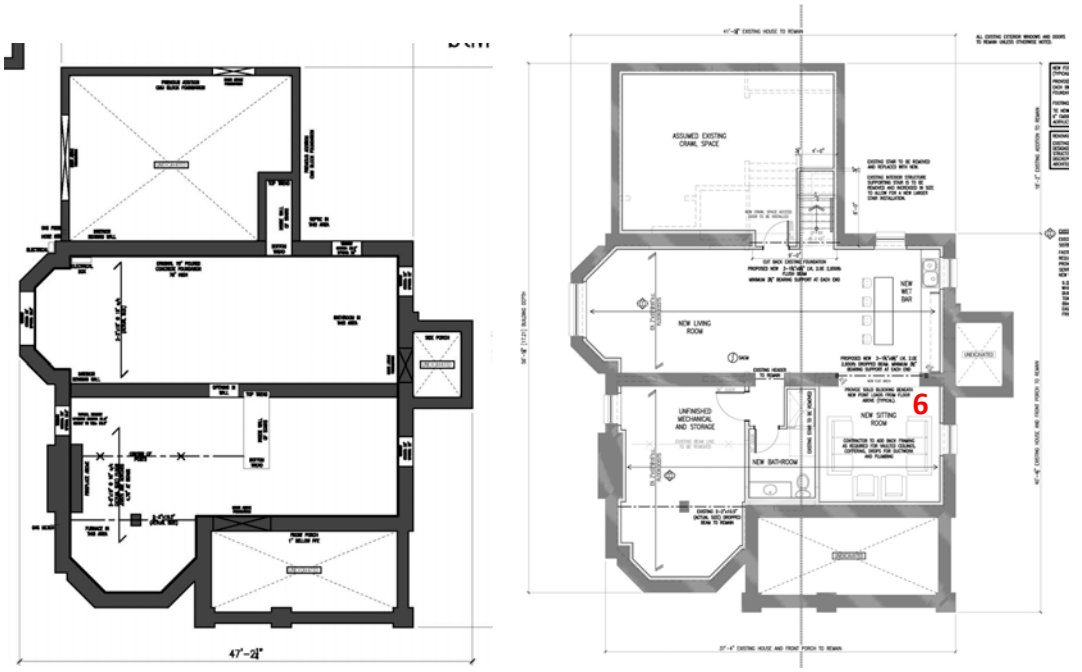
IMPACT 6: Removal of the wall at the end of the 2nd floor hall

RECOMMENDATION 2: The proposed changes will not have a significant impact on heritage values and are therefore recommended for approval

ALTERNATIVE OPTION 2: Retain this wall and opening and relocate the French doors at the entrance to the master bedroom

10.3 BASEMENT

There is an existing basement under the historic portion of the house that will be renovated. There is considerable mould growth on the wet dry-wall that will require removal prior to any other work inside the house. There are no heritage features in the basement. An opening in one of the interior walls is proposed. A structural engineer should be consulted regarding this proposed change.



IMPACT 9: Proposed opening in interior wall
RECOMMENDATION 3: Consult a structural engineer

10.4 INSULATION & HVAC

New batt insulation will be introduced into the existing wall framing on the 1st floor before new dry-wall is installed. This will not have any impact on heritage features. It is recommended that the existing plaster and lathe walls on the 2nd floor not be disturbed and additional insulation introduced in the roof rather than in the walls.

The existing hot water radiators will be removed and replaced with a forced air system for heating and cooling. There is currently no air conditioning in the house. Vents will be installed in the floors and ducts will be located in walls or closets to reduce impacts. In order to maintain an appropriate humidity level to conserve the interior woodwork, it is recommended that the HVAC system have a built-in humidifier.

11.0 WORK PLAN

The applicant proposes to start work as soon as the necessary planning approvals have been issued. This submission includes detailed plans for the following work:

- Site plan showing the lot boundaries after the proposed severance
- Site plan showing the location of the proposed garage
- Permit level drawings for the proposed garage
- Architectural drawings for alterations to the interior layout
- A Conservation Plan for the proposed conservation work prepared by a qualified heritage consultant
- A Cost Estimate and Specifications for the proposed conservation work by a reputable and experienced heritage tradesperson

The applicant proposed the following schedule:

- Fall 2017:
    - Demolition of 2 outbuildings
    - Tree removals (rear yard only)
    - Removal of wet drywall in the basement & mould abatement
    - Clean-up of demolished lathe and plaster debris on the 1st floor
    - Salvage and proper storage of wood components for repair and restoration, including mantle piece components, wood doors, wood trim and wood paneling
    - Installation of new plumbing and electrical
    - Installation of new drywall
    - Installation of new flooring
- Winter 2017/18:
    - Window repairs and production of new storm windows (off site)
    - Repairs to salvaged millwork (off site)
    - Installation of new kitchen and bathroom
    - Living fireplace masonry repairs
- Spring 2018:
    - Construction of proposed garage
    - Paving of proposed driveway
    - Installation of repaired windows and new wood storms
    - Installation of salvaged and repaired wooden components including fireplace mantle, wood trim and paneling
- Fall 2018:
    - Estimated completion date

12.0 PROPERTY MAINTENANCE, SECURITY & MONITORING

The services have been disconnected and the house will remain boarded up until the repaired windows are re-installed in the spring. The original windows will be removed and taken away for repair and plywood sheathing will be installed over the window openings.

The site is shielded from the street by hedging and the developer has installed signage indicating that this property will be redeveloped. The neighbour on the west side overlooks the subject property and has a clear view of the Hedge House property. This provides some measure of security. The property has recently been subject to a break-in by thieves targeting historic buildings. They are not likely to return but it is recommended that a chain or barrier be put up at the entrance from the North Service Road so that unauthorized vehicles cannot enter the site.

It is recommended that City can request a Letter of Credit from the owner to ensure that the heritage attributes are conserved. Based on the Cost Estimate that has been provided by Tom Murison as an appendix to this report, the total cost of the conservation work outlined in this Conservation Plan is approximately $150,000.

13.0 QUALIFICATIONS OF THE AUTHOR

The author of this report is a member in good standing of the Canadian Association of Heritage Professionals. Formal education includes a Master of Arts in Architectural History from the University of Toronto and a diploma in Heritage Conservation from the Willowbank School of Restoration Arts. Professional experience includes an internship at the Ontario Heritage Trust, three years as Architectural Historian and Conservation Specialist at Taylor Hazell Architects in Toronto, and 7 years in private practice in Ontario as a heritage consultant. Other relevant experience includes teaching art history at the University of Toronto and McMaster University and teaching Research Methods and Conservation Planning at the Willowbank School for Restoration Arts in Queenston. In addition to numerous heritage reports, the author has published work in academic journals such as the *Journal of the Society of Architectural Historians* and the *Canadian Historical Review*.

APPENDIX A

THE CORPORATION OF THE CITY OF MISSISSAUGA

BY-LAW NUMBER 0021-2016

A By-law to designate the William Hedge Farmhouse located at 915 North Service Road as being of cultural heritage value or interest

WHEREAS the *Ontario Heritage Act,* R.S.O. 1990, C. O.18, as amended ("Heritage Act") authorizes the Council of a municipality to enact By-laws to designate real property, including all the buildings and structures thereon, to be of cultural heritage value or interest;

AND WHEREAS Council for The Corporation of the City of Mississauga (the "City") approved the designation of the property known as the William Hedge Farmhouse located at 915 North Service Road in the city of Mississauga (the "Property") as being of cultural heritage value or interest through Resolution 0196-2015;

AND WHEREAS in accordance with the requirements of the Heritage Act, a Notice of Intention to designate the Property was published and served and no notice of objection to its designation was received by the Clerk of The Corporation of the City of Mississauga;

NOW THEREFORE the Council of The Corporation of the City of Mississauga hereby ENACTS as follows:

1. That the property, including all the buildings and structures thereon, known as the William Hedge Farmhouse, located at what is municipally known as 915 North Service Road in the city of Mississauga and legally described in Schedule 'A' attached hereto (the "Property"), is hereby designated as being of cultural heritage value or interest under Part IV of the *Ontario Heritage Act,* R.S.O. 1990, C. O.18, as amended.

2. That the reasons for designating the Property are duly set out in Schedule 'B' attached hereto.

3. That the City Clerk is hereby authorized to cause a copy of this By-law to be served upon the owner of the Property and upon the Ontario Heritage Trust and to cause notice of this By-law to be published in a newspaper having general circulation in the city of Mississauga.

4. That the City Solicitor is hereby directed to register a copy of this By-law against the Property in the proper land registry office.

5. That Schedules 'A' and 'B' form an integral part of this By-law.

ENACTED AND PASSED this 10 day of February, 2016.

Bonnie Crombie

MAYOR

Crystal Green

CLERK

APPROVED
AS TO FORM
City Solicitor
MISSISSAUGA
MBeck
Date Feb 3 16

SCHEDULE 'A' TO BY-LAW 0021-2016

Summary: All of Block H, Registered Plan 481
Part of Lot 9, Concession 1, South of Dundas Street
(To be designated under the Ontario Heritage Act)

(Ward 1, City Zone 13, in the vicinity of Cawthra Road and North Service Road)

Legal Description: In the City of Mississauga, Regional Municipality of Peel, (Geographic Township of Toronto, County of Peel), Province of Ontario and being composed of all of Block H, Registered Plan 481 and Part of Lot 9, Concession 1, South of Dundas Street, of the said Township, as in Instrument RO1073948.

Alnashir Jeraj
Ontario Land Surveyor

SCHEDULE "B"

Reasons for Identification

Description of Property

The property known as 915 North Service Road is located on the North Side of North Service Road on Concession 1, Part of lot 9 in the City of Mississauga. It is located in the vicinity of Westfield Drive and North Service Road.

The property contains a single family house, a detached garage and a shed. The single family dwelling - the William Hedge farmhouse - is most easily identified by its one and half storey form, side gabled roof with two dormers, and buff limestone cladding extending to the top of the windows on the second floor. The front entrance faces south, it has two bay windows on the ground floor (south and west side), a front porch with thick stone columns. The house is well set back on the lot.

Statement of Cultural Heritage Value or Interest

The William Hedge Farmhouse's cultural heritage value lies in it being a rare example of the Craftsman Bungalow style within the City of Mississauga with buff, rough cut (rusticated) limestone cladding sourced in the vicinity of the municipality. It has interior features telling of the era including cabinetry and millwork, plumbing and heating fixtures. Built in 1928, its architectural form, style and detailing reflect the design work of a local architect: Port Credit born and raised, Dixie Cox Cotton.

The Cultural Heritage Value also lies in its historic association with this architect. He was the grandson of area pioneer Robert Cotton and the nephew of Dr. Dixie Beaumont Cotton, after whom the village of Dixie was named. Dixie Cox Cotton was active in the community: he was maintenance Engineer for the St. Lawrence Starch Co. (a major locally based Canadian Industry) for over twenty years and is attributed for the design of various buildings in the community, reflecting the mainstream architectural design ideas of the time. These were based on references to vernacular and classical architecture within the British Empire, high quality craftsmanship and design, and integration of the arts and architecture as expressed in the Craftsman Bungalow, Edwardian, and Institutional and Commercial Period Revival buildings. Design ideas were carried into interior elements of the house displaying attention to detail in interior design and craftsmanship such as stonework and millwork. The house therefore demonstrates his work, the work of a significant architect to the community. The William Hedge house also has the potential to yield information to the understanding of a community. The farmhouse was built prior to the existence of the Queen Elizabeth Way as a highway, and was retained by the family within the Applewood subdivision of 1953, maintaining its orientation of its original frontage on Queen Elizabeth Highway, known as Middle Road at the time the house was designed.

Description of Heritage Attributes

The property at 915 North Service Road has cultural heritage value as it satisfies the criteria for Determining Cultural Heritage Value or Interest set out in Regulation 9/06 of the Ontario Heritage Act. The following are the key exterior and interior attributes as a rare example of the Craftsman Bungalow style within the City of Mississauga and as a reflection of the work by D.C. Cotton, architect:

1. The property has design and physical value in its architectural value as a rare example of the Craftsman Bungalow style within the City of Mississauga. The house features recognizable design characteristics of the style, including:

    a) 1 and half storey massing
    b) almost square plan, with protruding bay windows on the south and west wall, protruding stout stone chimney on the west wall
    c) relatively low floor to ceiling heights

d) low-slung gabled roof with dormers
e) front porch with thick stone columns
f) rusticated buff limestone exterior building material, laid in a split course bond, mortar joints that accentuate the bond pattern of the wall.
g) "punched" style masonry openings for windows, with segmental arch, key stone and straight cut voussouirs
h) exterior stone extends to the top of the 2nd floor window level and in all facades of the original portion of the house
i) stone is sourced from Milton
j) wood three over one pane sash style windows arranged in a variety of compositions: singles, pairs or threes
k) interior layout with centre hall plan with staircase in main hall
l) original kitchen shaker style stained oak cabinetry, sink, plumbing fixtures and hardware of the style
m) stained wood millwork such as wainscoting, mission style balustrade
n) limestone fireplaces and built in book case found in the house designed in an integrated way with the fireplace wall
o) orientation of the house on the lot

2. The house has associative and historical value because:

a) It has direct associations with Dixie Cox Cotton, architect born and raised in Port Credit, who is native of Port Credit, Mississauga. He studied at the University of Toronto, and worked both in Toronto and his home town. He is a rare architect born and raised in the municipality known to the community that lived and produced work in the early 20th century in Mississauga, contributing to the building of the character of the municipality as we know it today.

b) The house has the potential to yield information that contributes to the understanding of a community and culture because the house was built on farmland which was subdivided into suburban lots in the early 1950s. The Hedge family farmhouse stood in the family's fruit farm originally run on the lands. The Hedge family presumably farmed the land since 1906. Hedge Drive in the subdivision was named after the family. The orientation of the house facing North Service Road as the front entrance is reflective of an earlier time, prior to the building of the Queen Elizabeth Way as a multilane highway in the 1950s. The incorporation of the William Hedge Farmhouse, within the 1953 subdivision and retention to today provides a tangible representation of the history of land use and urban design in the City of Mississauga and it can yield information as to the history of a community.

c) The house demonstrates the work of Dixie Cox Cotton, an architect who is significant to the community. Dixie Cox Cotton is attributed with having designed a number of buildings in the community and Toronto, reflecting the mainstream architectural design ideas of the time, which were based on references to vernacular and classical architecture within the British Empire, high quality craftsmanship and design, and integration of the arts and architecture as expressed in the Craftsman Bungalow, Edwardian, and Institutional and Commercial Period Revival buildings. The ideas reflected in the execution of the interior of the house speak of innovations in middle class domestic architecture in order to achieve practicality while maintaining high quality craftsmanship. This is specially expressed in the kitchen cabinetry materiality and design, including the sink with interior plumbing (faucet) and millwork found throughout the house.

The physical/design attributes listed in point one are also the materialization of the historical and associative value. In addition to these attributes, the following lend the property its historical/associative value:

- Orientation of the front entrance towards North Service Road
- Siting within a large lot that is distinctive from the neighbouring properties

APPENDIX: PHOTOS

PHOTOS TAKEN AFTER FLOODING IN 2015

Figure 1: GROUND FLOOR - Front stair hall, view toward front entrance.

Figure 2: MAIN FLOOR - View from living room into front stair hall.

Figure 3: MAIN FLOOR - Detail of wood paneling on main stairs.

Figure 4: MAIN FLOOR - Detail of front stair newel post and hand rail

Figure 5: 2ND FLOOR - Upstairs landing, view looking down to main entrance.

Figure 6: 2nd FLOOR - Detail showing water damaged wood flooring.

Figure 7: MAIN FLOOR - Living room fireplace.

Figure 8: MAIN FLOOR - Living room fireplace and mantle-piece components.

Figure 9: MAIN FLOOR - Living room cornice trim.

Figure 10: MAIN FLOOR - Living room bay window.

Figure 11: MAIN FLOOR - Living room cornice trim.

Figure 12: MAIN FLOOR - View from living room into family room.

Figure 13: MAIN FLOOR - View from kitchen into dining room.

Figure 14: MAIN FLOOR - Dining room.

Figure 15: MAIN FLOOR - Kitchen

Figure 16: MAIN FLOOR - Kitchen

Figure 17: GROUND FLOOR - Stairs to the rear addition and basement level.

Figure 18: GROUND FLOOR - Rear addition, view into the historic portion of the house.

Figure 19: GROUND FLOOR - Rear addition

Figure 20: GROUND FLOOR - Rear addition.

Figure 21: BASEMENT - Main room.

Figure 22: BASEMENT - Bathroom

Impacts to Historic Front Porch during Relocation

Figure 23: FRONT PORCH - Stone knee wall and clay tile floor.

Figure 24: FRONT PORCH - Stone column

Figure 25: FRONT PORCH - Stone knee wall and stone column.

Figure 26: STONE PORCH - Detail of stone knee wall.

Figure 27: FRONT PORCH - Detail of stone column.

Figure 28: FOUNDATION – Detail of raised stone foundation on west elevation.

Figure 29: FOUNDATION - Detail of raised stone foundation on east side.

Figure 30: SIDE PORCH – wood pillars and gable roof.

Figure 31: SIDE PORCH – Concrete pad and stone stairs.

Figure 31: DETACHED GARAGE – front elevation

Figure 32: DETACHED GARAGE - side elevation

Figure 33: DETACHED SHED – Front elevation.

Figure 34: DETACHED SHED - rear elevation

Figure 35: DETACHED SHED - Side elevation.

Figure 36: DETACHED SHED - Side elevation.

PHOTOS TAKEN AFTER A BREAK-IN IN AUGUST 2017

Figure 37: 2ND FLOOR HALL AFTER BREAK-IN – BASEBOARD REMOVED

Figure 38: BEDRROM 1 AFTER BREAK-IN – BASEBOARD REMOVED

Figure 39: BEDROOM 1 AFTER BREAK-IN - WINDOW TRIM REMOVED - WINDOW SEAT AND DORMER ARE NOT ORIGINAL TO HOUSE

Figure 40: BEDROOM 1 AFTER BREAK-IN – BASEBOARD REMOVED

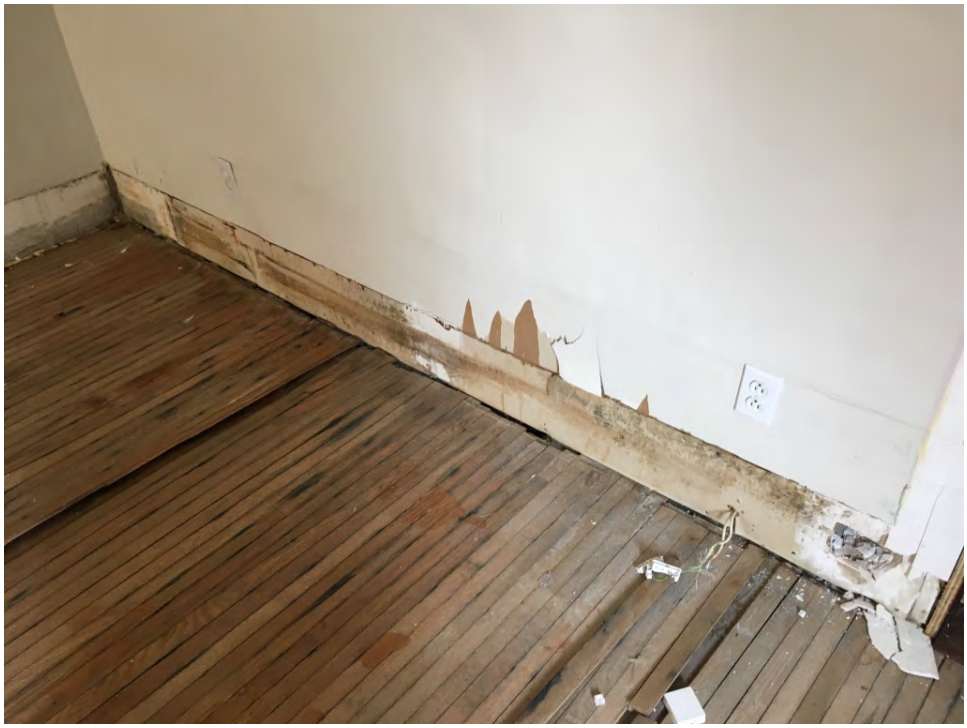


Figure 41: BEDROOM 1 AFTER BREAK-IN – BASEBOARD REMOVED

Figure 42: BEDROOM 2 AFTER BREAK-IN – DOOR TRIM AND DOORS REMOVED

Figure 43: BEDROOM 2 AFTER BREAK-IN – WINDOW TRIM REMOVED - WINDOW SEAT & DORMER ARE NOT ORIGINAL TO THE HOUSE

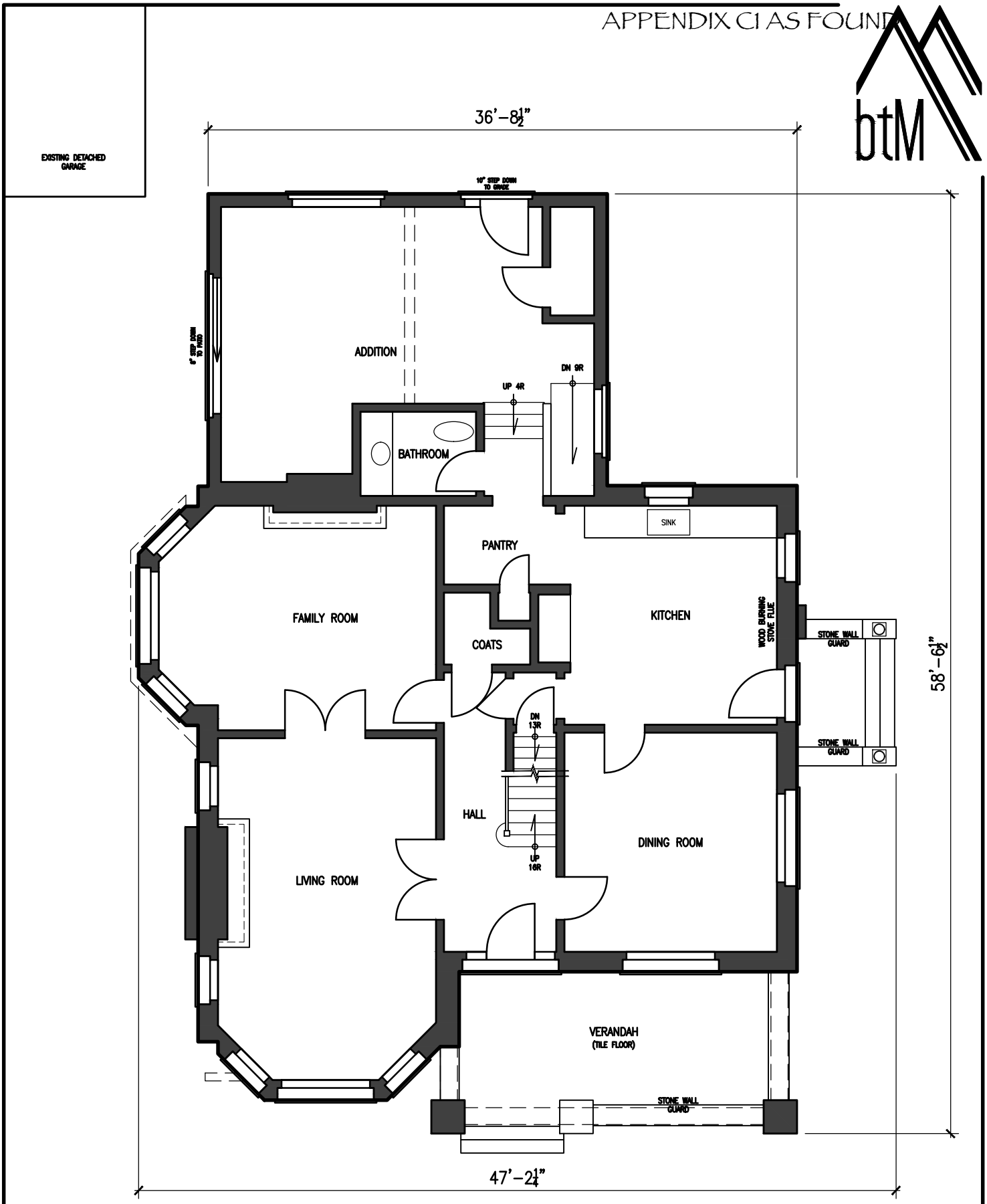
Figure 44: BEDROOM 2 AFTER BREAK-IN – BASEBOARD REMOVED

CONDITION OF THE DINING ROOM AT THE TIME OF DESIGNATION

Figure 45: DINING ROOM PRIOR TO 2015

Figure 46: DINING ROOM PRIOR TO 2015

APPENDIX C1 AS FOUND



915 North Service Rd., Mississauga

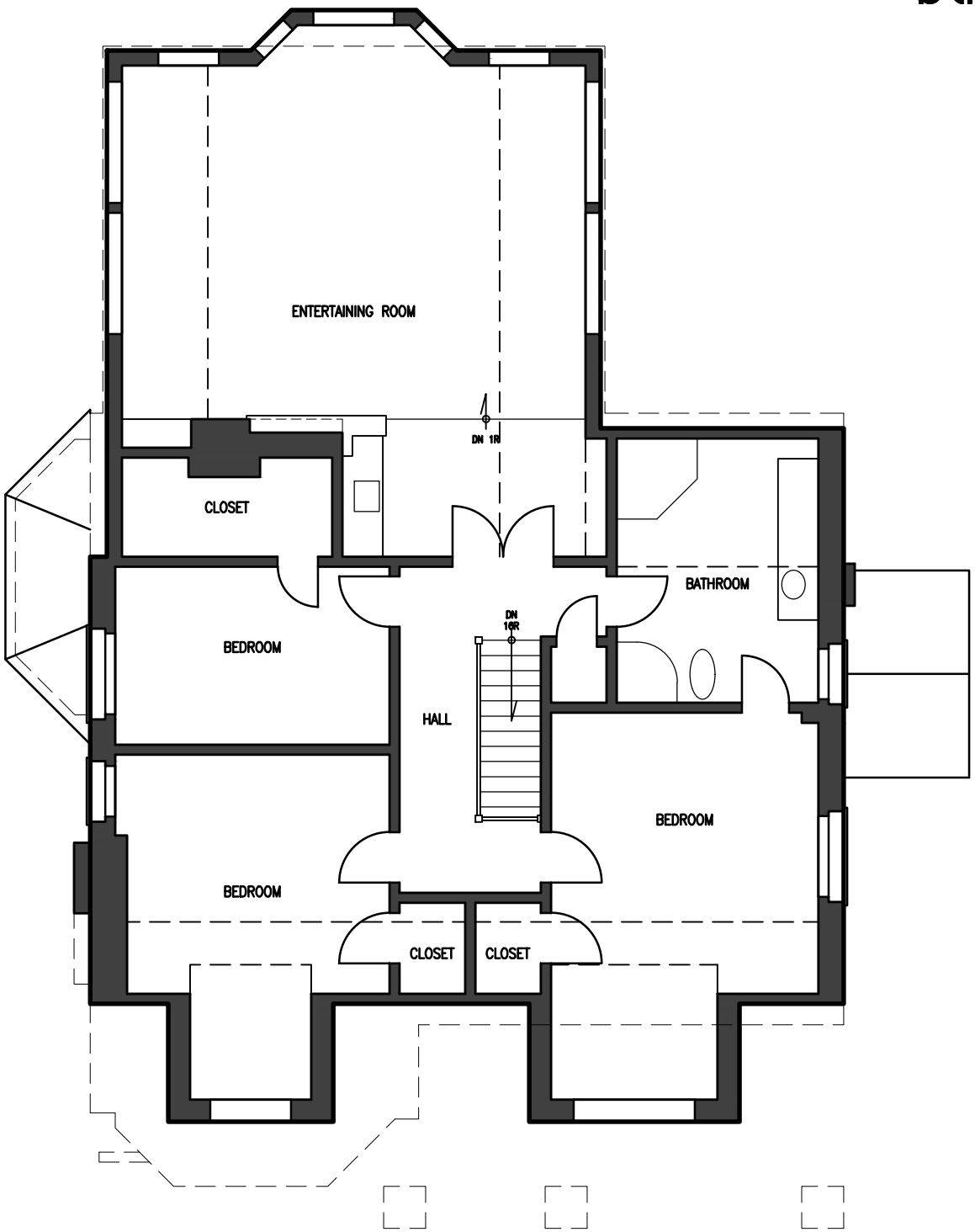
JULY 18, 2016

174-15

EXISTING MAIN FLOOR PLAN

1/8" = 1'-0"

1,740 sq.ft.



915 North Service Rd., Mississauga

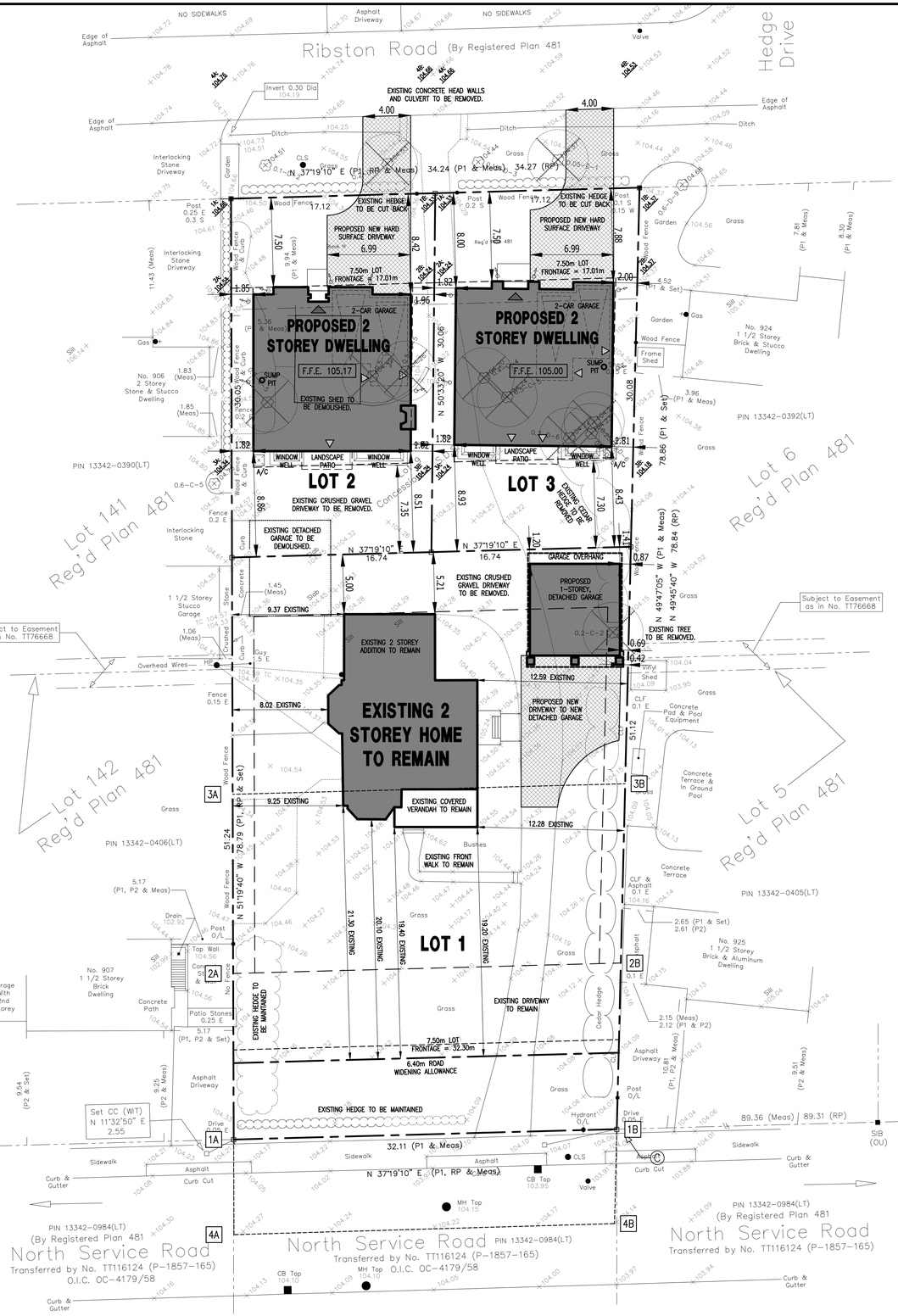
JULY 18, 2016

174-15

EXISTING SECOND FLOOR PLAN

1/8" = 1'-0"

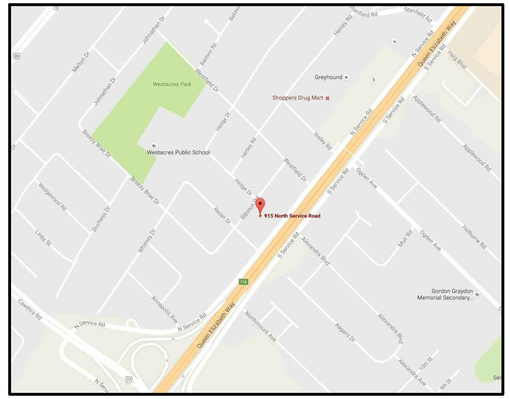
1,645 sq.ft.



1 A2.1 **ARCHITECTURAL SITE PLAN**
SCALE: 1 : 200

SITE PLAN LEGEND:

	PROPERTY LINE
	BUILDING ENVELOPE
	EXISTING TO BE REMOVED
	PROPOSED SOLID HOARDING
	PROPOSED FRAMED HOARDING
WAT	NEW WATER LINE
SAN	NEW SANITARY LINE
GAS	NEW NATURAL GAS LINE
HYD	NEW BURIED HYDRO VAULT
SP1	NEW SUMP LINE TO GRADE
	CONSTRUCTION ACCESS
	EXISTING GRADE
100.00	PROPOSED FINISHED GRADE
	MAIN ENTRY, FRONT DOOR
	SECONDARY ENTRANCE
	EXISTING BUILDING TO REMAIN
	PROPOSED NEW CONSTRUCTION
	PROPOSED NEW DRIVEWAY
	EXISTING TREE TO REMAIN
	EXISTING TREE TO BE REMOVED
RWL	RAIN WATER LEADERS



2 A2.1 **KEY PLAN**

PROPERTY OWNER:	PROJECT ADDRESS:
Jade Estates 501 Danforth Avenue Toronto, ON M4K 1P5	**915 North Service Road and (2) New Lots off of Ribston Road Mississauga, Ontario Block H, Registered Plan 481 and Part of Lot 9, Concession 1, S.D.S.**
DESIGNER:	**APPLICANT:**
btM Drafting and Design 32 Gilmour Place, Hamilton, Ontario, L8M 2Y2 Attention: Brian Matthews PH: (905) 393-8005	**W.E. OUGHTRED & ASSOCIATES. Attention: Bill Oughtred PH: (905) 822-5644 FX: (905) 822-9349**

SITE STATISTICS

ZONING: R3-75

Permitted Uses Detached Dwelling

Zoning Information	%	METRIC	IMPERIAL
Minimum Lot Area, Interior Lot		550.00	5,920.34
Lot 1, 915 N. Service Road:		***1,595.78***	***17,177.39***
Lot 2, SW off Ribston Road:		***507.03***	***5,457.80***
Lot 3, NE off Ribston Road:		***507.03***	***5,457.80***
Minimum Lot Frontage, Interior Lot		15.00	49.21
Measured 7.5m back from Front Property Line			
Lot 1, 915 N. Service Road:		***32.30***	***105.97***
Lot 2, SW off Ribston Road:		***17.01***	***55.81***
Lot 3, NE off Ribston Road:		***17.01***	***55.81***
Maximum Lot Coverage,	35.00%	177.46	1,910.23
Lot 1, 915 N. Service Road:			
Existing Dwelling:	10.13%	161.65	1,740.00
Existing Covered Verandah:	1.31%	20.90	225.00
Existing Side Porch:	0.29%	4.65	50.00
Proposed Detached Garage:	3.64%	58.06	625.00
Proposed Covered Garage Canopy (Front):	0.49%	7.90	85.00
Proposed Covered Garage Canopy (Rear):	1.47%	7.43	80.00
TOTAL, 915 N. Service Road:	***17.33%***	***260.59***	***2,805.00***
Lot 2, SW off Ribston Road:			
Proposed Dwelling, incl. Entry Porch:	34.91%	176.98	1,905.00
TOTAL, Lot 2 (SW off Ribston Road):	***34.91%***	***176.98***	***1,905.00***
Lot 3, NE off Ribston Road:			
Proposed Dwelling, incl. Entry Porch:	35.00%	177.44	1,910.00
TOTAL, Lot 3 (NE off Ribston Road):	***35.00%***	***177.44***	***1,910.00***
Building Gross Floor Area,			
Lot 1, 915 N. Service Road:			
Existing Main Floor:		161.65	1,740.00
Existing Second Floor:		153.29	1,650.00
TOTAL, 915 N. Service Road:		***314.94***	***3,390.00***
Lot 2, SW off Ribston Road:			
Proposed Main Floor:		129.60	1,395.00
Proposed Garage:		42.74	460.00
Proposed Second Floor:		163.51	1,760.00
TOTAL, Lot 2 (SW off Ribston Road):		***335.84***	***3,615.00***
Lot 3, NE off Ribston Road:			
Proposed Main Floor:		130.99	1,410.00
Proposed Garage:		41.34	445.00
Proposed Second Floor:		169.55	1,825.00
TOTAL, Lot 3 (NE off Ribston Road):		***341.88***	***3,680.00***
Maximum Height, Highest Ridge	(Exception 75)	9.50	31.17
Lot 1, 915 N. Service Road (Existing):		***8.38***	***27.49***
Lot 2, SW off Ribston Road:		***9.50***	***31.17***
Lot 3, NE off Ribston Road:		***9.43***	***30.94***
Maximum Height of Eaves	(Exception 75)	6.40	21.00
Lot 1, 915 N. Service Road (Existing):		***5.58***	***18.31***
Lot 2, SW off Ribston Road:		***6.40***	***21.00***
Lot 3, NE off Ribston Road:		***6.33***	***20.77***
Maximum Dwelling Unit Depth,	(Exception 75)	20.00	65.62
Lot 1, 915 N. Service Road:		***17.21***	***56.46***
Lot 2, SW off Ribston Road:		***13.74***	***45.08***
Lot 3, NE off Ribston Road:		***13.74***	***45.08***
Landscaped Soft Area (minimum required),	40.00%		
Lot 1, 915 N. Service Road:	Total	854.55	9198.30
Landscaped Hard Area:		95.01	1022.68
Landscaped Soft Area:	**88.88%**	***759.54***	***8175.62***
Lot 2, SW off Ribston Road:	Total	130.09	1400.28
Landscaped Hard Area:		53.12	571.78
Landscaped Soft Area:	**59.17%**	***76.97***	***828.50***
Lot 3, NE off Ribston Road:	Total	130.12	1400.60
Landscaped Hard Area:		54.84	590.29
Landscaped Soft Area:	**57.85%**	***75.28***	***810.31***

3 A2.1 **SITE STATISTICS**

APPENDIX C2 - SITE PLAN

SCHEDULE 1: DESIGNER INFORMATION

I BRIAN MATTHEWS DECLARE THAT I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER SUBSECTION 3.2.2.2. OF THE BUILDING CODE.
INDIVIDUAL BCIN: 41322
FIRM BCIN: 44237
SIGNATURE:

Drawings must NOT be scaled. Contractor must check and verify all dimensions, specifications and drawings on site and report any discrepancies to the designer prior to proceeding with any of the work.

SITE ACCREDITATION

SKETCH SHOWING TOPOGRAPHIC DETAIL OF:
BLOCK H, REGISTERED PLAN 481 and PART OF LOT 9, CONCESSION 1, S.D.S.
CITY OF MISSISSAUGA,
(REGIONAL MUNICIPALITY OF PEEL)

INFORMATION TAKEN FROM A SURVEY PREPARED BY:
DONALD H. BROWN,
ONTARIO LAND SURVEYOR
FEBRUARY 13, 2015

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

NO.	DATE	ISSUED/REVISED
5	09.09.13	ISSUED FOR HERITAGE REVIEW
4	09.05.17	ISSUED FOR HERITAGE REVIEW
3	03.23.17	ISSUED FOR HERITAGE REVIEW
2	09.30.16	ISSUED FOR HERITAGE REVIEW
1	08.25.16	ISSUED FOR COORDINATION
REF.	DATE:	DESCRIPTION:

REVISIONS / ISSUANCE:

btM
btM Drafting & Design
32 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y2
of. 905.393.8005
ce. 905.912.2337
em. btmdrafting@gmail.com

CLIENT:
915 N. SERVICE, RIBSTON ROAD LOTS

ADDRESS: 915 N. SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
SITE PLAN AND SITE STATISTICS

DRAWN: B.T.M.
DATE: 2.16.2017
SCALE: 1 : 200
JOB NUMBER: 203-16
SHEET NUMBER: **A2.1**

C:\USERS\BTM\DESIGN\DOCUMENTS\2016\BTM DESIGN\001 PROJECT FILES\915 RIB ST\N SERVICE LOTS\DRAWINGS\915 RIBSTON SITE PLAN.DWG

DRAWING LIST			
#	SHEET NAME	ISSUED FOR PERMIT	ISSUED FOR TENDER
A0.1	COVERSHEET & DRAWING LIST	X	
A0.3	BUILDING CODE AND SCHEDULES	X	
A1.1	SITE PLAN & KEYPLAN	X	
A2.1	FLOOR PLANS	X	
A5.1	ELEVATIONS	X	
A6.1	BUILDING SECTIONS	X	

915 NORTH SERVICE ROAD
PERMIT DRAWINGS

915 NORTH SERVICE ROAD, MISSISSAUGA, ON.

PROJECT NO. 17-1177

STRUCTURAL

PORMOUNT CONSULTANTS LTD.
120 NORFINCH DRIVE. SUITE 31
TORONTO, ONTARIO, M3N 1X3
T 416-800-5077

ARCHITECTURAL

ATA ARCHITECTS INC.
211 LAKSHORE ROAD EAST
OAKVILLE ONTARIO L6J 1H7
360 DUFFERIN STREET. SUITE 103
TORONTO ONTARIO M6K 1Z8
T 905-849-6986
F 905-849-4369

SECTION HEAD (1 / A101 SIM)
CALLOUT HEAD (1 / AD-000 Ref)
DOOR TAG (11)
ENTRY ARROW
FLOOR TAG (11)
GRID BUBBLE (0)
LEVEL TAG
MATERIAL TAG (5)
ROOF TAG (11)
ROOM NAME TAG (Room name / 101)
WALL TAG
WINDOW TAG (W00)
ELEVATION MARKER (1 Ref / Ref 1 / A101 / 1 Ref 1)

CJ	CONTROL JOINT
AL	ALUMINUM
HM	HOLLOW METAL
AN D	ANODIZE
PT	PAINT
FIN	FINISH
F.R.	FIRE RATING
GWG	GEORGIAN WIRED GLASS
TEMP	TEMPERED
WM	POSSIBLE WATER METER LOCATION
RWL	RAIN WATER LEADER

ANNOTATION LEGEND
1 : 50

GENERAL NOTES
1. ALL CONSTRUCTION TO MEET THE 2012 ONTARIO BUILDING CODE AND ALL APPLICABLE CODES.
2. INSPECT SITE CONDITIONS PRIOR TO QUOTING ON NEW WORK AND REPORT ANY DISCREPANCIES.
3. ENSURE THAT ALL CONSTRUCTION, MATERIALS, METHODS OF INSTALLATION AND TEMPORARY BRACING, COMPLY WITH REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION.
4. SITE VERIFY ALL DIMENSIONS AND MAKE MODIFICATIONS TO SUIT EXISTING SITE CONDITIONS.
5. MAKE GOOD ALL AREAS DISTURBED OR DAMAGED DURING CONSTRUCTION WHETHER SHOWN ON DRAWINGS OR NOT.
6. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ANY AND ALL STRUCTURAL, MECHANICAL, ELECTRICAL, SITE SERVICING AND LANDSCAPE DRAWINGS. REFER TO THESE DRAWINGS FOR EXACT LOCATION OF FINISHED FITTINGS. COORDINATE STRUCTURAL, MECHANICAL, ELECTRICAL & LANDSCAPE WORK TO ENSURE THAT THE PARTS OF THE WORK COME TOGETHER PROPERLY.
7. REPORT ALL CONTEMPLATED DEVIATIONS FROM THE DRAWINGS PRIOR TO MAKING CHANGES.
8. PROVIDE CUTTING, PATCHING AND REMEDIAL WORK IN ORDER TO ENSURE PARTS OF THE WORK COME TOGETHER PROPERLY.
9. ARRANGE FOR INSPECTIONS REQUIRED BY LOCAL BUILDING, PLUMBING, HYDRO, GAS, ETC., AUTHORITIES DURING CONSTRUCTION AND FOR OCCUPANCY.
10. PROVIDE STRAPPING FOR WALLS AND BLOCKING AS REQUIRED & AS DETAILED.
12. DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNLESS LABELLED, "FOR CONSTRUCTION."

REVISION

NUMBE	DATE	REMARK
001	2017 07 27	ISSUE FOR PERMIT

ATA ARCHITECTS
ATA ARCHITECTS INC.
OAKVILLE OFFICE:
211 LAKESHORE ROAD EAST,
OAKVILLE ONTARIO L6J 1H7
TORONTO OFFICE:
360 DUFFERIN STREET, SUITE 103
TORONTO, ONTARIO M6K 1Z8
T 905 849 6986 F 905 849 4369
E admin@ataarchitectsinc.com

SEALS

ONTARIO ASSOCIATION OF ARCHITECTS
ALEXANDER L. TEMPORALE
LICENCE
2507

PROJECT
915 NORTH SERVICE ROAD
915 NORTH SERVICE ROAD, MISSISSAUGA, ON.

DRAWING
COVERSHEET & DRAWING LIST

DRAWN
RL

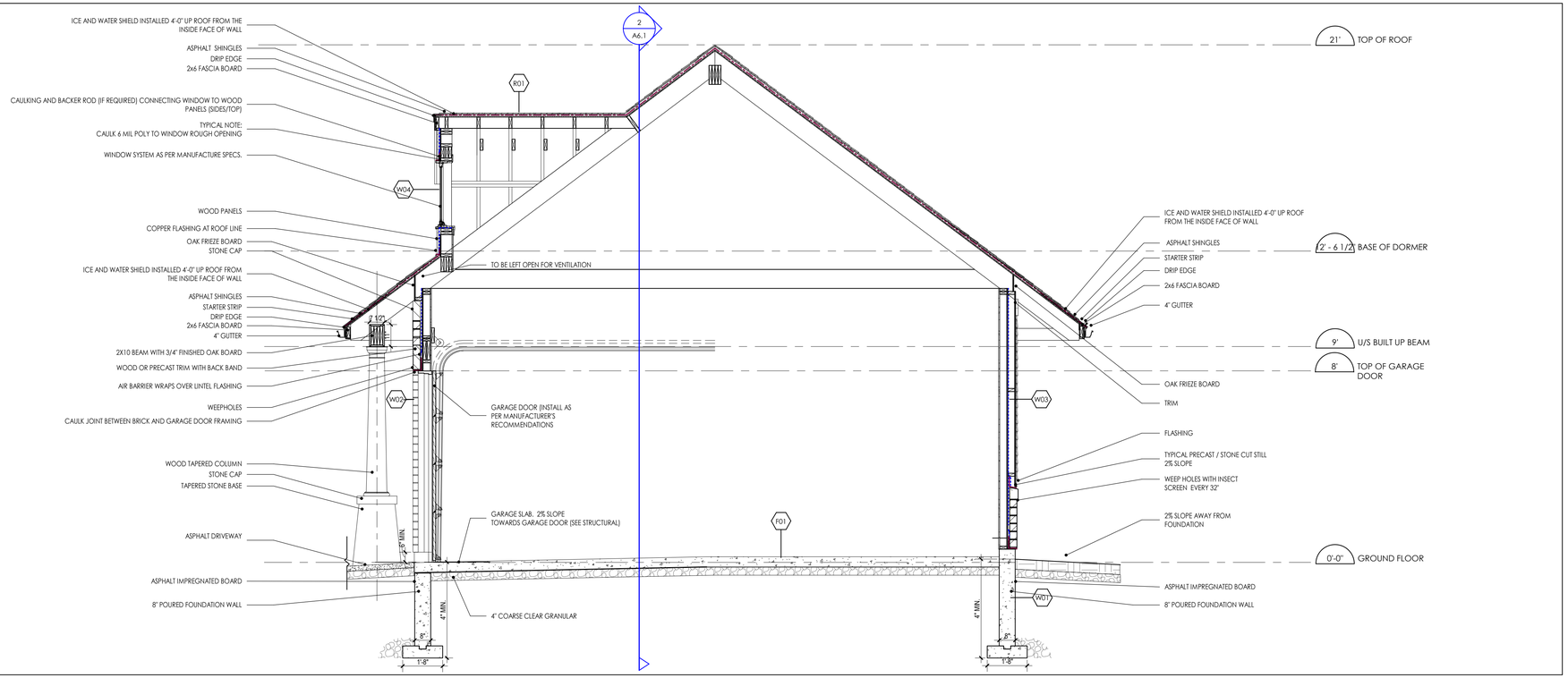
SCALE
1 : 50

DATE
2017 07 28

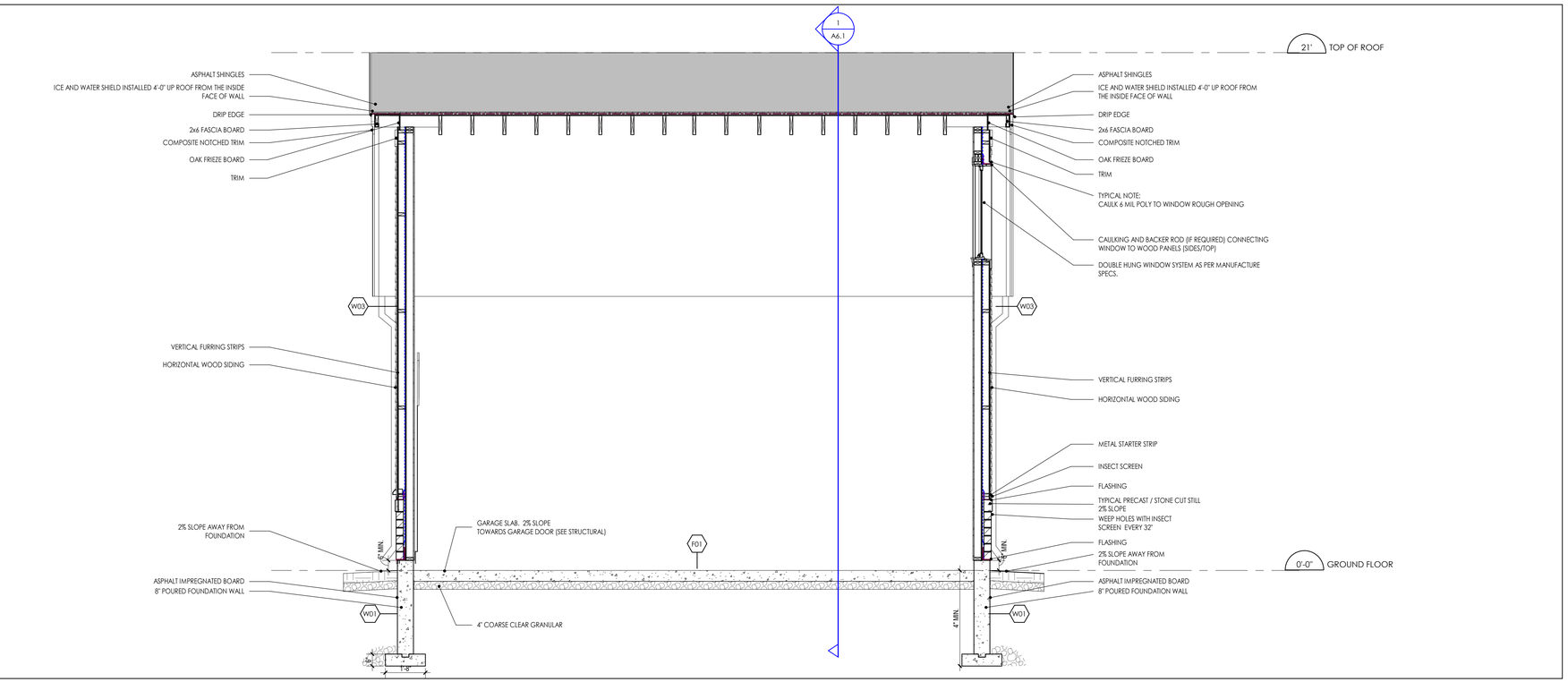
CHECKED
AT

PROJECT
17-1177

DRAWING
A0.1



1 / A6.1 SECTION 1
3/8" = 1'-0"



2 / A6.1 SECTION 2
3/8" = 1'-0"

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2017-07-28 11:32:22 AM

REVISION		
NUMBE	DATE	REMARK
001	2017 07 27	ISSUE FOR PERMIT

ATA ARCHITECTS
ATA ARCHITECTS INC.
OAKVILLE OFFICE:
211 LAKESHORE ROAD EAST,
OAKVILLE ONTARIO L6J 1H7
TORONTO OFFICE:
360 DUFFERIN STREET, SUITE 103
TORONTO, ONTARIO M6K 1Z8
T 905 849 6986 F 905 849 4369
E admin@ataarchitectsinc.com

SEALS

ONTARIO ASSOCIATION OF ARCHITECTS
ALEXANDER L. TEMPORALE
LICENCE
2587

PROJECT

915 NORTH SERVICE ROAD

915 NORTH SERVICE ROAD, MISSISSAUGA, ON.

DRAWING

BUILDING SECTIONS

DRAWN

RL

SCALE

3/8" = 1'-0"

DATE

2017 07 28

CHECKED

AT

PROJECT

17-1177

DRAWING

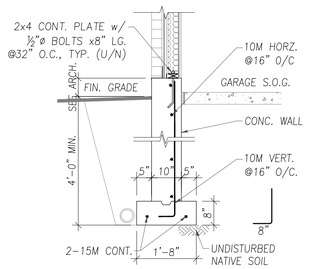
A6.1

FOUNDATION NOTES:

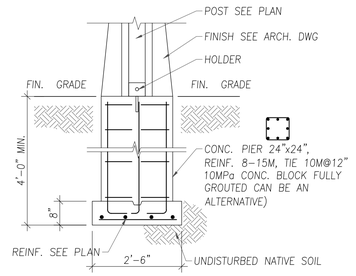
1. FOUND ALL NEW FOOTINGS ON UNDISTURBED NATURAL SOIL CAPABLE OF SAFELY SUSTAINING 2,500PSF (BEARING ELEVATIONS SHALL BE SITE CONFIRMED BY GEOTECHNICAL ENGINEER PRIOR TO ANY FORM, REBAR OR CONCRETE PLACEMENT)
2. PROVIDE 4'-0" MINIMUM FROST PROTECTION TO ALL FOOTINGS EXPOSED TO FREEZING.
3. 4" MIN. 25MPa SLAB-ON-GRADE ON MIN. 4" GRAVEL ON WELL COMPACTED SUBGRADE SAW-CUT @15'-0" o.c. MAX. EACH WAY.
4. DO NOT PLACE BACKFILL AGAINST WALLS RETAINING EARTH, EXCEPT CANTILEVER RETAINING WALLS, UNTIL THE WALLS HAVE REACHED THEIR DESIGN STRENGTH.
5. BACKFILL FOUNDATION WALLS SUCH THAT THE LEVEL OF BACKFILL AGAINST ONE SIDE OF THE WALL IS NEVER GREATER THAN 1'-6" ABOVE THE LEVEL ON THE OTHER SIDE, UNLESS TEMPORARY BRACING SUPPORTS ARE PROVIDED.
6. REINFORCING STEEL SHALL CONFORM TO CSA-G30.18 (LATEST VERSION), AND SHALL HAVE A YIELD STRENGTH OF 400MPa, UNLESS OTHERWISE NOTED.
7. FOOTING CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH 32MPa 5~7% AIR AT 28 DAYS.

FRAMING NOTES:

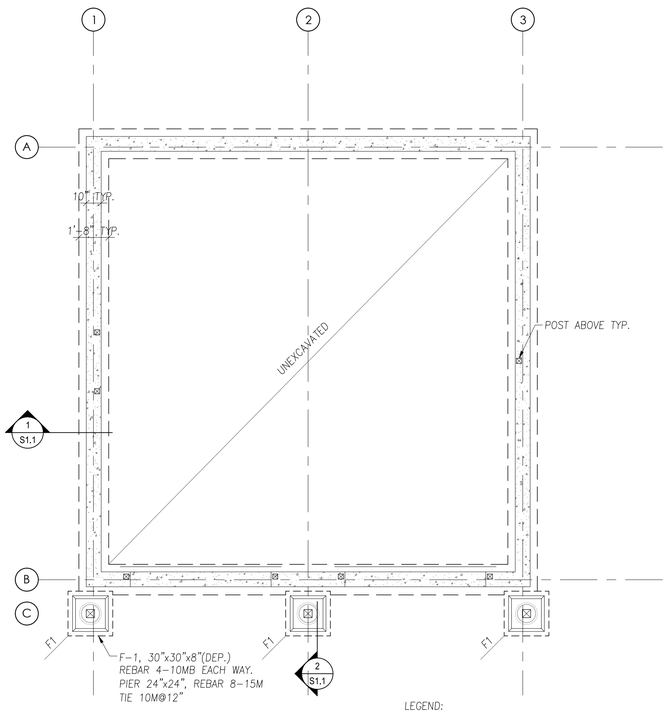
1. DESIGN LOADING (UNFACTORED)
   a. DEAD LOAD= 20 PSF
   b. SNOW LOAD SEE PLAN
2. ALL EXTERIOR WALLS SHALL BE LOAD-BEARING WALL 2x4@16"O.C. WOOD STUD (S.P.F. #2 OR BETTER) WALLS c/w DOUBLE TOP PLATE AND BLOCKING AT MID-HEIGHT. TYP. (U/N).
3. ALL WOOD STUD (S.P.F. #2 OR BETTER) WALLS c/w DOUBLE TOP PLATE AND BLOCKING AT MID-HEIGHT.
4. ALL BUILT UP WOOD POSTS TO BE CONTINUOUS TO FOUNDATION WALL OR SUPPORTING LINTEL.
5. WOOD POSTS, TRUSS AND LINTELS SHALL BE S.P.F. #2 OR BETTER.
6. LVL TO BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. LVL GRADE 1.9E.
7. OSB SUB-FLOOR / ROOF SHEATHING ⅝" MIN. TO BE GLUED AND NAILED TO JOISTS / RAFTER.



1 S1.1 SECTION ½" = 1'-0"



2 S1.1 SECTION ½" = 1'-0"

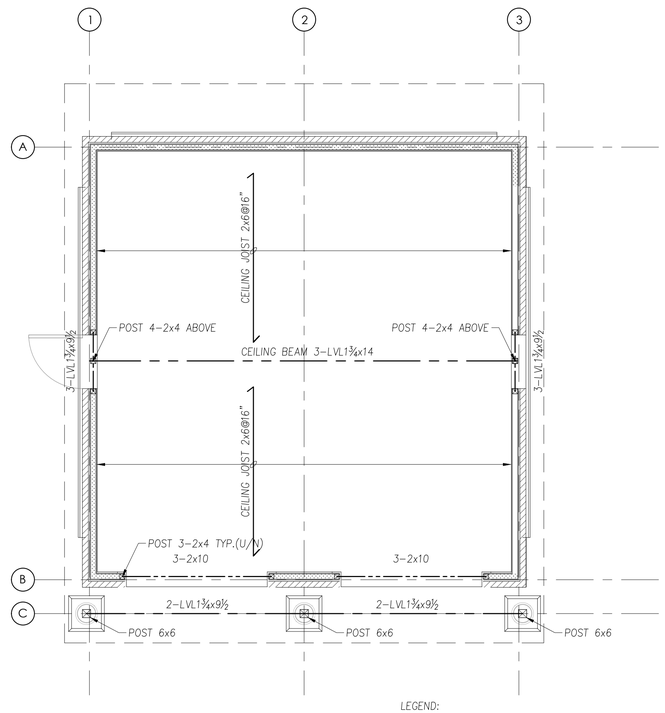


LEGEND:

DENOTES CONCRETE FOUNDATION WALL

FOUNDATION PLAN

¼" = 1'-0"

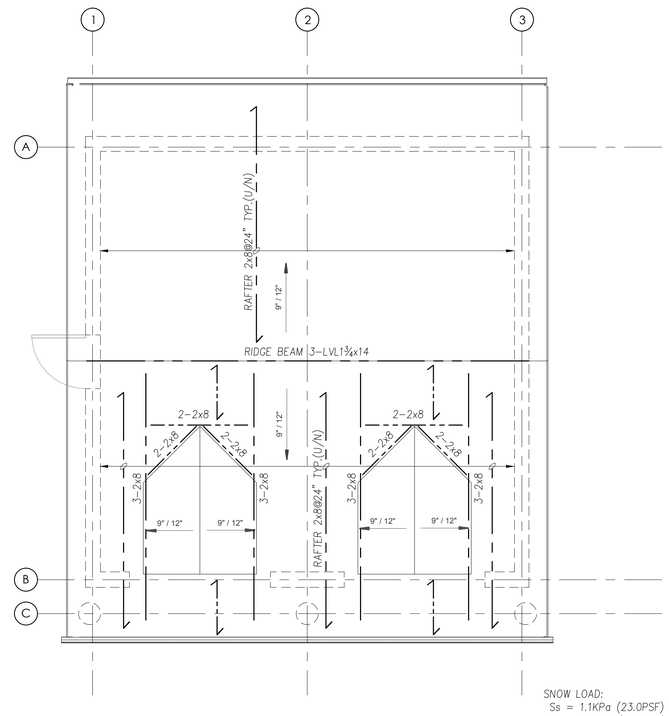


LEGEND:

DENOTES LOAD BEARING STUD WALL
DENOTES BEAM
DENOTES JOIST
DENOTES POST

GROUND FLOOR FRAME PLAN

¼" = 1'-0"



SNOW LOAD:
Ss = 1.1KPa (23.0PSF)
Sr = 0.4KPa (8.35PSF)

LEGEND:

DENOTES LOAD BEARING STUD WALL
DENOTES BEAM / RAFTER

ROOF FRAME PLAN

¼" = 1'-0"

Contractor must check and verify all dimensions on the job and report any discrepancies to Engineer before proceeding with the work.

Do not scale the drawing.

This drawing must be read in the context of all the other drawings which constitute the document.

No.	Issued For	Date
1	PERMIT APPLICATION	28/07/2017

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ATA ARCHITECTS INC.

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REGISTERED PROFESSIONAL ENGINEER
T.H.ZHANG
100089086
28/07/2017
PROVINCE OF ONTARIO

GARAGE

915 NORTH SERVICE RD.
MISSISSAUGA ON

Project No.
17-504

Drawn: T.L.
Scale: AS SHOWN
Checked: T.Z.
Date: JUL 28, 2017

Title
PLANS
DETAILS & NOTES

Drawing No.
S1.1

STATISTICS

ACCESSORY BUILDINGS AND STRUCTURES INFORMATION

TYPE: DETACHED GARAGE

	PERMITTED	GIVEN
MAX. NUMBER PERMITTED PER LOT	1	1
MAX FLOOR AREA	75M2	58 M2/625 SF
MIN UNOBSTRUCTED AREA FOR PARKING	2.75M X5.2M	2.75M X5.2M
MAX HEIGHT – SLOPE ROOF	4.6M	6.4M
MAX. HEIGHT OF EAVES	3M	2.90M
LOT COVERAGE	10%	3.64%

SEE SITE PLAN FOR ADDITIONAL DETAILS

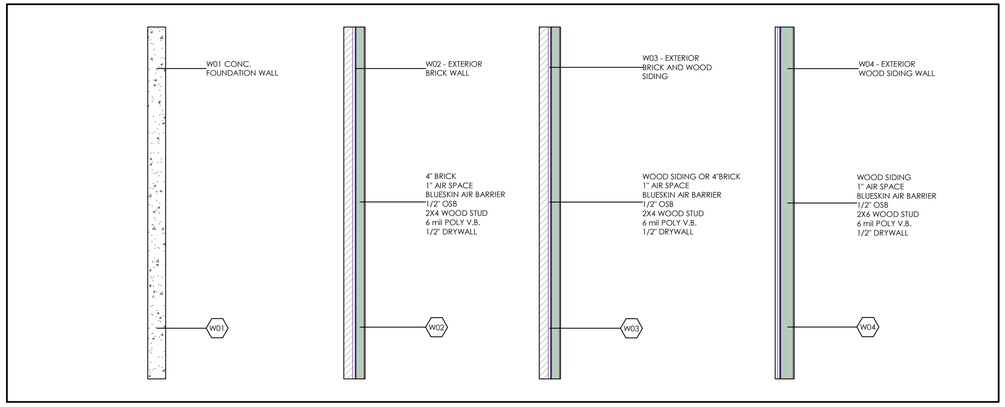
PROJECT SUMMARY:
THIS BUILDING PERMIT APPLICATION IS FOR CONSTRUCTION OF THE NEW DETACHED GARAGE FOR AN EXISTING RESIDENTIAL HOUSE.

CONSULTANT: ATA ARCHITECTS INC., 211 LAKESHORE ROAD OAKVILLE, ONTARIO L6J 1H7 — 360 DUFFERIN STREET, SUITE 103 TORONTO, ONTARIO M6K 1Z8

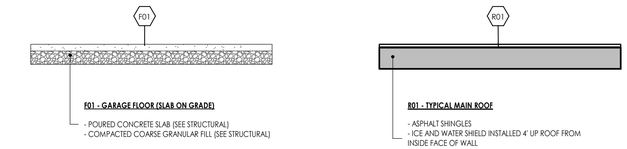
NAME OF PROJECT: 915 NORTH SERVICE ROAD
LOCATION: 915 NORTH SERVICE ROAD, MISSISSAUGA, ONTARIO

	ONTARIO Building CODE DATA MATRIX PART 9			ORC REFERENCE REFERENCES ARE TO DIVISION B UNLESS NOTED (A) FOR DIVISION A OR (C) FOR DIVISION C.
9.00				
9.01	PROJECT TYPE:	☐ ADDITION AND RENOVATION ☐ CHANGE OF USE	☒ NEW ☐ ADDITION ☐ ALTERATION	☒ PART 9 [A] 1.1.2.
	DESCRIPTION: DETACHED GARAGE			
9.02	MAJOR OCCUPANCY(S)	**ENTIRE BLD 1: GROUP C**		9.10.2.
9.03	BUILDING AREA (m2)	**GARAGE** EXISTING 0 NEW 58 m2 TOTAL 58 2		1.4.1.2[A]
9.04	GROSS AREA (m2)	EXISTING 0 NEW 58 m2 TOTAL 58 m2		[A]1.4.1.2.
9.05	BUILDING HEIGHT	1 STOREYS ABOVE GRADE 6.4 (m) ABOVE GRADE		[A]1.4.1.2. & 9.10.4.
9.06	NUMBER OF STREETS/FIRE FIGHTER ACCESS	1 STREET(S)		
9.07	SPRINKLER SYSTEM	☐ REQUIRED ☒ NOT REQUIRED PROPOSED: ☐ ENTIRE BUILDING ☐ SELECTED COMPARTMENT ☐ SELECTED FLOOR AREAS ☐ BASEMENT ☐ IN LIEU OF ROOF RATING ☐ NONE		9.10.8.2.-4 9.10.20.
9.08	FIRE ALARM REQUIRED	☐ Yes ☒ No		9.10.18.
9.09	WATER SERVICE / WATER SUPPLY IS ADEQUATE	N/A		***
9.10	CONSTRUCTION TYPE:	RESTRICTION: ☒ COMBUSTIBLE PERMITTED ☐ NON-COMBUSTIBLE REQUIRED ACTUAL: ☒ COMBUSTIBLE ☐ NON-COMBUSTIBLE ☐ BOTH		9.10.6.
9.11	BARRIER-FREE DESIGN	☐ YES ☒ NO **DETACHED GARAGE FOR HOUSE**		9.5.2.
9.12	HAZARDOUS SUBSTANCES	☐ YES ☒ NO		9.10.1.3.
9.13	REQUIRED FIRE RESISTANCE RATING	HORIZONTAL ASSEMBLY RATING	NONCOMBUSTIBLE IN LIEU OF RATING	9.10.8.
		FLOORS 0	☐ YES ☐ NO ☒ N/A	
		ROOF 0	☐ YES ☐ NO ☒ N/A	

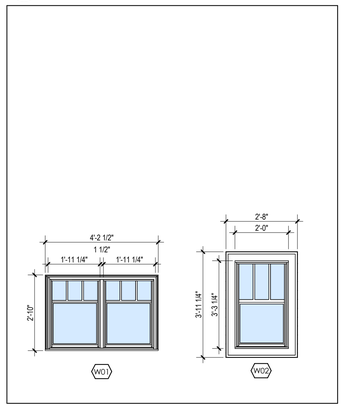
OBC - PART 9
1 : 10

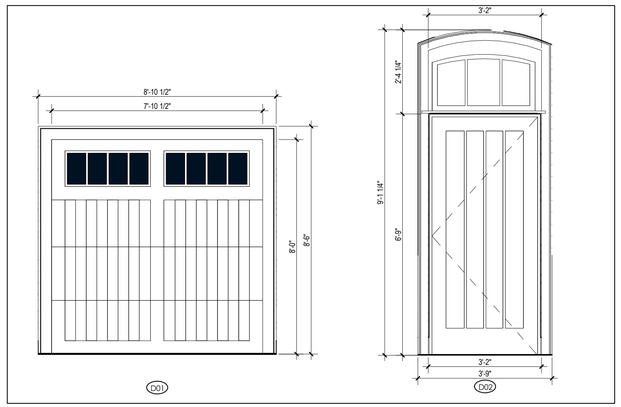


1 A0.3 WALL SCHEDULE
3/8" = 1'-0"



2 A0.3 FLOOR AND ROOF SCHEDULE
3/8" = 1'-0"





3 A0.3 WINDOW LEGEND
3/8" = 1'-0"

4 A0.3 DOOR LEGEND
3/8" = 1'-0"

MATERIAL SUMMARY

CODE	DESCRIPTION
C01	STONE VENEER(MATCH TO HOUSE)
C02	6" WOOD SIDING
C03	WOOD TRIM
C04	WOOD COLUMN (TAPERED)
C05	ASPHALT SINGLES (MATCH TO HOUSE)
C06	WOOD SIDING/PANELS
C07	CONCRETE FOUNDATION WALL
C08	
C09	STAINED WOOD DOORS

NOTE: ALL ROOF FLASHING TO BE COPPER

REVISION

NUMBE	DATE	REMARK
001	2017 07 27	ISSUE FOR PERMIT

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PROJECT
915 NORTH SERVICE ROAD
915 NORTH SERVICE ROAD, MISSISSAUGA, ON.

DRAWING
BUILDING CODE AND SCHEDULES

DRAWN
RL

SCALE
As indicated

DATE
2017 07 28

CHECKED
AT

PROJECT
17-1177

DRAWING
A0.3

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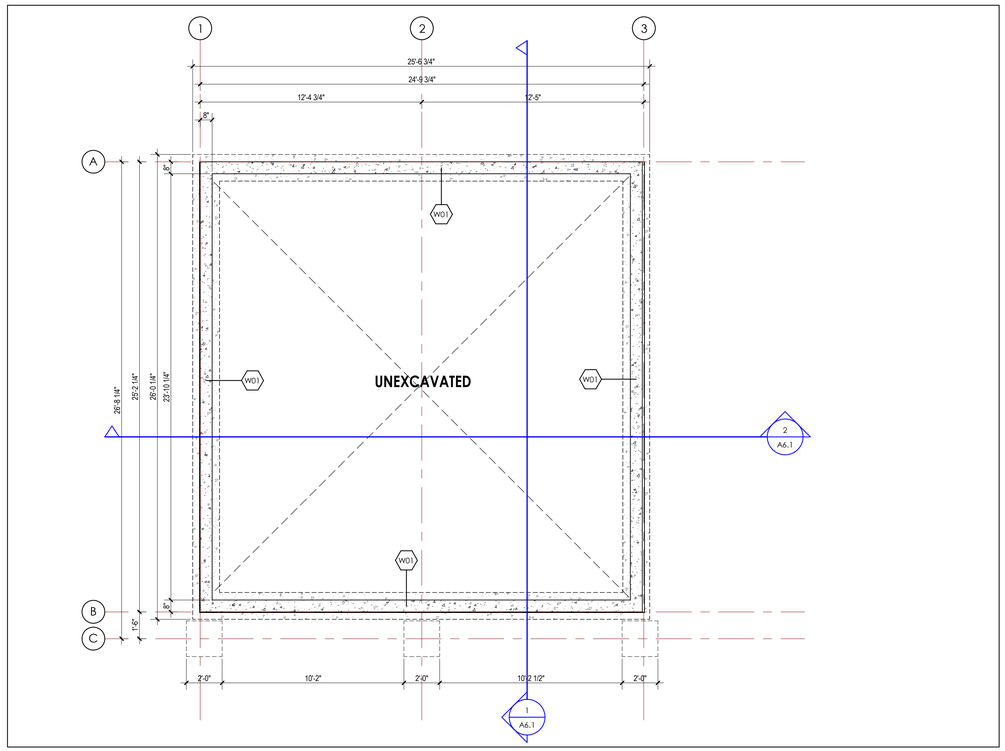
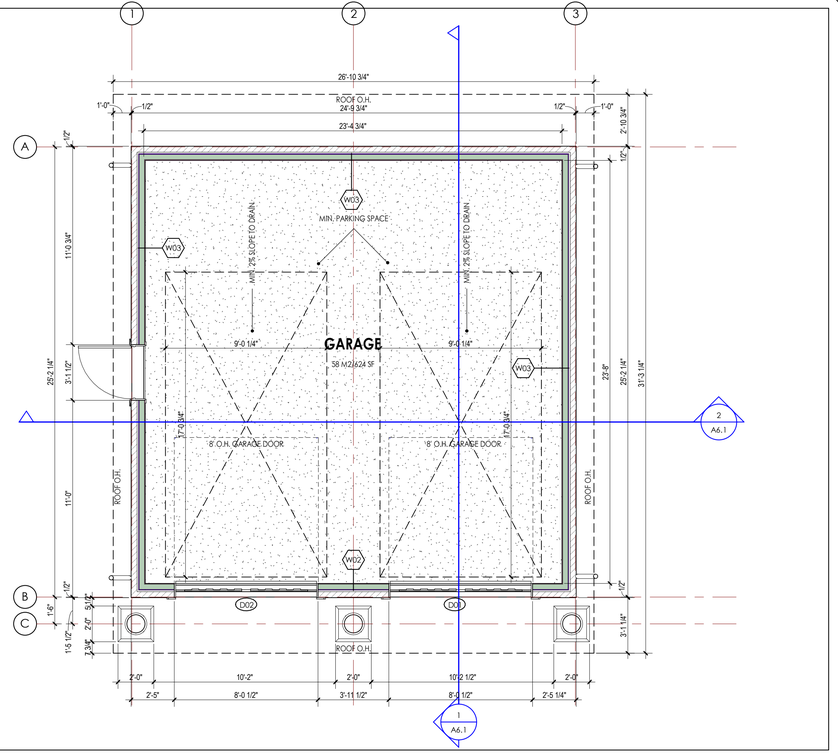
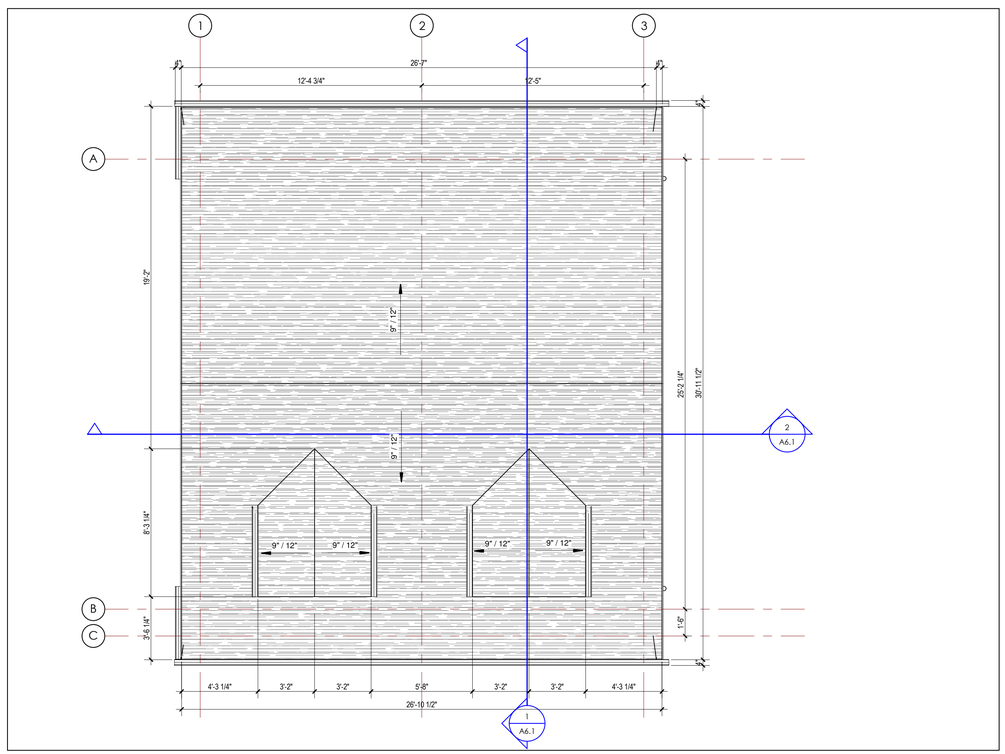


1 A2.1 FOUNDATION PLAN
1/4" = 1'-0"



3 A2.1 GROUND LEVEL
1/4" = 1'-0"



2 A2.1 TOP OF ROOF
1/4" = 1'-0"

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SEALS

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PROJECT

915 NORTH SERVICE ROAD

915 NORTH SERVICE ROAD, MISSISSAUGA, ON.

DRAWING

FLOOR PLANS

DRAWN

RL

SCALE

1/4" = 1'-0"

DATE

2017 07 28

CHECKED

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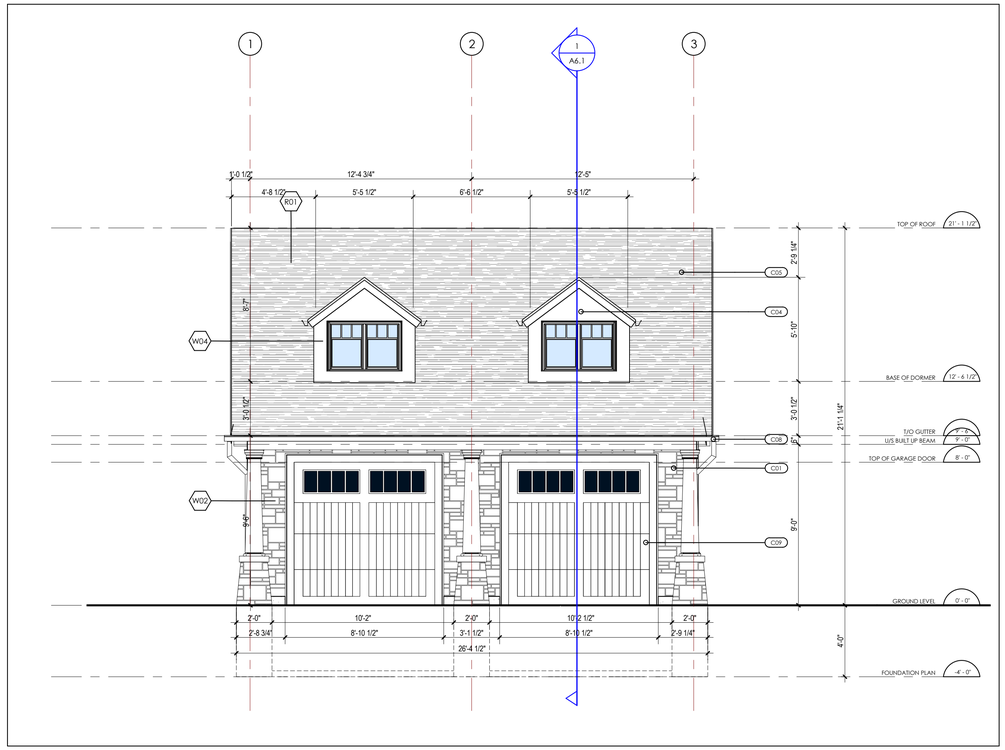
PROJECT

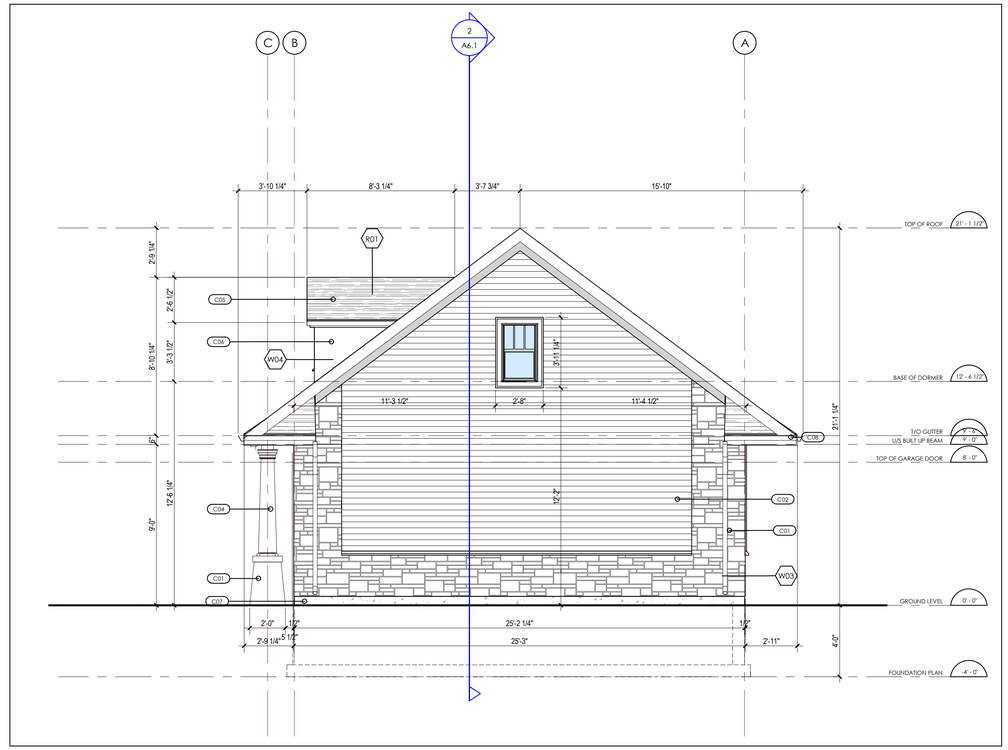
17-1177

DRAWING

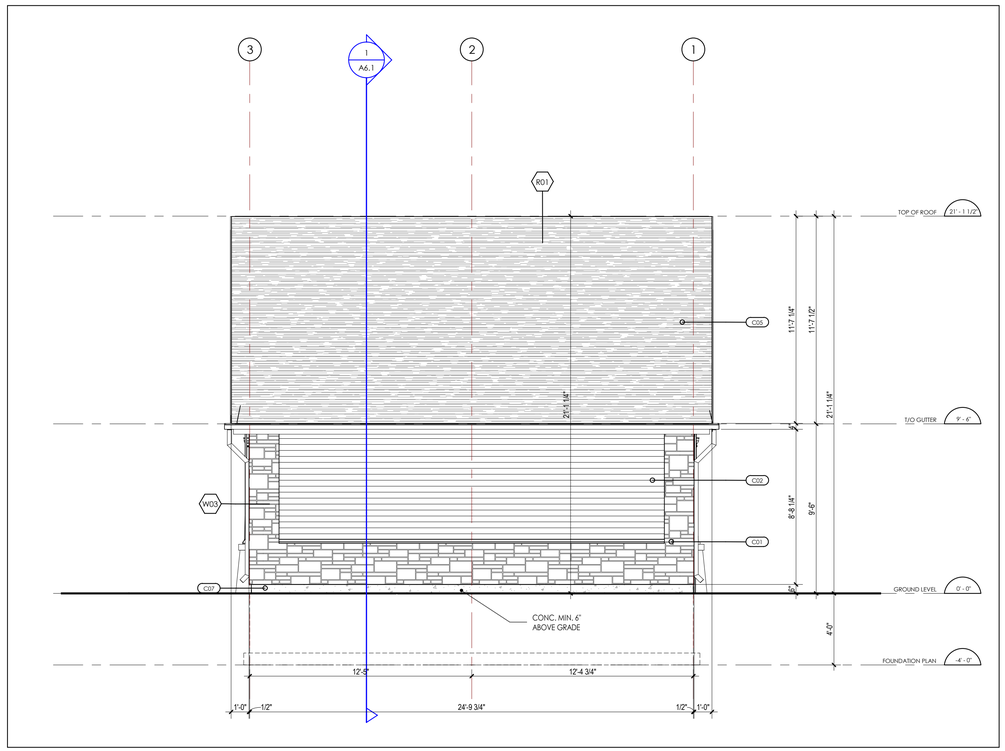
A2.1



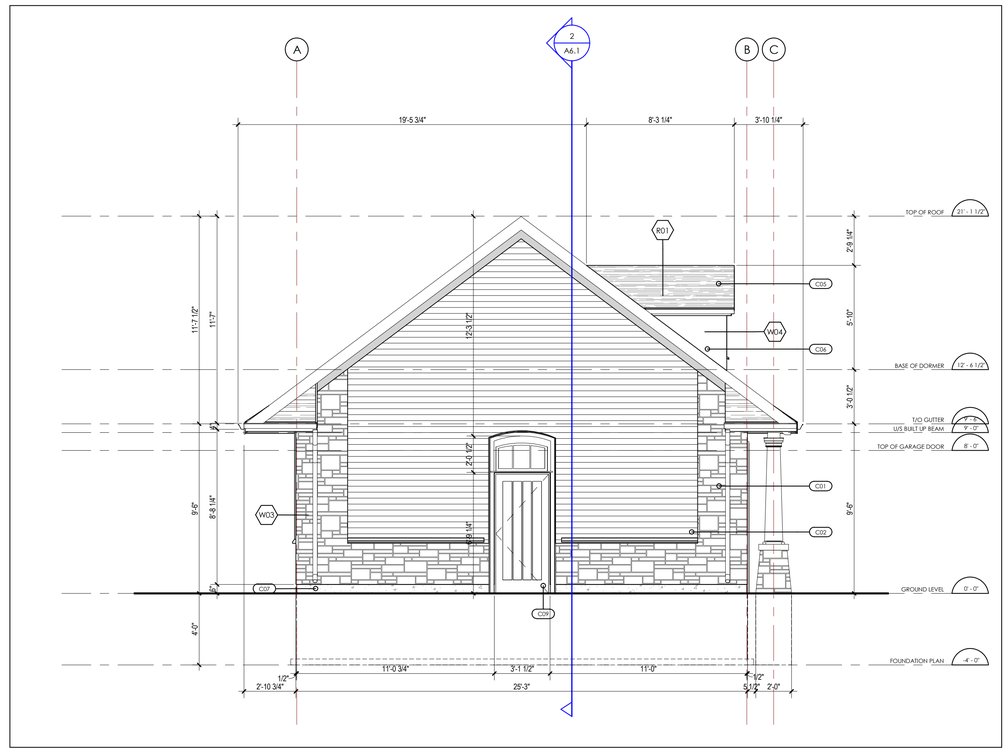
1 A5.1 SOUTH ELEVATION
1/4" = 1'-0"



2 A5.1 EAST ELEVATION
1/4" = 1'-0"



3 A5.1 NORTH ELEVATION
1/4" = 1'-0"



4 A5.1 WEST ELEVATION
1/4" = 1'-0"

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PROJECT

915 NORTH SERVICE ROAD

915 NORTH SERVICE ROAD, MISSISSAUGA, ON.

DRAWING

ELEVATIONS

DRAWN

RL

SCALE

1/4" = 1'-0"

DATE

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DRAWING

A5.1

GENERAL NOTES

STANDARD NOTES

DO NOT SCALE DRAWINGS.

ALL DRAWINGS ARE THE PROPERTY OF THE ARCHITECT/DESIGNER AND SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT WRITTEN CONSENT FROM THE SAID ARCHITECT/DESIGNER.

btM DRAFTING AND DESIGN MAKES EVERY EFFORT TO PROVIDE A COMPLETE AND ACCURATE CONSTRUCTION DRAWING PACKAGE. HOWEVER, IT IS THE RESPONSIBILITY OF THE BUILDER TO CHECK AND VERIFY ALL DIMENSIONS AND DETAILS BEFORE PROCEEDING WITH CONSTRUCTION. CONTRACTOR TO REPORT ANY DISCREPANCIES TO THE ARCHITECT/DESIGNER. FAILURE TO DO SO WILL CAUSE FORFEIT TO ANY CLAIM.

BY COMMENCING CONSTRUCTION OF A BUILDING FROM THESE DRAWINGS, THE OWNER AND/OR BUILDER ACKNOWLEDGES THAT THE GENERAL NOTES HAVE BEEN READ AND UNDERSTOOD AS FOLLOWS.

ALL CONSTRUCTION TO BE ACCORDING TO BEST COMMON PRACTICE AND TO CONFORM TO THE ONTARIO BUILDING CODE OR OTHER CODES HAVING JURISDICTION.

GENERAL CONTRACTOR SHALL GUARANTEE ALL MATERIAL AND WORKMANSHIP FOR A PERIOD OF (1) ONE YEAR FOLLOWING SUBSTANTIAL COMPLETION. ALL OTHER MANUFACTURER'S GUARANTEES TO APPLY.

GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS EXCEPT FOR THE BUILDING PERMIT, WHICH WILL BE OBTAINED BY THE OWNER.

btM DRAFTING AND DESIGN SHALL NOT BE RESPONSIBLE FOR ANY CHANGES OR VARIANCES FROM THE FINAL CONSTRUCTION DRAWINGS AND SPECIFICATIONS, OR ADJUSTMENTS REQUIRED RESULTING FROM CONDITIONS ENCOUNTERED ON THE JOB SITE AND IS THE SOLE RESPONSIBILITY OF THE OWNER OR CONTRACTOR.

GENERAL CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY SHORING AS REQUIRED DURING ANY CONSTRUCTION OR DEMOLITION OF STRUCTURAL WALLS, COMPONENTS OR SITE CONDITIONS. ANY AND ALL RESULTING DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

NO SUBSTITUTIONS CAN BE MADE TO btM DRAFTING AND DESIGN'S DRAWINGS OR DOCUMENTS UNLESS APPROVED BY btM DRAFTING AND DESIGN IN WRITING AND FOLLOWING SUBSEQUENT DETAILS.

STRUCTURAL NOTES

ALL SITE VISITS AND SHOP DRAWING REVIEW ARE TO BE INVOICED TO, AND PAID DIRECTLY BY THE OWNER. TRUSS SHOP DRAWING REVIEW (IF APPLICABLE) IS TO BE INCLUDED WITHIN INITIAL FEE PROPOSAL, ANY DEVIATION ON THE BUILDER'S PART TO CHANGE OR REVISE TRUSS PACKAGE WILL REQUIRE ADDITIONAL SHOP DRAWING REVIEW, AND SHALL BE INVOICED AS NOTED ABOVE.

SEE A3.2 FOR ALL ADDITIONAL STRUCTURAL NOTES, INSTRUCTIONS AND DETAILS.

FOOTINGS:	EXISTING FOOTINGS TO REMAIN.
FOUNDATION WALL:	EXISTING FOUNDATIONS TO REMAIN.
WALLS ABOVE GRADE CONSTRUCTION:	EXISTING EXTERIOR WALLS TO REMAIN. WHERE EXISTING OPENINGS ARE TO BE CLOSED IN, NEW CONSTRUCTION IS TO MATCH DEPTH OF EXISTING. PATCH AND MAKE GOOD ALL CONNECTIONS BETWEEN NEW AND EXISTING CONSTRUCTION ON INTERIOR AND EXTERIOR FACES. FOR AIR/MOISTURE PROTECTION, RAIN-SCREEN AND INSULATION REFER TO 'EXTERIOR WALL FINISH' IN CONSTRUCTION ASSEMBLIES.
CEILING HEIGHTS:	EXISTING CEILING HEIGHTS TO REMAIN.
BASEMENT FLOOR CONSTRUCTION:	EXISTING BASEMENT FLOOR SLAB TO REMAIN.
WOOD FLOOR CONSTRUCTION:	EXISTING FLOOR FRAMING TO REMAIN.
PORCH CONSTRUCTION:	EXISTING PORCH CONSTRUCTION TO REMAIN.
ROOF CONSTRUCTION:	EXISTING ROOF CONSTRUCTION TO REMAIN.
STAIR CONSTRUCTION:	AS PER ONTARIO BUILDING CODE 2012, DIVISION B,PART 9, SENTENCE 9.8.9.1.1.(a) THE DESIGN LOAD FOR STAIRS AND RAMPS SERVING A SINGLE DWELLING UNIT IS 1.9kPa (40 psf).

INSTALLATION / CONSTRUCTION NOTES

INTERCONNECTED SMOKE DETECTORS AND CARBON MONOXIDE ALARMS ARE TO BE INSTALLED ON EACH FLOOR LEVEL AND IN EACH BEDROOM AS PER ONTARIO BUILDING CODE REQUIREMENTS.

220 VOLT WIRING AND GAS LINES ARE TO BE ROUGHED IN FOR ALL STOVES AND DRYERS PROPOSED.

INSTALLATION OF ELECTRICAL ITEMS MUST COMPLY WITH LOCAL ELECTRICAL CODES AND REGULATIONS AS WELL AS WITH LOCAL ELECTRIC POWER SUPPLIER'S REGULATIONS IN ALL RESPECTS.

DOOR CHIME TO BE INSTALLED, COORDINATE WITH OWNER.

ALARM SYSTEM IS TO BE COORDINATED WITH OWNER'S REQUEST AND SPECIFICATIONS.

COMPLETE HOME AUTOMATION OR STRUCTURED CABLING IS TO BE COORDINATED WITH OWNER'S REQUEST AND SPECIFICATIONS.

WINDOW AND EXTERIOR DOOR HEIGHTS ARE BASED ON STANDARD "KOLBE" UNITS. SHOULD BUILDER OR OWNER CHANGE MANUFACTURER THEN ALL EXTERIOR WINDOW HEAD HEIGHTS ARE TO LINE UP WITH TYPICAL EXTERIOR DOOR HEIGHTS LOCATED ON THE SAME FLOOR.
WHERE NO EXTERIOR DOORS ARE PRESENT, PLACE THEM AS DIMENSIONED ON ELEVATIONS WITHIN THIS DRAWING SET.
WINDOW AND EXTERIOR DOOR SHOP DRAWINGS SHALL BE SUBMITTED TO ARCHITECT/DESIGNER FOR REVIEW BEFORE ORDERING.

COAT AND CLOTHES CLOSETS SHALL HAVE (1) ONE HANGING ROD AND (1) ONE SHELF ABOVE. LINEN CLOSETS SHALL HAVE (5) FIVE ADJUSTABLE SHELVES INSTALLED. BROOM CLOSETS SHALL BE COMPLETE WITH (1) ONE HIGH SHELF.

H.V.A.C. NOTES

ALL SITE VISITS AND SHOP DRAWING REVIEW AND DETAIL(S) PRODUCTION ARE TO BE INVOICED TO, AND PAID DIRECTLY BY THE OWNER.

HEATING, VENTILATION AND AIR CONDITIONING CALCULATIONS AND LAYOUTS ARE PROVIDED SEPARATELY FROM THIS SET OF DRAWINGS. INFORMATION BELOW, IS JUST FOR QUICK REFERENCE.

GAS CONNECTION WILL REQUIRE SEPARATE PERMIT AND INSPECTION, AND SHALL BE THE RESPONSIBILITY OF THE BUILDER TO OBTAIN.

NOTE: EACH FURNACE IS TO HAVE ITS OWN DEDICATED H.R.V. UNIT AND AIR CONDITIONER.

PROJECT SPECIFIC COMPLIANCE PACKAGE IS LOCATED ON THE RIGHT SIDE OF THIS SHEET, REFER TO IT FOR ALL REQUIRED INSULATION VALUES AND EFFICIENCY REQUIREMENTS. REFER TO CONSTRUCTION ASSEMBLIES FOR INSULATION TYPES.

FUEL BURNING APPLIANCES, INCLUDING FURNACES, FIREPLACES AND STOVES ARE TO BE PROVIDED WITH COMBUSTION AIR SUPPLY FROM EXTERIOR.

DRYER(S) ARE TO BE VENTED DIRECTLY TO THE EXTERIOR OF THE HOUSE.

ELECTRONICALLY PROGRAMMABLE THERMOSTATS ARE TO BE INSTALLED.

ALL BATHROOMS ARE TO HAVE EXHAUST FANS INSTALLED DIRECTLY TO EXTERIOR.

ALL COOKTOPS/RANGES ARE TO HAVE RANGE HOOD INSTALLED, MAXIMUM C.F.M NOT TO EXCEED 1,000 C.F.M. FAN UNIT TO BE INSTALLED ON EXTERIOR WALL.

FURNACE QUANTITY:	1 FORCED AIR FURNACE
FURNACE LOCATIONS:	BASEMENT
FURNACE FUEL SOURCE:	NATURAL GAS
FURNACE ZONES:	AS NOTED ON HVAC DRAWINGS
FIREPLACES:	SEE ARCHITECTURAL FLOOR PLANS FOR FUEL BURNING TYPE
IN-FLOOR HEATING:	BASEMENT FLOOR: NO
	MAIN FLOOR: NO
	SECOND FLOOR: NO

BUILDING ENVELOPE NOTES

ALL SITE VISITS AND SHOP DRAWING REVIEW AND DETAIL(S) PRODUCTION ARE TO BE INVOICED TO, AND PAID DIRECTLY BY THE OWNER.

MATERIALS SHOWN ON DETAILS PROVIDED MAY NOT BE SUBSTITUTED WITHOUT THE REVIEW AND APPROVAL OF btM DRAFTING AND DESIGN, IN WRITING.
ANY SUBSTITUTION PROPOSED SHALL BE BACKED UP WITH SUFFICIENT TECHNICAL DATA TO INDICATE THE SUBSTITUTION PERFORMS AT A LEVEL EQUAL TO OR BETTER THAN THE MATERIAL ORIGINALLY SHOWN IN THE DESIGN DETAILS.

THE BUILDING PERMIT IS ISSUED BASED UPON THE ARCHITECTURAL DRAWINGS, THEREFORE SUBSTITUTION OF MATERIALS DURING CONSTRUCTION WITHOUT THE WRITTEN APPROVAL OF btM DRAFTING AND DESIGN DOES NOT CONSTITUTE APPROVAL BY btM DRAFTING AND DESIGN AND ADDITIONAL DESIGN AND SITE REVIEWS MAY BE REQUIRED TO APPROVE THE SUBSTITUTION AT THE BUILDERS OR OWNERS EXPENSE.

PROJECT SPECIFICATIONS, CONSTRUCTION ASSEMBLIES

PROJECT SPECIFICATIONS ARE TO BE READ IN CONJUNCTION WITH DETAILS OUTLINED ON A3.2 AND S1.1.

DAMP-PROOFING / WATERPROOFING

DPF1

FOUNDATION MOISTURE PROTECTION:
DIRECTLY ATOP EXTERIOR FACE OF CONCRETE FOUNDATION WALL APPLY,
15–20mil DAMP–PROOF MATERIAL,
AT TOP, EXTEND DAMPPROOFING ABOVE GRADE TO POINT 4" BELOW TOP OF FOUNDATION WALL.
AT BOTTOM, COVER FOOTING COVE & EXTEND DOWN VERTICAL FACE OF FOOTING A MINIMUM OF 4".
ATOP DAMP–PROOF MATERIAL INSTALL,
8mm GEO–COMPOSITE MEMBRANE SYSTEM,
INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS.
AT TOP, STOP 1" BELOW PROPOSED FINISHED GRADE.
AT BOTTOM, EXTEND BEYOND FOOTING FACE BY 1".
AT TOP, WHERE FOUNDATION IS EXPOSED ABOVE GRADE APPLY SPRAY ON WATERPROOFING,
"SIKA 740W" SPRAY APPLIED 12" STRIP FROM TOP OF FOUNDATION WALLS DOWN TO MEET GRADE.

EXTERIOR WALL FINISH

ALL STUD WALL FRAMING, SHEATHING, INSULATION AND INTERIOR FINISH HAS BEEN NOTED IN STRUCTURAL NOTES

EXT1

AIR / MOISTURE BARRIER, RAINSCREEN AND INSULATION:
ON EXTERIOR FACE OF EXTERIOR SHEATHING:
'HENRY VP100' POLYMERIC NON–WOVEN AIR/MOISTURE SHEET BARRIER (SELF ADHERING), 3oz/yd² OR EQUIVALENT, 40mil THICKNESS MINIMUM.
'BENJAMIN OBDYKE' 'SLICKER', CLASSIC RAINSCREEN, 10mm (MORTAR NET FOR BRICK/STONE). USE PLASTIC WASHERS AND NAILS TO ATTACH SLICKER.

ON INTERIOR FACE OF EXTERIOR SHEATHING:
INSTALL BATT INSULATION, MINIMUM R24 BETWEEN WOOD STUD FRAMING,
6mil POLY VAPOUR BARRIER, 6" LAP, TAPE AND SEAL ALL JOINTS.
½" GYPSUM BOARD FINISH.

EXT2

BRICK MASONRY OR STONE WALL ASSEMBLY: (INCLUDE AIR/MOISTURE BARRIER ABOVE)
3⅝" FULL BED BRICK OR STONE FACE VENEER,
COLOUR AND TEXTURE TO BE APPROVED BY OWNER,
1" AIR SPACE
BRICK TIES AS PER 9.20.9.5,
BRICK TIES ATTACHED DIRECTLY TO STUDS BEHIND SHEATHING AND THROUGH EXTERIOR INSULATION IF APPLICABLE, (MIN. 2" PENETRATION INTO WALL STUD).
1"x3" @ 16"o.c. HORIZONTAL STRAPPING.
NAIL DIRECTLY TO STUDS BEHIND SHEATHING AND THROUGH EXTERIOR INSULATION IF APPLICABLE.
AT BOTTOM,
WEEP HOLES SPACED NOT MORE THAN 30" APART SHALL BE PROVIDED AT THE BOTTOM OF THE MASONRY WALL.
PRE–FINISHED METAL FLASHING BENEATH WEEP HOLES IN MASONRY VENEER SHALL BE INSTALLED SO THAT IT EXTENDS FROM A POINT NOT LESS THAN ¼" BEYOND THE OUTER FACE OF THE FOUNDATION WALL TO A POINT 6"(MIN) UP THE SHEATHING OF WOOD FRAME WALL, BRING AIR/MOISTURE BARRIER OVER VERTICAL LEG OF FLASHING AND SECURE WITH '3M' FLASHING TAPE.

EXT3

EXTERNAL INSULATION FINISH SYSTEM ASSEMBLY: (INCLUDE AIR/MOISTURE BARRIER ABOVE)
FINISH COAT ATOP BASE COAT,
WITH REINFORCING MESH EMBEDDED.
USE IMPACT RESISTANT MESH FOR FIRST 5'–0" VERTICAL UP FROM FOUNDATION WALL.
MINIMUM 1" E.P.S. INSULATION BOARD,
NOTCHED FOR AIR FLOW.
NOTCHED TROWEL ADHESIVE,
ROLL–ON WATER–RESISTIVE BARRIER
AS PER MANUFACTURER'S SPECIFICATION.
CONTINUE WATER–RESISTIVE BARRIER INTO ALL WINDOW AND DOOR OPENINGS.
½" CEMENT–BOARD PANELS OR GLASS–MAT SURFACED GYPSUM SHEATHING,
INSTALL VENT ASSEMBLY & WRAP ENDS OF E.P.S. AS PER MANUFACTURER'S SPECIFICATIONS.
AT FOUNDATION WALL CONNECTION,
EXTEND SHEATHING 2" BELOW T/O FOUNDATION WALL AND SEAL w/ FOAM SEALANT.
APPROVED MINSTER'S RULING:
–No. 99–07–66 (12874–R) –DRYVIT
–No. 95–03–22 (12416–R)–Sto
CONTRACTOR TO PROVIDE DESIGNER WITH SHOP DRAWINGS FOR REVIEW PRIOR TO CONSTRUCTION COMMENCING. DETAILS AND INSTALLATION MUST BE FROM A SUPPLIER AND TECH REP APPROVED OF BY THE ARCHITECT.

ROOF FINISH REQUIREMENTS

TYPICAL ROOF FINISH NOTES.
1. EAVE PROTECTION:
UNDERLAY ICE AND WATER SHIELD ATOP PLYWOOD SHEATHING AND BELOW ANY ADDITIONALLY REQUIRED MEMBRANES.
EXTEND FROM EAVES TO A POINT MINIMUM 4'–0" BEYOND THE INSIDE FACE OF EXTERIOR WALLS.
ALSO INSTALL ICE AND WATER SHIELD ALONG VALLEYS A MINIMUM OF 18" BEYOND VALLEY INTERSECTION ON EACH SLOPE.
2. ROOF SHEATHING:
½" EXTERIOR GRADE SPRUCE PLYWOOD + METAL 'H' CLIPS, ALL JOINTS STAGGERED,
3. ALL VALLEY FLASHING SHOULD BE CONSTRUCTED AS 'CLOSED VALLEYS'
WHERE INSTALLATION OF RIGID SHINGLES (WOOD, SLATE, METAL, ETC.) THE SLOPE MUST BE 10:12 OR GREATER TO BE CONSTRUCTED AS CLOSED VALLEY.
4. RENOVATION:
IF PROJECT IS RENOVATION, EXISTING SHEATHING AND SUPPORTING STRUCTURE TO BE INSPECTED AND REPAIRED AS NECESSARY.

RFT1

ROOF FINISH (ASPHALT SHINGLES):
ASPHALT SHINGLES, SELF–SEALING, 3 TAB w/ MINIMUM 25 YEAR WARRANTY.
COVER ENTIRE ROOF SURFACE w/ BREATHABLE MEMBRANE BELOW SHINGLES, ATOP SHEATHING.
INSTALLER TO FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.

INTERIOR FLOOR FINISH

FF1

BASEMENT FLOOR FINISH:
¾" ENGINEERED HARDWOOD, UNLESS SPECIFIED OTHERWISE.
'LEPAGE' SELF–LEVELING, EPOXY BASED, FLOOR LEVELER,
⅜" PLYWOOD SUB–FLOOR,
'DMX AIRFLOW' UNDERLAYMENT ATOP CONCRETE SLAB.

INTERIOR WALLS AND CEILINGS

TYPICAL INTERIOR WALL NOTES.
1. UNLESS NOTED OTHERWISE ALL INTERIOR WALLS ARE TO BE CONSTRUCTED USING S.P.F. #1,2 (THICKNESS AS NOTED ON PLANS) @ 16"o.c., FINISH EACH SIDE OF WALL w/ ½" GYPSUM BOARD.
2. INSTALL 12" STRIP OF 6mil POLY VAPOUR BARRIER CENTRED ALONG DOUBLE TOP PLATE OF WALLS WHERE THEY INTERFACE ATTIC OR EXPOSED AREAS TO ALLOW OVERLAPPED AND SEALED JOINTS WITH MAIN VAPOUR BARRIER INSTALLATION.
3. ALL GAPS IN LUMBER FRAMING ARE TO BE ACOUSTICALLY SEALED ON INSIDE FACE PRIOR TO VAPOUR BARRIER AND DRYWALL INSTALLATION.
4. ATTIC FULL HEIGHT OR KNEE WALLS ARE TO BE CONSTRUCTED AS PARTITION WALLS USING 2"x6" @ 16"o.c. (@ 12"o.c. FOR BEARING) AND INSULATED WITH MIN. R24 BATT INSULATION, ON INSIDE FACE OF STUD WALL INSTALL 6mil POLY VAPOUR BARRIER (6" LAP, TAPE & SEAL ALL JOINTS), w/ ½" GYPSUM BOARD FINISH.
5. WASHROOM WALLS TO HAVE WATER RESISTANT GYPSUM BOARD THROUGHOUT ENTIRE.
6. SHOWER/SAUNA ENCLOSURES TO BE CLAD WITH 'DUROCK' CEMENT BOARD, JOINTS TO BE FILLED WITH LATEX FORTIFIED MORTAR W/ 'DUROCK' TAPE EMBEDDED.
6.1. SHOWER CONSTRUCTION TO INCLUDE 'SCHLUTER' BASE AND WALL SYSTEMS.
7. PROVIDE POLY MOISTURE PROTECTION BELOW ALL WALLS ATOP OF CONCRETE FLOOR SLABS.
8. PROVIDE 'ROXUL, SAFE N SOUND' SOUND ABSORPTIVE INSULATION IN PARTITIONS AROUND WASHROOMS, ENSUITES, MECHANICAL ROOMS, POWDER ROOMS & LAUNDRY.
9. DRYWALL FINISHING, SQUARE, METAL CORNER BEADS TO BE INSTALLED AT ALL LOCATIONS, ALL JOINTS TO BE TAPED WITH MIN. 2 COATS OF MUD AND SANDED. DRYWALL TO BE LEFT READY FOR PAINT.
10. ALL INTERIOR WALL FINISHES SHALL HAVE A SURFACE FLAME SPREAD LIMIT NOT EXCEEDING 150, PER O.B.C. 9.10.17.1(1).

IFT1

INTERIOR FOUNDATION WALL INSULATION AND FINISH:
'TYVEK INTERIOR WRAP' TO BE ATTACHED TO REAR FACE OF 2"x4"@16"o.c. LIGHT STEEL FRAMED WALL, STAPLE @ 4" o.c.,
INSTALL SOLID WOOD BLOCKING AS NECESSARY FOR FUTURE SOLID BEARING POINTS.
'TYVEK' TO BE CONTINUOUS, PROJECT 6" FROM U/S OF BOTTOM PLATE ATOP BASEMENT FLOOR SLAB,
LEAVE MIN. 8" EXTRA AT TOP TO WRAP OVER SILL PLATE.
CONSTRUCT LIGHT STEEL WALL HORIZONTALLY AND TIP INTO PLACE,
ONCE IN PLACE WRAP 'TYVEK' OVER TOP PLATE AND STAPLE INTO PLACE.
FILL LIGHT GAUGE FRAMED WALL w/ CLOSED CELL RIGID POLYURETHANE FOAM TO CREATE CONTINUOUS INSULATION COVERAGE.
STOP INSULATION 8" BEFORE TOP OF BASEMENT SLAB, INSTALL SOLID BLOCKING AS STOP.
SEPARATE, ADDITIONAL VAPOUR BARRIER IS NOT REQUIRED.
LATERALLY SUPPORT WALL WITH ½" PLYWOOD
½" GYPSUM BOARD.

IFT2

INTERIOR CEILING FINISH, UNDERSIDE ROOF:
6 MIL POLY VAPOUR BARRIER,
INSTALL RESILIENT METAL CHANNELS @16"o.c. TO U/S CEILING FRAMING, RUNNING PERPENDICULAR.
INSTALL SOUND–PROOFING, PADDING TAPE ALONG CHANNEL FACE TO CONTACT DRYWALL.
FOR ADDED SOUND PROOFING, INSTALL ½" RIGID FOAM INSULATION (NOT TAPED) BETWEEN RESILIENT CHANNEL,
½" GYPSUM, CEILING BOARD FINISH.

INSULATION REQUIREMENTS

TYPICAL INSULATION NOTES.
1. SEE A3.2 FOR DETAILS ON RIM JOIST INSULATION, FLOOR OVER GARAGE, STEEL COLUMN, LOW HEEL AND ATTIC ACCESS HATCH INSULATION.
2. ROOF BAFFLES ARE TO BE INSTALLED TO ENSURE A MINIMUM OF 2⅜" AIR SPACE IS MAINTAINED BETWEEN UNDERSIDE OF SHEATHING AND TOP OF INSULATION.
3. EXTERIOR AND INTERIOR TYPICAL WALL INSULATION IS OUTLINED IN "EXTERIOR WALL FINISH".
4. INTERIOR FOUNDATION WALL INSULATION IS OUTLINED IN "INTERIOR WALLS AND CEILINGS".

UIN1

BASEMENT FLOOR INSULATION:
SHOULD THE SLAB–ON–GROUND BE LOCATED LESS THAN 24" BELOW GRADE, INSTALL 1" THICK 'AMPEX 2020F BOARD' BENEATH THE EXTERIOR PERIMETER OF THE SLAB, UNDERNEATH VAPOUR BARRIER, FOR A HORIZONTAL DIMENSION OF NOT LESS THAN 36" IN FROM INTERIOR FACE OF FOUNDATION WALL.
CARRY 1" THICK 'AMPEX 2020F BOARD' VERTICALLY DOWN INSIDE FACE OF FOUNDATION WALL.

UIN2

ROOF, CEILING AND ATTIC INSULATION:
WHERE 2"x12" @ 16"o.c. ROOF JOISTS ARE USED INSTALL R32 'ROXUL' BATT INSULATION,
ENSURE MIN. 2⅜" AIR FLOW SPACE BETWEEN TOP OF INSULATION AND BOTTOM OF ½" EXTERIOR ROOF PLYWOOD SHEATHING.
WHERE ROOF RAFTERS, OR ENGINEERED TRUSSES ARE USED AND CREATE ATTIC SPACE, INSTALL INSULATION TO MINIMUM REQUIREMENT OF COMPLIANCE PACKAGE TO BE USED.
MINIMUM INSULATION MAY BE ACHIEVED BY USING BLOWN–IN, OR IT IS PREFERABLE TO INSTALL BATT INSULATION BETWEEN CEILING JOISTS OR TRUSSES, TURNING EACH LAYER TO ENSURE ALL JOINTS ARE STAGGERED.

SOUND-PROOFING

SPF1

TYPICAL WALL SOUNDPROOFING:
STC = 50, OR BETTER, BASED ON W5a (2012 O.B.C.)
MINIMUM 2"x4" WOOD STUDS @ 16"o.c.
MINIMUM ⅝" THICK 'ROXUL SAFE N SOUND' INSULATION,
RESILIENT METAL CHANNELS ON ONE SIDE, @ 16"o.c.
(1) LAYER OF ⅝" 'TYPE X' GYPSUM BOARD ATOP RESILIENT METAL CHANNEL,
(2) LAYERS OF ⅝" 'TYPE X' GYPSUM BOARD ON OTHER SIDE.

SPF2

TYPICAL FLOOR/CEILING SOUNDPROOFING:
STC = 55, OR BETTER, BASED ON F18d (2012 O.B.C.)
1½" LIGHTWEIGHT CONCRETE, OR GYPCRETE TOPPING,
¾" TONGUE AND GROOVE PLYWOOD SHEATHING,
ENGINEERED WOOD FLOOR JOISTS
AS NOTED ON STRUCTURAL PLANS
'ROXUL SAFE N SOUND' INSULATION
BETWEEN FLOOR JOISTS,
STEEL FURRING CHANNELS @ 24"o.c.
(1) LAYER OF ⅝" 'TYPE X' GYPSUM BOARD ATOP STEEL FURRING CHANNEL.

CLIENT INFORMATION

PROJECT ADDRESS:	915 North Service Road, Mississauga, Ontario
OPENING DATE:	October 28, 2015
CLIENT NAME:	Jade Estates
CLIENT ADDRESS:	501 Danforth Avenue, Toronto, ON, M4K 1P5
CLIENT PHONE NUMBER:	Rick Rye, (647) 834-7424
CLIENT EMAIL:	rick@jadecapital.ca

ENERGY COMPLIANCE PACKAGE

COMPLIANCE PACKAGE SPECIFIED:		(ADDITIONS, ZONE 1) 3.1.1.11	
WINDOW AREA : EXTERIOR WALL AREA		<17.00%	
CEILING WITH ATTIC SPACE	R60	WINDOWS AND SLIDING GLASS DOORS, MAX. U-VALUE	1.6
CEILING WITHOUT ATTIC SPACE	R31		
EXPOSED FLOOR	R31		
WALLS ABOVE GRADE	R19 +R5 C.I.		
BASEMENT WALLS	R20 C.I.		
BELOW GRADE SLAB, MORE THAN 24" BELOW GRADE	N/A		
HEATED SLAB OR SLAB LESS THAN 24" BELOW GRADE.	R10		
EDGE OF BELOW GRADE SLAB, LESS THAN 24" BELOW GRADE	R10		

'C.I.' INDICATES CONTINUOUS INSULATION REQUIREMENT.

DATA MATRIX

PROJECT NAME:			LOCATION:	915 NORTH SERVICE ROAD,	
915 NORTH SERVICE RD.			CITY:	MISSISSAUGA, ONTARIO	
FIRM NAME:	btM Drafting & Design, Brian Matthews, BCIN 44237 32 Gilmour Place, Hamilton, ON, L8M 2Y2, (905) 393-8005				
	O.B.C. DATA MATRIX, Parts 3 & 9				O.B.C. Reference
PROJECT DESCRIPTION:	☐ New	☑ Alteration	☐ Part 11	☑ PART 9	
	☐ Addition	☐ Change	(11.1-11.4)	(2.1.1, 9.10.1.3)	
OCCUPANCY:	GROUP C, Residential Occupancy				9.10.2.
BUILDING AREA:	Existing: 119.84 New: 0.00 Total: 119.84			(m²)	1.1.3.2.
GROSS AREA:	Existing: 229.01 New: 0.00 Total: 229.01			(m²)	1.1.3.2.
## OF STORIES:	Above Grade: 2 stories, Below Grade: 1 storey				2.1.1.3.
CLASSIFICATION:	Facing (1) one street				9.10.4.
CONST, Permitted:	☑ Combustible ☐ Non-Combustible ☐ Both				9.10.6.
CONST, Actual:	☑ Combustible ☐ Non-Combustible ☐ Both				
OCCUPANT LOAD	(2) Two persons per sleeping room or area.				9.9.1.3.
SPACIAL SEPARATION, CONSTRUCTION OF EXTERIOR WALLS					9.10.14.
NO WALLS OF THIS PROJECT ARE REQUIRED TO HAVE A FIRE RESISTANCE RATING. EXTERIOR WALLS OF THIS PROJECT ARE ALLOWED TO BE OF COMBUSTIBLE CONSTRUCTION AND CLAD WITH COMBUSTIBLE MATERIAL. NON-COMBUSTIBLE CONSTRUCTION IS NOT REQUIRED.					

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APPENDIX C3 - PROPOSED ALTERATIONS TO HEDGE HOUSE

btM Drafting & Design
32 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y2
of. 905.393.8005
ce. 905.912.2337
em. btmdrafting@gmail.com

915 NORTH SERVICE RD.

174-15

HERITAGE PERMIT SET
SEPTEMBER 13, 2017

Ontario Building Code, 2012:

9.3.1.7. CONCRETE MIXES.

(1) FOR SITE–BATCHED CONCRETE, THE CONCRETE MIXES DESCRIBED IN TABLE 9.3.1.7. SHALL BE CONSIDERED ACCEPTABLE IF THE RATIO OF WATER TO CEMENTING MATERIALS DOES NOT EXCEED,
- (a) 0.45 FOR GARAGE FLOORS, CARPORT FLOORS AND ALL EXTERIOR FLATWORK.
- (b) 0.65 FOR INTERIOR FLOORS OTHER THAN THOSE FOR GARAGES AND CARPORTS, AND
- (c) 0.70 FOR ALL OTHER APPLICATIONS.

(2) THE SIZE OF AGGREGATE IN UN–REINFORCED CONCRETE MIXES REFERRED TO IN SENTENCE (1) SHALL NOT EXCEED,
- (a) ⅕ THE DISTANCE BETWEEN THE SIDES OF VERTICAL FORMS, OR
- (b) ⅓ THE THICKNESS OF FLATWORK.

9.8.2.1. STAIRS, STAIR WIDTH.

(1) EXCEPT AS PROVIDED IN SENTENCE (2), REQUIRED EXIT STAIRS AND PUBLIC STAIRS SERVING BUILDINGS OF RESIDENTIAL OCCUPANCY SHALL HAVE A WIDTH, MEASURED BETWEEN WALL FACES OR GUARDS, OF NOT LESS THAN 900mm.
(2) AT LEAST ONE STAIR BETWEEN EACH FLOOR LEVEL WITHIN A DWELLING UNIT, AND EXTERIOR STAIRS AND REQUIRED EXIT STAIRS SERVING A SINGLE DWELLING UNIT, SHALL HAVE A WIDTH OF NOT LESS THAN 860mm.
(3) REQUIRED EXIT STAIRS AND PUBLIC STAIRS SERVING BUILDINGS OF OTHER THAN RESIDENTIAL OCCUPANCY SHALL HAVE A WIDTH OF NOT LESS THAN THE GREATER OF,
- (a) 900mm, OR
- (b) 8mm PER PERSON BASED ON THE OCCUPANT LOAD LIMITS SPECIFIED IN TABLE 3.1.17.1.

9.8.2.2. STAIRS, HEIGHT OVER STAIRS.

(1) THE CLEAR HEIGHT OVER STAIRS SHALL BE,
- (a) MEASURED VERTICALLY, OVER THE CLEAR WIDTH OF THE STAIR, FROM A STRAIGHT LINE TANGENT TO THE TREAD AND LANDING NOSING TO THE LOWEST POINT ABOVE, AND
- (b) NOT LESS THAN,
  - (i) 1,950mm FOR STAIRS SERVING A SINGLE DWELLING UNIT, AND
  - (ii) 2,050mm FOR STAIRS NOT SERVING A SINGLE DWELLING UNIT.

9.8.3.1. STAIR CONFIGURATIONS, STRAIGHT AND CURVED RUNS IN STAIRS.

(1) EXCEPT AS PROVIDED IN SENTENCE (2), STAIRS SHALL CONSIST OF,
- (a) STRAIGHT RUNS, OR
- (b) CURVED RUNS.

(2) STAIRS WITHIN DWELLING UNITS SHALL CONSIST OF,
- (a) STRAIGHT RUNS,
- (b) CURVED RUNS,
- (c) STRAIGHT RUNS WITH WINDERS, OR
- (d) STRAIGHT RUNS WITH CURVED RUNS.

9.8.3.2. STAIR CONFIGURATIONS, MINIMUM NUMBER OF RISERS.

(1) EXCEPT FOR STAIRS WITHIN A DWELLING UNIT, AT LEAST 3 RISERS SHALL BE PROVIDED IN INTERIOR FLIGHTS.

9.8.3.3. STAIR CONFIGURATIONS, MAXIMUM HEIGHT OF STAIRS.

(1) THE VERTICAL HEIGHT BETWEEN ANY LANDING SHALL NOT EXCEED 3.70m.

9.8.4.1. STEP DIMENSIONS, FOR RISERS.

(1) THE RISE, WHICH IS MEASURED AS THE VERTICAL NOSING–TO–NOSING DISTANCE, SHALL CONFORM TO TABLE 9.8.4.1.

STAIR TYPE	ALL STEPS		RECTANGULAR TREADS			
	RISE, mm		RUN, mm		TREAD DEPTH, mm	
	max.	min.	max.	min.	max.	min.
SERVICE AND MEZZANINE, IN LIVE/WORK UNITS	NO LIMIT	125	355	NO LIMIT	355	NO LIMIT
PRIVATE (INTERIOR, DWELLING UNIT)	200,(7⅞")	125,(4⅞")	355,(14")	210,(8¼")	355,(13¾")	235,(9¼")
PUBLIC STAIRS	180	125	NO LIMIT	280	NO LIMIT	280

9.8.4.3. STEP DIMENSIONS, DIMENSIONS FOR ANGLED TREADS.

(1) ANGLED TREADS IN REQUIRED EXIT STAIRS SHALL CONFORM TO THE REQUIREMENTS IN ARTICLE 3.4.6.9.
(2) EXCEPT AS PROVIDED IN ARTICLE 9.8.4.5., ANGLED TREADS IN OTHER THAN REQUIRED EXIT STAIRS SHALL HAVE AN AVERAGE RUN, WHICH IS MEASURED AS THE HORIZONTAL NOSING TO NOSING DISTANCE, OF NOT LESS THAN 200mm AND A MINIMUM RUN OF 150mm.
(3) THE DEPTH OF AN ANGLED TREAD SHALL BE NOT LESS THAN ITS RUN, MEASURED AS THE HORIZONTAL NOSING TO NOSING DISTANCE, AT ANY POINT AND NOT MORE THAN ITS RUN AT ANY POINT PLUS 25mm.

9.8.4.5. STEP DIMENSIONS, WINDERS.

(1) STAIRS WITHIN DWELLING UNITS ARE PERMITTED TO CONTAIN WINDERS THAT CONVERGE TO A CENTRE POINT PROVIDED,
- (a) THE WINDERS TURN THROUGH AN ANGLE OF NOT MORE THAN 90°,
- (b) INDIVIDUAL TREADS TURN THROUGH AN ANGLE OF NOT LESS THAN 30° OR NOT MORE THAN 45°, AND
- (c) ADJACENT WINDERS TURN THROUGH THE SAME ANGLE.

(2) WHERE MORE THAN ONE SET OF WINDERS DESCRIBED IN SENTENCE (1) IS PROVIDED IN A SINGLE STAIRWAY BETWEEN ADJACENT FLOOR LEVELS, SUCH WINDERS SHALL BE SEPARATED IN PLAN BY AT LEAST 1,200mm.

9.8.6.2. LANDINGS, REQUIRED LANDINGS.

(1) EXCEPT AS PROVIDED IN SENTENCES (2) TO (4) AND SENTENCE 9.9.6.6.(2), A LANDING SHALL BE PROVIDED,
- (a) AT THE TOP AND BOTTOM OF EACH FLIGHT OF INTERIOR AND EXTERIOR STAIRS, INCLUDING STAIRS IN GARAGES,
- (b) AT THE TOP AND BOTTOM OF EVERY RAMP WITH A SLOPE GREATER THAN 1 IN 50, AND
- (c) WHERE A DOORWAY OPENS ONTO A STAIR OR RAMP.

(2) WHERE A DOOR AT THE TOP OF A STAIR IN A DWELLING UNIT SWINGS AWAY FROM THE STAIR, NO LANDING IS REQUIRED BETWEEN THE DOORWAY AND THE STAIR.
(3) A LANDING MAY BE OMITTED AT THE TOP OF AN EXTERIOR STAIR SERVING A GARAGE OR A SECONDARY ENTRANCE TO A SINGLE DWELLING UNIT, INCLUDING AN ENTRANCE FROM AN ATTACHED GARAGE, PROVIDED,
- (a) THE STAIR DOES NOT CONTAIN MORE THAN THREE RISERS,
- (b) EXCEPT AS PROVIDED IN CLAUSE (C), THE DOOR IS A SLIDING DOOR OR SWINGS AWAY FROM THE STAIR, AND
- (c) WHERE A STORM OR SCREEN DOOR IS PROVIDED, IT MAY SWING OVER THE STAIR IF IT IS EQUIPPED WITH HARDWARE TO HOLD IT OPEN.

(4) A LANDING MAY BE OMITTED AT THE BOTTOM OF AN EXTERIOR STAIR OR RAMP PROVIDED THERE IS NO OBSTRUCTION, SUCH AS A GATE OR DOOR, WITHIN THE LESSER OF THE WIDTH OF THE STAIR OR RAMP, OR,
- (a) 900mm FOR STAIRS OR RAMPS SERVING A SINGLE DWELLING UNIT, AND
- (b) 1,100mm FOR STAIRS OR RAMPS NOT SERVING A SINGLE DWELLING UNIT.

9.8.7.1. REQUIRED HANDRAILS.

(1) EXCEPT AS PROVIDED IN SENTENCES (2) TO (4), A HANDRAIL SHALL BE INSTALLED ON STAIRS AND RAMPS IN CONFORMANCE WITH TABLE 9.8.7.1.

LOCATION OF STAIR OR RAMP	HANDRAIL SERVING STAIRS			HANDRAIL SERVING RAMPS	
	STAIRS <1,100mm REQUIRED WIDTH		STAIRS ≥1,100mm REQUIRED WIDTH	RAMPS <1,100mm REQUIRED WIDTH	RAMPS ≥1,100mm REQUIRED WIDTH
	STRAIGHT	CURVED	ALL	STRAIGHT OR CURVED	ALL
	NUMBER OF SIDES REQUIRED TO HAVE A HANDRAIL				
WITHIN A DWELLING UNIT	1	1	1	1	2
ALL OTHER LOCATIONS	1	2	2	2	2

(2) WHERE A STAIR OR RAMP IS REQUIRED TO BE AT LEAST 2,200mm WIDE DUE TO THE OCCUPANT LOAD, A HANDRAIL SHALL BE INSTALLED SUCH THAT NO POSITION ON THE STAIR OR RAMP IS MORE THAN 825mm FROM A HANDRAIL.
(3) A HANDRAIL IS NOT REQUIRED FOR STAIRS AND RAMPS SERVING A SINGLE DWELLING UNIT, WHERE,
- (a) INTERIOR STAIRS HAVE NOT MORE THAN TWO RISERS.
- (b) EXTERIOR STAIRS HAVE NOT MORE THAN THREE RISERS, OR
- (c) RAMPS RISE NOT MORE THAN 400mm

(4) ONLY ONE HANDRAIL IS REQUIRED ON EXTERIOR STAIRS HAVING MORE THAN THREE RISERS, PROVIDED SUCH STAIRS SERVE A SINGLE DWELLING UNIT.

9.8.7.2. CONTINUITY OF HANDRAILS.

(1) EXCEPT AS PROVIDED IN SENTENCE (2), AT LEAST ONE REQUIRED HANDRAIL SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE STAIR OR RAMP, INCLUDING LANDING, EXCEPT WHERE INTERRUPTED BY,
- (a) DOORWAYS, OR
- (b) NEWEL POSTS AT CHANGES IN DIRECTION.

(2) FOR STAIRS OR RAMPS SERVING A SINGLE DWELLING UNIT, AT LEAST ONE REQUIRED HANDRAIL SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE STAIR OR RAMP, EXCEPT WHERE INTERRUPTED BY,
- (a) DOORWAYS,
- (b) LANDINGS, OR
- (c) NEWEL POSTS AT CHANGES IN DIRECTION.

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9.8.7.3. TERMINATION OF HANDRAILS.

(1) HANDRAILS SHALL BE TERMINATED IN A MANNER THAT WILL NOT OBSTRUCT PEDESTRIAN TRAVEL OR CREATE A HAZARD.
(2) EXCEPT FOR STAIRS AND RAMPS SERVING A SINGLE DWELLING UNIT, AT LEAST ONE HANDRAIL AT THE SIDES OF A STAIR OR RAMP SHALL EXTEND HORIZONTALLY NOT LESS THAN 300mm BEYOND THE TOP AND BOTTOM OF EACH STAIR OR RAMP.

9.8.7.4. HEIGHT OF HANDRAILS.

(1) THE HEIGHT OF HANDRAILS ON STAIRS AND RAMPS SHALL BE MEASURED VERTICALLY FROM THE TOP OF THE HANDRAIL TO,
- (a) A STRAIGHT LINE DRAWN TANGENT TO THE TREAD NOSINGS OF THE STAIR SERVED BY THE HANDRAIL, OR
- (b) THE SURFACE OF THE RAMP, FLOOR OR LANDING SERVED BY THE HANDRAIL.

(2) EXCEPT AS PROVIDED IN SENTENCES (3) AND (4), THE HEIGHT OF HANDRAILS ON STAIRS AND RAMPS SHALL BE,
- (a) NOT LESS THAN 865mm, AND
- (b) NOT MORE THAN 965mm.

(3) WHERE GUARDS ARE REQUIRED, HANDRAILS REQUIRED ON LANDINGS SHALL BE NOT MORE THAN 1,070mm IN HEIGHT.
(4) HANDRAILS INSTALLED IN ADDITION TO REQUIRED HANDRAILS NEED NOT COMPLY WITH SENTENCE (2).

9.8.7.6. HANDRAILS, PROJECTIONS INTO STAIRS AND RAMPS.

(1) HANDRAILS AND PROJECTIONS BELOW HANDRAILS, INCLUDING HANDRAIL SUPPORTS AND STAIR STRINGERS, SHALL NOT PROJECT MORE THAN 100mm INTO THE REQUIRED WIDTH OF A STAIR OR RAMP.

9.8.7.7. DESIGN AND ATTACHMENT OF HANDRAILS.

(1) HANDRAILS AND ANY BUILDING ELEMENT THAT COULD BE USED AS A HANDRAIL SHALL BE DESIGNED AND ATTACHED IN SUCH A MANNER AS TO RESIST,
- (a) A CONCENTRATED LOAD AT ANY POINT OF NOT LESS THAN 0.9 kN, AND
- (b) FOR HANDRAILS OTHER THAN THOSE SERVING A SINGLE DWELLING UNIT, A UNIFORMLY DISTRIBUTED LOAD OF 0.7kN/m.

(2) WHERE A HANDRAIL SERVING A SINGLE DWELLING UNIT IS ATTACHED TO WOOD STUDS OR BLOCKING, THE ATTACHMENT SHALL BE DEEMED TO COMPLY WITH SENTENCE (1), WHERE,
- (a) THE ATTACHMENT POINTS ARE SPACED NOT MORE THAN 1.20m APART,
- (b) THE FIRST ATTACHMENT POINT AT EITHER END IS LOCATED NOT MORE THAN 300mm FROM THE END OF THE HANDRAIL, AND
- (c) THE FASTENERS CONSIST OF NO FEWER THAN TWO WOOD SCREWS AT EACH POINT, PENETRATING NOT LESS THAN 32mm INTO SOLID WOOD.

9.8.8.3. HEIGHT OF GUARDS.

(1) EXCEPT AS PROVIDED IN SENTENCES (2) TO (6), ALL GUARDS SHALL BE NOT LESS THAN 1,070mm HIGH.
(2) ALL GUARDS WITHIN DWELLING UNITS SHALL BE NOT LESS THAN 900mm HIGH.
(3) EXTERIOR GUARDS SERVING NOT MORE THAN ONE DWELLING UNIT SHALL BE NOT LESS THAN 900mm HIGH WHERE THE WALKING SURFACE SERVED BY THE GUARD IS NOT MORE THAN 1,800mm ABOVE THE FINISHED GROUND LEVEL.
(4) GUARDS FOR FLIGHTS OF STEPS, EXCEPT IN REQUIRED EXIT STAIRS, SHALL BE NOT LESS THAN 900mm HIGH.
(5) EXCEPT AS PROVIDED IN SENTENCE (6), THE HEIGHT OF GUARDS SHALL BE NOT LESS THAN,
- (a) 920mm FOR REQUIRED EXIT STAIRS, AND
- (b) 1,070mm AROUND LANDINGS.

(6) THE HEIGHT OF GUARDS FOR EXTERIOR STAIRS AND LANDINGS MORE THAN 10m ABOVE ADJACENT GROUND LEVEL SHALL BE NOT LESS THAN 1,500mm.
(7) THE HEIGHT OF GUARDS FOR STAIRS AND LANDING SHALL BE MEASURED VERTICALLY FROM THE TOP OF THE GUARD TO,
- (a) A STRAIGHT LINE DRAWN TANGENT TO THE TREAD NOSINGS OF THE STAIR, OR
- (b) THE SURFACE OF THE LANDING.

9.8.8.4. GUARDS FOR FLOORS AND RAMPS IN GARAGES.

(1) EXCEPT FOR FLOORS OF GARAGES REFERRED TO IN SECTION 9.35., WHERE GARAGE FLOORS OR RAMPS ARE 600mm OR MORE ABOVE THE ADJACENT GROUND OR FLOOR LEVEL, EVERY OPENING THROUGH A GARAGE FLOOR AND THE PERIMETER OF FLOORS AND RAMPS THAT HAVE NO EXTERIOR WALLS SHALL BE PROVIDED WITH,
- (a) A CONTINUOUS CURB NOT LESS THAN 150mm IN HEIGHT, AND
- (b) A GUARD NOT LESS THAN 1,070mm ABOVE THE FLOOR LEVEL.

(2) VEHICLE GUARDRAILS SHALL BE DESIGNED FOR A CONCENTRATED HORIZONTAL LOAD OF 22kN APPLIED OUTWARD AT ANY POINT 500mm ABOVE THE FLOOR SURFACE.

9.8.8.5. OPENINGS IN GUARDS.

(1) EXCEPT AS PROVIDED IN SENTENCE (2), OPENINGS THROUGH ANY GUARD THAT IS REQUIRED BY ARTICLE 9.8.8.1. SHALL BE OF A SIZE THAT WILL PREVENT THE PASSAGE OF A SPHERICAL OBJECT HAVING A DIAMETER OF 100mm UNLESS IT CAN BE SHOWN THAT THE LOCATION AND SIZE OF OPENINGS THAT EXCEED THIS LIMIT DO NOT REPRESENT A HAZARD.
(2) OPENINGS THROUGH ANY GUARD THAT IS REQUIRED BY ARTICLE 9.8.8.1. AND THAT IS INSTALLED IN A BUILDING OF INDUSTRIAL OCCUPANCY SHALL BE OF A SIZE THAT WILL PREVENT THE PASSAGE OF A SPHERICAL OBJECT HAVING A DIAMETER OF 200mm, UNLESS IT CAN BE SHOWN THAT THE LOCATION AND SIZE OF OPENINGS THAT EXCEED THIS LIMIT DO NOT REPRESENT A HAZARD.
(3) UNLESS IT CAN BE SHOWN THAT THE LOCATION AND SIZE OF OPENINGS THAT DO NOT COMPLY WITH THE FOLLOWING LIMITS DO NOT REPRESENT A HAZARD, OPENINGS THROUGH ANY GUARD THAT IS NOT REQUIRED BY ARTICLE 9.8.8.1. AND THAT SERVES A BUILDING OF OTHER THAN INDUSTRIAL OCCUPANCY, SHALL BE OF A SIZE THAT,
- (a) WILL PREVENT THE PASSAGE OF A SPHERICAL OBJECT HAVING A DIAMETER OF 100mm, OR
- (b) WILL PERMIT THE PASSAGE OF A SPHERICAL OBJECT HAVING A DIAMETER OF 200mm.

9.8.8.6. GUARDS DESIGNED NOT TO FACILITATE CLIMBING.

(1) GUARDS REQUIRED BY ARTICLE 9.8.8.1., EXCEPT THOSE IN INDUSTRIAL OCCUPANCIES AND WHERE IT CAN BE SHOWN THAT THE LOCATION AND SIZE OF OPENINGS DO NOT REPRESENT A HAZARD, SHALL BE DESIGNED SO THAT NO MEMBER, ATTACHMENT OR OPENING LOCATED BETWEEN 140mm AND 900mm ABOVE THE FLOOR OR WALKING SURFACE PROTECTED BY THE GUARD WILL FACILITATE CLIMBING.

9.8.8.7. GLASS IN GUARDS.

(1) GLASS IN GUARDS SHALL BE,
- (a) SAFETY GLASS OF THE LAMINATED OR TEMPERED TYPE CONFORMING TO CAN/CGSB–12.1–M, "Tempered or Laminated Safety Glass", OR
- (b) WIRED GLASS CONFORMING TO CAN/CGSB–12.11–M, "Wired Safety Glass".

9.8.9.1. LOADS ON STAIRS AND RAMPS.

(1) EXCEPT AS REQUIRED IN ARTICLE 9.8.9.4. AND 9.8.9.5., STAIRS AND RAMPS SHALL BE DESIGNED FOR STRENGTH AND RIGIDITY UNDER UNIFORM LOADING CRITERIA TO SUPPORT SPECIFIED LOADS OF,
- (a) 1.9 kPa FOR STAIRS AND RAMPS SERVING A SINGLE DWELLING UNIT, AND
- (b) 4.8 kPa FOR OTHER STAIRS AND RAMPS.

9.8.7.4. HEIGHT OF HANDRAILS.

(1) THE HEIGHT OF HANDRAILS ON STAIRS AND RAMPS SHALL BE MEASURED VERTICALLY FROM THE TOP OF THE HANDRAIL TO,
- (a) A STRAIGHT LINE DRAWN TANGENT TO THE TREAD NOSINGS OF THE STAIR SERVED BY THE HANDRAIL, OR
- (b) THE SURFACE OF THE RAMP, FLOOR OR LANDING SERVED BY THE HANDRAIL.

(2) EXCEPT AS PROVIDED IN SENTENCES (3) AND (4), THE HEIGHT OF HANDRAILS ON STAIRS AND RAMPS SHALL BE,
- (a) NOT LESS THAN 865mm, AND
- (b) NOT MORE THAN 965mm.

(3) WHERE GUARDS ARE REQUIRED, HANDRAILS REQUIRED ON LANDINGS SHALL BE NOT MORE THAN 1,070mm IN HEIGHT.
(4) HANDRAILS INSTALLED IN ADDITION TO REQUIRED HANDRAILS NEED NOT COMPLY WITH SENTENCE (2).

9.8.9.2. EXTERIOR CONCRETE STAIRS.

(1) EXTERIOR CONCRETE STAIRS WITH MORE THAN TWO RISERS AND TWO TREADS SHALL BE,
- (a) SUPPORTED ON UNIT MASONRY OR CONCRETE WALLS OR PIERS NOT LESS THAN 150mm IN CROSS–SECTION, OR
- (b) CANTILEVERED FROM THE MAIN FOUNDATION WALL.

(2) STAIRS DESCRIBED IN SENTENCE (1), WHEN CANTILEVERED FROM THE FOUNDATION WALL, SHALL BE CONSTRUCTED AND INSTALLED IN CONFORMANCE WITH SUBSECTION 9.8.10.
(3) THE DEPTH BELOW GROUND LEVEL FOR FOUNDATIONS FOR EXTERIOR STEPS SHALL CONFORM TO THE REQUIREMENTS IN SECTION 9.12.

9.8.9.3. EXTERIOR WOOD STEPS.

(1) EXTERIOR WOOD STEPS SHALL NOT BE IN DIRECT CONTACT WITH THE GROUND UNLESS SUITABLY TREATED WITH A WOOD PRESERVATIVE.

9.8.9.4. WOODEN STAIR STRINGERS.

(1) WOODEN STAIR STRINGERS SHALL,
- (a) HAVE A MINIMUM EFFECTIVE DEPTH OF 90mm, MEASURED PERPENDICULARLY TO THE BOTTOM OF THE STRINGER AT THE POINT OF MINIMUM CROSS–SECTION, AND AN OVERALL DEPTH OF NOT LESS THAN 235mm,
- (b) BE SUPPORTED AND SECURED TOP AND BOTTOM,
- (c) BE NOT LESS THAN 25mm ACTUAL THICKNESS IF SUPPORTED ALONG THEIR LENGTH AND 38mm ACTUAL THICKNESS IF UNSUPPORTED ALONG THEIR LENGTH, AND
- (d) EXCEPT AS PERMITTED IN SENTENCE (2), BE SPACED NOT MORE THAN 900mm O.C. FOR STAIRS SERVING NOT MORE THAN ONE DWELLING UNIT, AND 600mm O.C. IN OTHER STAIRS.

(2) FOR STAIRS SERVING NOT MORE THAN ONE DWELLING UNIT, WHERE RISERS SUPPORT THE FRONT PORTION OF THE TREAD, THE SPACE BETWEEN STRINGERS SHALL BE NOT MORE THAN 1,200mm.

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9.8.9.5. TREADS.

(1) STAIR TREADS OF LUMBER, PLYWOOD OR 0–2 GRADE OSB WITHIN DWELLING UNITS SHALL BE NOT LESS THAN 25mm ACTUAL THICKNESS, EXCEPT THAT IF OPEN RISERS ARE USED AND THE DISTANCE BETWEEN STRINGERS EXCEEDS 750mm, THE TREADS SHALL BE NOT LESS THAN 38mm ACTUAL THICKNESS.
(2) STAIR TREADS OF PLYWOOD OR OSB, THAT ARE NOT CONTINUOUSLY SUPPORTED BY THE RISER SHALL HAVE THEIR FACE GRAIN OR DIRECTION OF FACE ORIENTATION AT RIGHT ANGLES TO THE STRINGERS.

9.8.9.6. FINISH FOR TREADS, LANDINGS AND RAMPS.

(1) EXCEPT AS REQUIRED IN SENTENCE (4), THE FINISH FOR TREADS, LANDINGS AND RAMPS SHALL BE,
- (a) WEAR–RESISTANT,
- (b) SLIP–RESISTANT, AND
- (c) SMOOTH, EVEN AND FREE FROM OPEN DEFECTS.

(2) THE FINISH FOR TREADS, LANDINGS AND RAMPS IN DWELLING UNITS, INCLUDING THOSE FROM AN ATTACHED GARAGE SERVING A SINGLE DWELLING UNIT, SHALL BE DEEMED TO COMPLY WITH SENTENCE (1) WHERE THESE TREADS, LANDING OR RAMPS ARE FINISHED WITH,
- (a) HARDWOOD,
- (b) VERTICAL GRAIN SOFTWOOD,
- (c) RESILIENT FLOORING,
- (d) LOW–PILE CARPET,
- (e) MAT FINISH CERAMIC TILE,
- (f) CONCRETE, OR
- (g) FOR STAIRS TO UNFINISHED BASEMENTS AND TO GARAGES, PLYWOOD.

(3) STAIRS AND RAMPS, EXCEPT THOSE SERVING A SINGLE DWELLING UNIT OR SERVICE ROOMS OR SERVICE SPACES, SHALL HAVE EITHER A COLOUR CONTRAST OR A DISTINCTIVE PATTERN TO DEMARCATE,
- (a) THE LEADING EDGE OF THE TREADS,
- (b) THE LEADING EDGE OF THE LANDING, AND
- (c) THE BEGINNING AND END OF A RAMP.

(4) TREADS AND LANDING OF INTERIOR AND EXTERIOR STAIRS AND RAMPS, OTHER THAN THOSE WITHIN DWELLING UNITS, SHALL HAVE A SLIP–RESISTANT FINISH OR BE PROVIDED WITH SLIP–RESISTANT STRIPS THAT EXTEND NOT MORE THAN 1mm ABOVE THE SURFACE.

9.9.10.1. EGRESS WINDOWS OR DOORS FOR BEDROOMS.

(1) EXCEPT WHERE A DOOR ON THE SAME FLOOR LEVEL AS THE BEDROOM PROVIDES DIRECT ACCESS TO THE EXTERIOR, EVERY FLOOR LEVEL CONTAINING A BEDROOM IN A SUITE SHALL BE PROVIDED WITH AT LEAST ONE OUTSIDE WINDOW THAT,
- (a) IS OPENABLE FROM THE INSIDE WITHOUT THE USE OF TOOLS,
- (b) PROVIDES AN INDIVIDUAL, UNOBSTRUCTED OPEN PORTION HAVING A MINIMUM AREA OF $0.35m^2$ WITH NO DIMENSIONS LESS THAN 380mm, AND
- (c) MAINTAINS THE REQUIRED OPENING DESCRIBED IN CLAUSE (b) WITHOUT THE NEED FOR ADDITIONAL SUPPORT.

(2) EXCEPT FOR BASEMENT AREAS, THE WINDOW REQUIRED IN SENTENCE (1) SHALL HAVE A MAXIMUM SILL HEIGHT OF 1,000mm ABOVE THE FLOOR.
(3) WHEN SLIDING WINDOWS ARE USED, THE MINIMUM DIMENSION DESCRIBED IN SENTENCE (1) SHALL APPLY TO THE OPENABLE PORTION OF THE WINDOW.
(4) WHERE THE SLEEPING AREA WITHIN A LIVE/WORK UNIT IS ON A MEZZANINE WITH NO OBSTRUCTIONS MORE THAN 1,070mm ABOVE THE FLOOR, THE WINDOW REQUIRED IN SENTENCE (1) MAY BE PROVIDED ON THE MAIN LEVEL OF THE LIVE/WORK UNIT PROVIDED THE MEZZANINE IS NOT MORE THAN 25% OR THE AREA OF THE LIVE/WORK UNIT OR $20m^2$, WHICHEVER IS LESS, AND AN UNOBSTRUCTED DIRECT PATH OF TRAVEL IS PROVIDED FROM THE MEZZANINE TO THIS WINDOW.
(5) WHERE A WINDOW REQUIRED IN SENTENCE (1) OPENS INTO A WINDOW WELL, A CLEARANCE OF NOT LESS THAN 550mm SHALL BE PROVIDED IN FRONT OF THE WINDOW.
(6) WHERE THE SASH OF A WINDOW REFERRED TO IN SENTENCE (5) SWINGS TOWARDS THE WINDOW WELL, THE OPERATION OF THE SASH SHALL NOT REDUCE THE CLEARANCE IN A MANNER THAT WOULD RESTRICT ESCAPE IN AN EMERGENCY.
(7) WHERE A PROTECTIVE ENCLOSURE IS INSTALLED OVER THE WINDOW WELL REFERRED TO IN SENTENCE (5), SUCH ENCLOSURE SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF KEYS, TOOLS OR SPECIAL KNOWLEDGE OF THE OPENING MECHANISM.

9.10.9.16. SEPARATION OF STORAGE GARAGES.

(1) EXCEPT AS PROVIDED IN SENTENCES (2) AND (3), A STORAGE GARAGE SHALL BE SEPARATED FROM OTHER OCCUPANCIES BY A FIRE SEPARATION HAVING NOT LESS THAN A 1.5h FIRE RESISTANCE RATING.
(2) EXCEPT AS PERMITTED IN SENTENCE (3), STORAGE GARAGES CONTAINING 5 MOTOR VEHICLES OR FEWER SHALL BE SEPARATED FROM OTHER OCCUPANCIES BY A FIRE SEPARATION OF NOT LESS THAN 1.0h.
(3) WHERE A STORAGE GARAGE SERVES ONLY THE DWELLING UNIT IT IS ATTACHED TO OR BUILT INTO, IT SHALL BE CONSIDERED AS PART OF THAT DWELLING UNIT AND THE FIRE SEPARATION REQUIRED IN SENTENCE (2) NEED NOT BE PROVIDED BETWEEN THE GARAGE AND THE DWELLING UNIT.
(4) WHERE A STORAGE GARAGE IS ATTACHED TO OR BUILT INTO A BUILDING OF RESIDENTIAL OCCUPANCY,
- (a) AN AIR BARRIER SYSTEM CONFORMING TO SUBSECTION 9.25.3. SHALL BE INSTALLED BETWEEN THE GARAGE AND THE REMAINDER OF THE BUILDING TO PROVIDE AN EFFECTIVE BARRIER TO GAS AND EXHAUST FUMES, AND
- (b) EVERY DOOR BETWEEN THE GARAGE AND THE REMAINDER OF THE BUILDING SHALL CONFORM TO ARTICLE 9.10.13.15.

(5) WHERE MEMBRANE MATERIALS ARE USED TO PROVIDE THE REQUIRED AIRTIGHTNESS IN THE AIR BARRIER SYSTEM, ALL JOINTS SHALL BE SEALED AND STRUCTURALLY SUPPORTED.

9.10.13.15. DOORS BETWEEN GARAGES AND DWELLING UNITS.

(1) A DOOR BETWEEN AN ATTACHED OR BUILT–IN GARAGE AND A DWELLING UNIT SHALL BE TIGHT–FITTING AND WEATHER–STRIPPED TO PROVIDE AN EFFECTIVE BARRIER AGAINST THE PASSAGE OF GASES AND EXHAUST FUMES AND SHALL BE FITTED WITH A SELF–CLOSING DEVICE.
(2) A DOORWAY BETWEEN AN ATTACHED OR BUILT–IN GARAGE AND A DWELLING UNIT SHALL NOT BE LOCATED IN A ROOM INTENDED FOR SLEEPING.

9.10.19.1. SMOKE ALARMS, REQUIRED SMOKE ALARMS.

(1) SMOKE ALARMS CONFORMING TO CAN/ULC–S531, "Smoke Alarms", SHALL BE INSTALLED IN EACH DWELLING UNIT AND IN EACH SLEEPING ROOM NOT WITHIN A DWELLING UNIT.

9.10.19.3. SMOKE ALARMS, LOCATION OF SMOKE ALARMS.

(1) WITHIN DWELLING UNITS, SUFFICIENT SMOKE ALARMS SHALL BE INSTALLED SO THAT,
- (a) THERE IS AT LEAST ONE SMOKE ALARM INSTALLED ON EACH STOREY, INCLUDING BASEMENTS, AND
- (b) ON ANY STOREY OF A DWELLING UNIT CONTAINING SLEEPING ROOMS, A SMOKE ALARM IS INSTALLED,
  - (i) IN EACH SLEEPING ROOM, AND
  - (ii) IN A LOCATION BETWEEN THE SLEEPING ROOMS AND THE REMAINDER OF THE STOREY, AND IF THE SLEEPING ROOMS ARE SERVED BY A HALLWAY, THE SMOKE ALARM SHALL BE LOCATED IN THE HALLWAY.

(2) A SMOKE ALARM REQUIRED IN SENTENCE (1) SHALL BE INSTALLED IN CONFORMANCE WITH CAN/ULC–S553, "Installation of Smoke Alarms".
(3) SMOKE ALARMS REQUIRED IN ARTICLE 9.10.19.1. AND SENTENCE (1) SHALL BE INSTALLED ON OR NEAR THE CEILING.

9.10.19.4. SMOKE ALARMS, POWER SUPPLY.

(1) EXCEPT AS PROVIDED IN SENTENCES (2) AND (3), SMOKE ALARMS REQUIRED IN SENTENCE 9.10.19.1.(1) SHALL,
- (a) BE INSTALLED WITH PERMANENT CONNECTIONS TO AN ELECTRICAL CIRCUIT,
- (b) HAVE NO DISCONNECT SWITCH BETWEEN THE OVER–CURRENT DEVICE AND THE SMOKE ALARM, AND
- (c) IN CASE THE REGULAR POWER SUPPLY TO THE SMOKE ALARM IS INTERRUPTED, BE PROVIDED WITH A BATTERY AS AN ALTERNATIVE POWER SOURCE THAT CAN CONTINUE TO PROVIDE POWER TO THE SMOKE ALARM FOR A PERIOD OF NOT LESS THAN 7 DAYS IN THE NORMAL CONDITION, FOLLOWED BY 4 min. OF ALARM.

(2) WHERE THE BUILDING IS NOT SUPPLIED WITH ELECTRICAL POWER, SMOKE ALARMS ARE PERMITTED TO BE BATTERY OPERATED.
(3) SUITES OF RESIDENTIAL OCCUPANCY ARE PERMITTED TO BE EQUIPPED WITH SMOKE DETECTORS IN LIEU OF SMOKE ALARMS, PROVIDED THE SMOKE DETECTORS,
- (a) ARE CAPABLE OF INDEPENDENTLY SOUNDING AUDIBLE SIGNALS WITHIN THE INDIVIDUAL SUITES,
- (b) EXCEPT AS PROVIDED BY SENTENCE (4), ARE INSTALLED IN CONFORMANCE WITH CAN/ULC–S524, "Installation of Fire Alarm Systems", AND
- (c) FORM PART OF THE FIRE ALARM SYSTEM.

(4) SMOKE DETECTORS PERMITTED TO BE INSTALLED IN LIEU OF SMOKE ALARMS AS PROVIDED IN SENTENCE (3) ARE PERMITTED TO SOUND LOCALIZED ALARMS WITHIN INDIVIDUAL SUITES, AND NEED NOT SOUND AN ALARM THROUGHOUT THE REST OF THE BUILDING.

9.10.19.5. SMOKE ALARMS, INTERCONNECTION OF SMOKE ALARMS.

(1) WHERE MORE THAN ONE SMOKE ALARM IS REQUIRED IN A DWELLING UNIT, THE SMOKE ALARMS SHALL BE WIRED SO THAT THE ACTIVATION OF ONE ALARM WILL CAUSE ALL ALARMS WITHIN THE DWELLING UNIT TO SOUND.

9.10.19.6. SMOKE ALARMS, SILENCING OF SMOKE ALARMS.

(1) EXCEPT AS PERMITTED IN SENTENCE (2), A MANUALLY OPERATED DEVICE SHALL BE INCORPORATED WITHIN THE CIRCUITRY OF A SMOKE ALARM INSTALLED IN A DWELLING UNIT SO THAT THE SIGNAL EMITTED BY THE SMOKE ALARM CAN BE SILENCED FOR A PERIOD OF NOT MORE THAN 10 min. AFTER WHICH THE SMOKE ALARM WILL RESET AND SOUND AGAIN IF THE LEVEL OF SMOKE IN THE VICINITY IS SUFFICIENT TO REACTUATE IT.
(2) SUITES OF RESIDENTIAL OCCUPANCY EQUIPPED WITH SMOKE DETECTORS INSTALLED TO CAN/ULC–S524, "Installation of Fire Alarm Systems", WHICH ARE PART OF THE FIRE ALARM SYSTEM IN LIEU OF SMOKE ALARMS AS PERMITTED IN SENTENCE 9.10.19.4.(3), NEED NOT INCORPORATE THE MANUALLY OPERATED DEVICE REQUIRED IN SENTENCE (1).

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9.10.19.7. SMOKE ALARMS, INSTRUCTIONS FOR MAINTENANCE AND CARE.

(1) WHERE INSTRUCTIONS ARE NECESSARY TO DESCRIBE THE MAINTENANCE AND CARE REQUIRED FOR SMOKE ALARMS TO ENSURE CONTINUING SATISFACTORY PERFORMANCE, THEY SHALL BE POSTED IN A LOCATION WHERE THEY WILL BE READILY AVAILABLE TO THE OCCUPANTS FOR REFERENCE.

9.12.1.4. PRECAUTIONS DURING EXCAVATION.

(1) EVERY EXCAVATION SHALL BE UNDERTAKEN IN SUCH A MANNER TO PREVENT DAMAGE TO ADJACENT PROPERTY, EXISTING STRUCTURES, UTILITIES, ROADS AND SIDEWALKS AT ALL STAGES OF CONSTRUCTION.
(2) MATERIAL SHALL NOT BE PLACED NOR SHALL EQUIPMENT BE OPERATED OR PLACED IN OR ADJACENT TO AN EXCAVATION IN A MANNER THAT MAY ENDANGER THE INTEGRITY OF THE EXCAVATION OR ITS SUPPORTS.

9.13.2.1. DAMPPROOFING.

(1) EXCEPT AS PROVIDED IN ARTICLE 9.13.3.1., WHERE THE EXTERIOR FINISHED GROUND LEVEL IS AT A HIGHER ELEVATION THAN THE GROUND LEVEL INSIDE THE FOUNDATION WALLS, EXTERIOR SURFACES OF FOUNDATION WALLS BELOW GROUND LEVEL SHALL BE DAMPPROOFED.
(2) EXCEPT AS PROVIDED IN SENTENCE (3) AND ARTICLE 9.13.3.1., FLOORS ON GROUND SHALL BE DAMPPROOFED.
(3) FLOORS IN GARAGES, FLOORS IN UNENCLOSED PORTIONS OF BUILDINGS AND FLOOR INSTALLED OVER GRANULAR FILL IN CONFORMANCE WITH ARTICLE 9.16.2.1. NEED NOT BE DAMPPROOFED.
(4) DAMPPROOFING IN SENTENCE (1) IS NOT REQUIRED WHERE THE EXTERIOR SURFACES OF FOUNDATION WALLS BELOW GROUND LEVEL ARE WATERPROOFED.

9.13.2.4. DAMPPROOFING, PREPARATION OF SURFACE.

(1) UNIT MASONRY WALLS TO BE DAMPPROOFED SHALL BE,
- (a) PARGED ON THE EXTERIOR FACE BELOW GROUND LEVEL WITH NOT LESS THAN 6mm OF MORTAR CONFORMING TO SECTION 9.20, AND
- (b) COVED OVER THE FOOTING WHEN THE FIRST COURSE OF BLOCK IS LAID.

(2) CONCRETE WALLS TO BE DAMPPROOFED SHALL HAVE HOLES AND RECESSES RESULTING FROM THE REMOVAL OF FORM TIES SEALED WITH CEMENT MORTAR OR DAMPPROOFING MATERIAL.
(3) THE SURFACE OF INSULATING CONCRETE FORM WALLS TO BE DAMPPROOFED SHALL BE REPAIRED AND FREE OF PROJECTIONS AND DEPRESSIONS THAT COULD BE DETRIMENTAL TO THE PERFORMANCE OF THE MEMBRANE TO BE APPLIED.

9.13.2.5. DAMPPROOFING, APPLICATION OF DAMPPROOFING MATERIAL.

(1) DAMPPROOFING MATERIAL SHALL BE APPLIED OVER THE PARGING OR CONCRETE BELOW GROUND LEVEL.

9.13.2.6. DAMPPROOFING, MOISTURE PROTECTION FOR INTERIOR FINISHES.

(1) THE INTERIOR SURFACE OF FOUNDATION WALLS BELOW GROUND LEVEL SHALL BE PROTECTED BY MEANS THAT MINIMIZE THE INGRESS OF MOISTURE FROM TEH FOUNDATION WALL INTO INTERIOR SPACES WHERE,
- (a) A SEPARATE INTERIOR FINISH IS APPLIED TO A CONCRETE OR UNIT MASONRY WALL THAT IS IN CONTACT WITH THE SOIL, OR
- (b) WOOD MEMBERS ARE PLACED IN CONTACT WITH SUCH WALLS FOR THE INSTALLATION OF INSULATION OR FINISH.

(2) EXCEPT AS PROVIDED IN SENTENCE (3), WHERE THE PROTECTION OF INTERIOR FINISHES REQUIRED IN SENTENCE (1) CONSISTS OF MEMBRANES OR COATINGS,
- (a) THE MEMBRANE OR COATING SHALL EXTEND FROM THE BASEMENT FLOOR SURFACE UP TO THE HIGHEST EXTENT OF THE INTERIOR INSULATION OR FINISH, BUT NOT HIGHER THAN THE EXTERIOR FINISHED GROUND LEVEL, AND
- (b) NO MEMBRANE OR COATING WITH A PERMEANCE LESS THAN $170ng/(Pa.s.m^2)$ SHALL BE APPLIED TO THE INTERIOR SURFACE OF THE FOUNDATION WALL ABOVE GROUND LEVEL BETWEEN THE INSULATION AND THE FOUNDATION WALL.

(3) WHERE INSULATION FUNCTIONS AS BOTH MOISTURE PROTECTION FOR INTERIOR FINISHES AND AS A VAPOUR BARRIER IN ACCORDANCE WITH SUBSECTION 9.25.4., IT SHALL BE APPLIED OVER THE ENTIRE INTERIOR SURFACE OF THE FOUNDATION WALL.

9.13.2.7. DAMPPROOFING, DAMPPROOFING OF FLOORS ON GROUND.

(1) WHERE FLOORS ARE DAMPPROOFED, THE DAMPPROOFING SHALL BE INSTALLED BELOW THE FLOOR, EXCEPT THAT WHERE A SEPARATE FLOOR IS PROVIDED OVER A SLAB, THE DAMPPROOFING IS PERMITTED TO BE APPLIED TO THE TOP OF THE SLAB.
(2) WHERE INSTALLED BELOW THE FLOOR, DAMPPROOFING MEMBRANES SHALL CONSIST OF POLYETHYLENE NOT LESS THAN 0.15mm THICK, OR TYPE 2 ROLL ROOFING.
(3) JOINTS IN DAMPPROOFING MEMBRANCE DESCRIBED IN SENTENCE (2) SHALL BE LAPPED NOT LESS THAN 100mm.
(4) WHERE INSTALLED ABOVE THE SLAB, DAMPPROOFING SHALL CONSIST OF,
- (a) NO FEWER THAN 2 MOPPED–ON COATS OF BITUMEN,
- (b) NOT LESS THAN 0.05mm POLYETHYLENE, OR
- (c) OTHER MATERIAL PROVIDING EQUIVALENT PERFORMANCE.

9.14.2.1. FOUNDATION WALL DRAINAGE.

(1) UNLESS IT CAN BE SHOWN TO BE UNNECESSARY, DRAINAGE SHALL BE PROVIDED AT THE BOTTOM OF EVERY FOUNDATION WALL THAT CONTAINS THE BUILDING INTERIOR.
(2) EXCEPT AS PROVIDED IN SENTENCES (4) AND (5), WHERE THE INSULATION ON A FOUNDATION WALL EXTENDS TO MORE THAN 900mm BELOW THE ADJACENT EXTERIOR GROUND LEVEL,
- (a) A DRAINAGE LAYER SHALL BE INSTALLED ADJACENT TO THE EXTERIOR SURFACE OF A FOUNDATION WALL CONSISTING OF,
  - (i) NOT LESS THAN 19mm MINERAL FIBRE INSULATION WITH A DENSITY OF NOT LESS THAN $57\ kg/m^3$, OR
  - (ii) NOT LESS THAN 100mm OF FREE DRAINING GRANULAR MATERIAL, OR
- (b) A SYSTEM SHALL BE INSTALLED THAT CAN BE SHOWN TO PROVIDE EQUIVALENT PERFORMANCE TO THAT PROVIDED BY THE MATERIALS DESCRIBED IN CLAUSE (a).

(3) WHERE MINERAL FIBRE INSULATION, CRUSHED ROCK BACKFILL OR OTHER DRAINAGE LAYER MEDIUM IS PROVIDED ADJACENT TO THE EXTERIOR SURFACE OF A FOUNDATION WALL,
- (a) THE INSULATION, BACKFILL OR OTHER DRAINAGE LAYER MEDIUM SHALL EXTEND TO THE FOOTING LEVEL TO FACILITATE DRAINAGE OF GROUND WATER TO THE FOUNDATION DRAINAGE SYSTEM, AND
- (b) ANY PYRITIC MATERIAL IN THE CRUSHED ROCK SHALL BE LIMITED TO A CONCENTRATION THAT WILL NOT DAMAGE THE BUILDING TO A DEGREE THAT WOULD ADVERSELY AFFECT ITS STABILITY OR THE PERFORMANCE OF ASSEMBLIES SEPARATING DISSIMILAR ENVIRONMENTS.

(4) EXCEPT WHERE THE INSULATION PROVIDES THE DRAINAGE LAYER REQUIRED IN CLAUSE (2)(a), WHEN EXTERIOR INSULATION IS PROVIDED, THE DRAINAGE LAYER SHALL BE INSTALLED ON THE EXTERIOR FACE OF THE INSULATION.
(5) THE DRAINAGE LAYER REQUIRED IN SENTENCE (2) IS NOT REQUIRED,
- (a) WHEN THE FOUNDATION WALL IS NOT REQUIRED TO BE DAMPPROOFED, OR
- (b) WHEN THE FOUNDATION WALL IS WATERPROOFED.

(6) WHERE DRAINAGE IS REQUIRED IN SENTENCE (1), THE DRAINAGE SHALL CONFORM TO SUBSECTION 9.14.3. OR 9.14.4.

9.14.3.1. DRAINAGE TILE AND PIPE, MATERIAL STANDARDS.

(1) DRAIN TILE AND PIPE FOR FOUNDATION DRAINAGE SHALL CONFORM TO,
- (a) ASTM C4, "Clay Drain Tile and Perforated Clay Drain Tile",
- (b) ASTM C412M, "Concrete Drain Tile (Metric)",
- (c) ASTM C444M, "Perforated Concrete Pipe (Metric)",
- (d) ASTM C700, "Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated",
- (e) CAN/CGSB–34.22, "Asbestos–Cement Drain Pipe",
- (f) CAN/CSA–B182.1, "Plastic Drain and Sewer Pipe and Pipe Fittings",
- (g) CAN/CSA–G401, "Corrugated Steel Pipe Products", or
- (h) BNQ 3624–115, "Polyethylene (PE) Pipe Fittings–Flexible Pipes for Drainage–Characteristics and Test Methods.

9.14.3.2. DRAINAGE TILE AND PIPE, MINIMUM SIZE.

(1) DRAIN TILE OR PIPE USED FOR FOUNDATION DRAINAGE SHALL BE NOT LESS THAN 100mm IN DIAMETER.

9.14.3.3. DRAINAGE TILE AND PIPE, INSTALLATION.

(1) DRAIN TILE OR PIPE SHALL BE LAID ON UNDISTURBED OR WELL–COMPACTED SOIL SO THAT THE TOP OF THE TILE OR PIPE IS BELOW THE BOTTOM OF THE FLOOR SLAB OR THE GROUND COVER OF THE CRAWL SPACE.
(2) DRAIN TILE OR PIPE WITH BUTT JOINTS SHALL BE LAID WITH 6mm TO 10mm OPEN JOINTS.
(3) THE TOP HALF OF JOINTS REFERRED TO IN SENTENCE (2) SHALL BE COVERED WITH SHEATHING PAPER, 0.10mm POLYETHYLENE OR No.15 ASPHALT OR TAR–SATURATED FELT.
(4) THE TOP AND SIDES OF DRAIN PIPE OR TILE SHALL BE COVERED WITH NOT LESS THAN 150mm OF CRUSHED STONE OR OTHER COARSE CLEAN GRANULAR MATERIAL CONTAINING NOT MORE THAN 10% OF MATERIAL THAT WILL PASS A 4mm SIEVE.

9.14.4.1. GRANULAR DRAINAGE LAYER, TYPE OF GRANULAR MATERIAL.

(1) GRANULAR MATERIAL USED TO DRAIN THE BOTTOM OF A FOUNDATION SHALL CONSIST OF A CONTINUOUS LAYER OF CRUSHED STONE OR OTHER COARSE CLEAN GRANULAR MATERIAL CONTAINING,
- (a) NOT MORE THAN 10% OF MATERIAL THAT WILL PASS A 4mm SIEVE, AND
- (b) NO PYRITIC MATERIAL IN A CONCENTRATION THAT WOULD ADVERSELY AFFECT ITS STABILITY OR THE PERFORMANCE OF ASSEMBLIES SEPARATING DISSIMILAR ENVIRONMENTS.

9.14.4.2. GRANULAR DRAINAGE LAYER, INSTALLATION.

(1) GRANULAR MATERIAL DESCRIBED IN ARTICLE 9.14.4.1. SHALL BE LAID ON UNDISTURBED OR COMPACTED SOIL TO A MINIMUM DEPTH OF NOT LESS THAN 125mm BENEATH THE FOOTING OF THE BUILDING AND EXTEND NOT LESS THAN 300mm BEYOND THE OUTSIDE EDGE OF THE FOOTINGS.

9.15.3.9. STEP FOOTINGS.

(1) WHERE STEP FOOTINGS ARE USED,
- (a) THE VERTICAL RISE BETWEEN HORIZONTAL PORTIONS SHALL NOT EXCEED 600mm, AND
- (b) THE HORIZONTAL DISTANCE BETWEEN RISERS SHALL BE NOT LESS THAN 600mm.

Ontario Building Code, 2012:

9.15.4.6. FOUNDATION WALLS, EXTENSION ABOVE GROUND LEVEL.

(1) EXTERIOR FOUNDATION WALLS SHALL EXTEND NOT LESS THAN 150mm ABOVE FINISHED GROUND LEVEL.

9.15.4.7. FOUNDATION WALLS, REDUCTION IN THICKNESS.

(1) WHERE THE TOP OF A FOUNDATION WALL IS REDUCED IN THICKNESS TO PERMIT THE INSTALLATION OF FLOOR JOISTS, THE REDUCED SECTION SHALL BE NOT MORE THAN 350mm HIGH AND NOT LESS THAN 90mm THICK.
(2) WHERE THE TOP OF A FOUNDATION WALL IS REDUCED IN THICKNESS TO PERMIT THE INSTALLATION OF A MASONRY EXTERIOR FACING, THE REDUCED SECTION SHALL BE,
- (a) NOT LESS THAN 90mm THICK, AND
- (b) TIED TO THE FACING MATERIAL WITH METAL TIES CONFORMING TO SENTENCE 9.20.9.4.(3) SPACED NOT MORE THAN,
  - (i) 200mm O.C. VERTICALLY, AND
  - (ii) 900mm O.C. HORIZONTALLY.

(3) THE SPACE BETWEEN WALL AND FACING DESCRIBED IN SENTENCE (2) SHALL BE FILLED WITH MORTAR.

9.15.5.1. SUPPORT OF FLOOR JOISTS ON MASONRY FOUNDATION WALLS.

(1) EXCEPT AS PERMITTED IN SENTENCE (2), FOUNDATION WALLS OF HOLLOW UNIT MASONRY SUPPORTING FLOOR JOISTS SHALL BE,
- (a) CAPPED WITH NOT LESS THAN 50mm OF SOLID MASONRY OR CONCRETE, OR
- (b) HAVE THE TOP COURSE FILLED WITH MORTAR OR CONCRETE.

(2) CAPPING REQUIRED IN SENTENCE (1) IS PERMITTED TO BE OMITTED,
- (a) IN LOCALITIES WHERE TERMITES ARE NOT KNOWN TO OCCUR,
- (b) WHEN THE JOISTS ARE SUPPORTED ON A WOOD PLATE NOT LESS THAN 38mm BY 89mm, AND
- (c) WHEN THE SIDING OVERLAPS THE FOUNDATION WALL NOT LESS THAN 12mm.

9.15.6.1. FOUNDATION WALLS BELOW GROUND.

(1) CONCRETE BLOCK FOUNDATION WALLS SHALL BE PARGED ON THE EXTERIOR FACE BELOW GROUND LEVEL AS REQUIRED IN SECTION 9.13.

9.15.6.2. FOUNDATION WALLS ABOVE GROUND.

(1) EXTERIOR SURFACES OF CONCRETE BLOCK FOUNDATION WALLS ABOVE GROUND LEVEL SHALL HAVE TOOLED JOINTS, OR SHALL BE RENDERED, PARGED OR OTHERWISE SUITABLY FINISHED.

9.17.4.1. WOOD COLUMNS, COLUMN SIZES.

(1) THE WIDTH OR DIAMETER OF A WOOD COLUMN SHALL BE NOT LESS THAN THE WIDTH OF THE SUPPORTED MEMBER.
(2) EXCEPT AS PROVIDED IN ARTICLE 9.35.4.2., COLUMNS SHALL BE NOT LESS THAN 184mm FOR ROUND COLUMNS AND 140mm BY 140mm FOR RECTANGULAR COLUMNS, UNLESS CALCULATIONS ARE PROVIDED TO SHOW THAT LESSER SIZES ARE ADEQUATE.

9.17.4.2. WOOD COLUMNS, MATERIALS.

(1) WOOD COLUMNS SHALL BE EITHER SOLID, GLUE–LAMINATED OR BUILT–UP.
(2) BUILT–UP COLUMNS SHALL CONSIST OF NOT LESS THAN 38mm THICK FULL–LENGTH MEMBERS,
- (a) BOLTED TOGETHER WITH NOT LESS THAN 9.52mm DIA. BOLTS SPACED NOT MORE THAN 450mm O.C., OR
- (b) NAILED TOGETHER WITH NOT LESS THAN 76mm NAILS SPACED NOT MORE THAN 300mm O.C.

(3) GLUE–LAMINATED COLUMNS SHALL CONFORM TO SECTION 4.3.

9.17.4.3. WOOD COLUMNS, COLUMNS IN CONTACT WITH CONCRETE.

(1) WOOD COLUMNS SHALL BE SEPARATED FROM CONCRETE IN CONTACT WITH THE GROUND BY 0.05mm POLYETHYLENE FILM OR TYPE S ROLL ROOFING.

9.17.4.4. WOOD COLUMNS, TERMITE PROTECTION.

(1) WHERE TERMITES ARE KNOWN TO EXIST, EXTERIOR WOOD COLUMNS, SUCH AS PORCH SUPPORTS, SHALL BE,
- (a) PRESSURE–TREATED WITH A CHEMICAL THAT IS TOXIC TO SUCH TERMITES, IN ACCORDANCE WITH ARTICLE 9.3.2.9., OR
- (b) SUPPORTED ON NON–CELLULOSIC MATERIAL EXTENDING NOT LESS THAN 150mm ABOVE THE FINISHED GROUND AND SHALL BE LOCATED NOT LESS THAN 50mm FROM THE EXTERIOR WALL OF AN ADJACENT BUILDING.

9.19.1.1. ROOF SPACES, VENTING, REQUIRED VENTING.

(1) EXCEPT WHERE IT CAN BE SHOWN TO BE UNNECESSARY, WHERE INSULATION IS INSTALLED BETWEEN A CEILING AND THE UNDERSIDE OF THE ROOF SHEATHING, A SPACE SHALL BE PROVIDED BETWEEN THE INSULATION AND THE SHEATHING, AND VENTS SHALL BE INSTALLED TO PERMIT THE MOVEMENT OF AIR FROM THE SPACE TO THE EXTERIOR.

9.19.1.2. ROOF SPACES, VENTING, VENT REQUIREMENTS.

(1) EXCEPT AS PROVIDED IN SENTENCE (2), THE UNOBSTRUCTED VENT AREA SHALL BE NOT LESS THAN 1/300 OF THE INSULATED CEILING AREA.
(2) WHERE THE ROOF SLOPE IS LESS THAN 1 IN 6 OR IN ROOFS THAT ARE CONSTRUCTED WITH ROOF JOISTS, THE UNOBSTRUCTED VENT AREA SHALL BE NOT LESS THAN 1/150 OF THE INSULATED CEILING AREA.
(3) REQUIRED VENTS ARE PERMITTED TO BE ROOF TYPE, EAVE TYPE, GABLE–END TYPE OR ANY COMBINATION OF THEM, AND SHALL BE DISTRIBUTED,
- (a) UNIFORMLY ON OPPOSITE SIDES OF THE BUILDING,
- (b) WITH NOT LESS THAN 25% OF THE REQUIRED OPENINGS LOCATED AT THE TOP OF THE SPACE, AND
- (c) WITH NOT LESS THAN 25% OF THE REQUIRED OPENINGS LOCATED AT THE BOTTOM OF THE SPACE.

(4) EXCEPT WHERE EACH ROOF JOIST SPACE REFERRED TO IN SENTENCE (2) IS SEPARATELY VENTED, ROOF JOIST SPACES SHALL BE INTERCONNECTED BY INSTALLING PURLINS NOT LESS THAN 38mm BY 38mm ON THE TOP OF ROOF JOISTS.
(5) VENTS SHALL COMPLY WITH CAN3–A93–M, "Natural Airflow Ventilators for Buildings".

9.19.1.3. ROOF SPACES, VENTING, CLEARANCES.

(1) EXCEPT AS PROVIDED IN SENTENCE (2), WHERE VENTING IS PROVIDED TO A ROOF JOIST SPACE, NOT LESS THAN 63mm SHALL BE PROVIDED BETWEEN THE TOP OF THE INSULATION AND THE UNDERSIDE OF THE ROOF SHEATHING.
(2) WHERE VENTING IS PROVIDED AT THE JUNCTION OF SLOPED ROOFS AND EXTERIOR WALLS AND WHERE PREFORMED BAFFLES ARE USED TO CONTAIN THE INSULATION, THE BAFFLES SHALL,
- (a) PROVIDE AN UNOBSTRUCTED AIR SPACE BETWEEN THE INSULATION AND THE UNDERSIDE OF THE ROOF SHEATHING, THAT IS
  - (i) NOT LESS THAN 25mm IN DIMENSION, AND
  - (ii) OF SUFFICIENT CROSS AREA TO MEET THE ATTIC OR ROOF SPACE VENTING REQUIREMENTS OF ARTICLE 9.19.1.2, AND
- (b) EXTEND VERTICALLY NOT LESS THAN 50mm ABOVE THE TOP OF THE INSULATION.

(3) CEILING INSULATION SHALL BE INSTALLED IN A MANNER THAT WILL NOT RESTRICT A FREE FLOW OF AIR THROUGH ROOF VENTS OR THROUGH ANY PORTION OF THE ATTIC OR ROOF SPACE.

9.19.1.4. ROOF SPACES, VENTING, MANSARD OR GAMBREL ROOF.

(1) THE LOWER PORTION OF A MANSARD OR GAMBREL STYLE ROOF NEED NOT BE VENTILATED.
(2) THE UPPER PORTION OF ROOFS DESCRIBED IN SENTENCE (1) SHALL BE VENTILATED IN CONFORMANCE WITH THE REQUIREMENTS IN ARTICLES 9.19.1.1. TO 9.19.1.3.

9.20.6.4. MASONRY VENEER.

(1) EXCEPT FOR MASONRY VENEER WHERE EACH MASONRY UNIT IS SUPPORTED INDIVIDUALLY BY THE STRUCTURAL BACKING, MASONRY VENEER SHALL BE OF SOLID UNITS NOT LESS THAN 70mm THICK.
(2) VENEER DESCRIBED IN SENTENCE (1) OVER WOOD FRAME WALLS SHALL HAVE NOT LESS THAN A 25mm AIR SPACE BEHIND THE VENEER.
(3) MASONRY VENEER LESS THAN 90mm THICK SHALL HAVE UNRAKED JOINTS.
(4) MASONRY VENEER SHALL CONFORM TO SUBSECTION 4.3.2. WHERE THE MASONRY UNITS ARE REQUIRED TO BE INDIVIDUALLY SUPPORTED BY THE STRUCTURAL BACKING.

9.20.9.5. TIES FOR MASONRY VENEER.

(1) MASONRY VENEER 70mm OR MORE IN THICKNESS AND RESTING ON A BEARING SUPPORT SHALL BE TIED TO MASONRY BACK UP OR TO WOOD FRAMING MEMBERS WITH STRAPS THAT ARE,
- (a) CORROSION–RESISTANT,
- (b) NOT LESS THAN 0.76mm THICK,
- (c) NOT LESS THAN 22mm WIDE,
- (d) SHAPED TO PROVIDE A KEY WITH THE MORTAR, AND
- (e) SPACED IN ACCORDANCE WITH TABLE 9.20.9.5.

MAXIMUM VERTICAL SPACING, mm	MAXIMUM HORIZONTAL SPACING, mm
400	800
500	600
600	400

(2) THE STRAPS DESCRIBED IN SENTENCE (1) THAT ARE FASTENED TO THE WOOD FRAMING MEMBERS SHALL BE,
- (a) BENT AT A RIGHT ANGLE WITHIN 6mm FROM THE FASTENER, AND
- (b) FASTENED WITH CORROSION RESISTANT 3.18mm DIA. SCREWS OR SPIRAL NAILS HAVING A WOOD PENETRATION OF NOT LESS THAN 30mm.

(3) MASONRY VENEER INDIVIDUALLY SUPPORTED BY MASONRY OR WOOD FRAME BACK–UP SHALL BE SECURED TO THE BACK–UP IN CONFORMANCE WITH SUBSECTION 4.3.2.
(4) THE STRAPS DESCRIBED IN SENTENCE (1) MAY BE INSTALLED AGAINST ONE OF THE SHEATHINGS LISTED IN TABLE 9.23.16.2.A. PROVIDED THAT,
- (a) THE TIE IS IN CONTACT WITH THE EXTERIOR SURFACE OF THE SHEATHING, AND
- (b) THE SHEATHING BENEATH THE TIE IS NOT COMPRESSED.

SCHEDULE 1: DESIGNER INFORMATION

I BRIAN MATTHEWS DECLARE THAT I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER SUBSECTION 3.2.2.2. OF THE BUILDING CODE.
INDIVIDUAL BCIN: 41322
FIRM BCIN: 44237
SIGNATURE;

Drawings must NOT be scaled. Contractor must check and verify all dimensions, specifications and drawings on site and report any discrepancies to the designer prior to proceeding with any of the work.

PRELIMINARY, NOT FOR CONSTRUCTION

5	09.09.13	ISSUED FOR HERITAGE REVIEW
4	09.05.17	ISSUED FOR HERITAGE REVIEW
3	03.23.17	ISSUED FOR HERITAGE REVIEW
2	09.30.16	ISSUED FOR HERITAGE REVIEW
1	08.25.16	ISSUED FOR COORDINATION
NO.	DATE	ISSUED/REVISED
REF.	DATE:	DESCRIPTION:

REVISIONS / ISSUANCE:

btM
btM Drafting & Design
32 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y2
of. 905.393.8005
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CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
2012 BUILDING CODE, CONSTRUCTION NOTES

DRAWN: B.T.M.
DATE: 7.26.2017 | SCALE: N/A
JOB NUMBER: 174-15 | SHEET NUMBER: **A3.1.1**

\\BTMAUTOCAD\USERS\BTM DESIGN\DOCUMENTS\002 BTM DESIGN\001 PROJECT FILES\174-15 915 NORTH SERVICE ROAD, MISS\DRAWINGS\174-15 915 N SERVICE ROAD-DRAWINGS.DWG

Ontario Building Code, 2012:

9.20.13.1. CONTROL OF RAIN WATER PENETRATION, MATERIALS FOR FLASHING.
(1) MATERIALS FOR FLASHING SHALL CONFORM TO TABLE 9.20.13.1.
(2) ALUMINUM FLASHING IN CONTACT WITH MASONRY OR CONCRETE SHALL BE EFFECTIVELY COATED OR SEPARATED FROM THE MASONRY OR CONCRETE BY AN IMPERVIOUS MEMBRANE.

9.20.13.2. CONTROL OF RAIN WATER PENETRATION, FASTENING OF FLASHING.
(1) FASTENING DEVICES FOR FLASHING SHALL BE CORROSION-RESISTANT AND, WHERE METAL FLASHING IS USED, SHALL BE COMPATIBLE WITH THE FLASHING WITH RESPECT TO GALVANIC ACTION.

9.20.13.3. CONTROL OF RAIN WATER PENETRATION, LOCATION OF FLASHING.
(1) FLASHING SHALL BE INSTALLED IN MASONRY WAN MASONRY VENEER WALLS,
(a) BENEATH JOINTED MASONRY WINDOW SILLS,
(b) OVER THE BACK AND TOP OF PARAPET WALLS,
(c) OVER THE HEADS OF GLASS BLOCK PANELS,
(d) BENEATH WEEP HOLES, AND
(e) OVER THE HEADS OF WINDOW AND DOOR OPENINGS IN EXTERIOR WALLS WHEN THE VERTICAL DISTANCE BETWEEN THE TOP OF A WINDOW OR DOOR FRAME AND THE BOTTOM EDGE OF THE EAVE EXCEEDS ONE-QUARTER OF THE HORIZONTAL EAVE OVERHANG.
(2) THROUGH-WALL FLASHING SHALL BE PROVIDED IN A MASONRY VENEER WALL SUCH THAT ANY MOISTURE THAT ACCUMULATES IN THE AIR SPACE WILL BE DIRECTED TO THE EXTERIOR OF THE BUILDING.

9.20.13.4. CONTROL OF RAIN WATER PENETRATION, EXTENSION OF FLASHING.
(1) WHEN INSTALLED BENEATH JOINTED MASONRY WINDOW SILLS AND JOINTED MASONRY COPINGS OR OVER THE HEADS OF OPENINGS, FLASHING SHALL EXTEND FROM THE FRONT EDGE OF THE MASONRY UP BEHIND THE SILL OR LINTEL.
(2) A FLASHING MAY BE OMITTED WHEN THE MASONRY AT THE SILL OF A WALL OPENING OR THE TOP OF A WALL IS PROTECTED BY AN IMPERVIOUS NON-JOINTED MASONRY COPING THAT CONFORMS TO ARTICLE 9.20.13.12.

9.20.13.5. CONTROL OF RAIN WATER PENETRATION, FLASHING FOR WEEP HOLES IN MASONRY/VENEER WALLS.
(1) FLASHING BENEATH WEEP HOLES IN CAVITY WALLS AND MASONRY VENEER/MASONRY BACK-UP WALLS SHALL,
(a) BE BEDDED NOT LESS THAN 25mm IN THE INSIDE WYTHE,
(b) EXTEND TO NOT LESS THAN 5mm BEYOND THE OUTER FACE OF THE BUILDING ELEMENT BELOW THE FLASHING, AND
(c) BE INSTALLED WITH A NOMINALLY HORIZONTAL SLOPE TOWARD THE OUTSIDE WYTHE.

9.20.13.6. CONTROL OF RAIN WATER PENETRATION, FLASHING FOR WEEP HOLES IN MASONRY VENEER.
(1) FLASHING BENEATH WEEP HOLES IN MASONRY VENEER OVER MASONRY BACK-UP WALLS SHALL CONFORM TO THE FLASHING REQUIREMENTS FOR CAVITY WALLS AND MASONRY VENEER/MASONRY BACK-UP WALLS WIN ARTICLE 9.20.13.5.
(2) FLASHING BENEATH WEEP HOLES IN MASONRY VENEER OVER WOOD FRAME WALLS SHALL BE INSTALLED SO THAT IT EXTENDS FROM A POINT NOT LESS THAN 5mm BEYOND THE OUTER FACE OF THE BUILDING ELEMENT BELOW THE FLASHING TO A POINT 150mm UP THE WOOD FRAME WALL.
(3) WHERE THE FRAME WALL IS SHEATHED WITH A SHEATHING MEMBRANE, A NON-WOOD-BASED RIGID EXTERIOR INSULATING SHEATHING OR A SEMI-RIGID INSULATING SHEATHING WITH AN INTEGRAL SHEATHING MEMBRANE, THE FLASHING SHALL BE INSTALLED BEHIND THE SHEATHING MEMBRANE OR INSULATING SHEATHING.
(4) FLASHING DESCRIBED IN SENTENCE (2) IS PERMITTED TO CONFORM TO THE REQUIREMENTS FOR CONCEALED FLASHING IN TABLE 9.20.13.1.

9.20.13.7. CONTROL OF RAIN WATER PENETRATION, FLASHING JOINTS.
(1) JOINTS IN FLASHING SHALL BE MADE WATERTIGHT.

9.20.13.8. CONTROL OF RAIN WATER PENETRATION, REQUIRED WEEP HOLES.
(1) WEEP HOLES SPACED NOT MORE THAN 800mm APART SHALL BE PROVIDED AT THE BOTTOM OF,
(a) CAVITIES IN CAVITY WALLS, AND
(b) CAVITIES OR AIR SPACES IN MASONRY VENEER WALLS.
(2) THE CAVITIES OR AIR SPACES DESCRIBED IN SENTENCE (1) SHALL INCLUDE THOSE ABOVE LINTELS OVER WINDOW AND DOOR OPENINGS REQUIRED TO BE FLASHED IN CONFORMANCE WITH ARTICLE 9.20.13.3.
(3) THE WEEP HOLES REQUIRED IN SENTENCE (1) SHALL BE IN A LOCATION SUCH THAT ANY WATER THAT COLLECTS IN THE CAVITY OR SPACE WILL BE DIRECTED TO THE EXTERIOR OF THE BUILDING.

9.21.1.2. FACTORY-BUILT CHIMNEYS.
(1) FACTORY BUILT CHIMNEYS SERVING SOLID FUEL BURNING APPLIANCES, AND THEIR INSTALLATION, SHALL CONFORM TO CAN/ULC-S629-M, "650°C Factory-Built Chimneys".

9.21.2.1. CHIMNEY FLUE LIMITATIONS.
(1) A CHIMNEY FLUE THAT SERVES A FIREPLACE OR INCINERATOR SHALL NOT SERVE ANY OTHER APPLIANCE.
(2) A CHIMNEY FLUE THAT SERVES A SOLID FUEL-BURNING APPLIANCE SHALL NOT BE CONNECTED TO A NATURAL GAS OR PROPANE FIRED APPLIANCE.
(3) A CHIMNEY FLUE THAT SERVES A SOLID FUEL-BURNING APPLIANCE SHALL NOT BE CONNECTED TO AN OIL-BURNING APPLIANCE UNLESS THE SOLID FUEL-BURNING APPLIANCE IS LISTED FOR SUCH INSTALLATION AND THE INSTALLATION OF BOTH APPLIANCES MEETS THEIR RESPECTIVE INSTALLATION REQUIREMENTS.

9.21.2.2. CONNECTION OF MORE THAN ONE APPLIANCE.
(1) EXCEPT AS REQUIRED IN ARTICLE 9.21.2.1., TWO OR MORE FUEL-BURNING APPLIANCES ARE PERMITTED TO BE CONNECTED TO THE SAME CHIMNEY FLUE PROVIDED ADEQUATE DRAFT IS MAINTAINED FOR THE CONNECTED APPLIANCES AND THE CONNECTIONS ARE MADE AS DESCRIBED IN SENTENCES (2) AND (3).
(2) WHERE TWO OR MORE SOLID FUEL-BURNING APPLIANCES ARE CONNECTED TO THE SAME CHIMNEY FLUE, THE APPLIANCES MUST BE LOCATED ON THE SAME STOREY.
(3) THE CONNECTION REFERRED TO IN SENTENCE (2) FOR A SOLID FUEL-BURNING APPLIANCE SHALL BE MADE BELOW CONNECTIONS FOR APPLIANCES BURNING OTHER FUELS.

9.21.2.3. INCLINED CHIMNEY FLUES.
(1) CHIMNEY FLUES SHALL NOT BE INCLINED MORE THAN 45° TO THE VERTICAL.

9.21.2.4. SIZE OF CHIMNEY FLUES.
(1) EXCEPT FOR CHIMNEY SERVING FIREPLACES, THE SIZE OF A CHIMNEY FLUE SHALL CONFORM TO THE REQUIREMENTS OF THE SOLID FUEL-BURNING APPLIANCE INSTALLATION STANDARD REFERENCED IN SENTENCE 6.2.1.4.(1) AND ARTICLE 9.33.1.2.
(2) WHERE A CHIMNEY FLUE SERVES ONLY ONE SOLID FUEL-BURNING APPLIANCE, THE FLUE AREA SHALL BE AT LEAST EQUAL TO THAT OF THE FLUE PIPE CONNECTED TO IT.

9.21.2.5. FIREPLACE CHIMNEYS.
(1) THE SIZE OF A CHIMNEY FLUE SERVING A MASONRY FIREPLACE SHALL BE WITHIN THE ALLOWABLE RANGE SPECIFIED IN TABLE 9.21.2.5.A OR TABLE 9.21.2.5.B.
~ TABLES FOUND ON PAGE 135 OF SECTION 9 OF THE 2012 ONTARIO BUILDING CODE.~

9.21.3.3. CLAY LINERS.
(1) CLAY LINERS SHALL CONFORM TO CAN/CSA-A324-M, "Clay Flue Liners".
(2) LINERS REFERRED TO IN SENTENCE (1) SHALL BE NOT LESS THAN 15.9mm THICK AND SHALL BE CAPABLE OF RESISTING, WITHOUT SOFTENING OR CRACKING, A TEMPERATURE OF 1,100°C.

9.21.5.1. CHIMNEYS, CLEARANCE FROM COMBUSTIBLE CONSTRUCTION.
(1) THE CLEARANCE BETWEEN MASONRY OR CONCRETE CHIMNEYS AND COMBUSTIBLE FRAMING MATERIAL SHALL BE NOT LESS THAN,
(a) 50mm FOR INTERIOR CHIMNEYS, AND
(b) 12mm FOR EXTERIOR CHIMNEYS.
(2) A CLEARANCE OF NOT LESS THAN 150mm SHALL BE PROVIDED BETWEEN A CLEANOUT OPENING AND COMBUSTIBLE MATERIAL.
(3) COMBUSTIBLE FLOORING, SUBFLOORING AND CEILING FINISHES SHALL HAVE NOT LESS THAN A 12mm CLEARANCE FROM MASONRY OR CONCRETE CHIMNEYS.

9.21.5.2. CHIMNEYS, SEALING OF SPACES.
(1) ALL SPACES BETWEEN MASONRY OR CONCRETE CHIMNEYS AND COMBUSTIBLE MATERIAL SHALL BE SEALED TOP OR BOTTOM WITH NONCOMBUSTIBLE MATERIAL.

9.21.5.3. CHIMNEYS, SUPPORT OF JOISTS OR BEAMS.
(1) JOISTS OR BEAMS MAY BE SUPPORTED ON MASONRY WALLS THAT ENCLOSE CHIMNEY FLUES PROVIDED THE COMBUSTIBLE MEMBERS ARE SEPARATED FROM THE FLUE BY A MINIMUM OF 290mm OF SOLID MASONRY.

Ontario Building Code, 2012:

9.22.1.2. FIREPLACES, MASONRY AND CONCRETE.
(1) EXCEPT AS OTHERWISE STATED IN THIS SECTION, UNIT MASONRY SHALL CONFORM TO SECTION 9.20. AND CONCRETE TO SECTION 9.3.
(2) MASONRY ABOVE OPENINGS SHALL BE SUPPORTED BY STEEL LINTELS CONFORMING TO SENTENCE 9.20.5.2.(2), REINFORCED CONCRETE OR A MASONRY ARCH.

9.22.1.4. FIREPLACES, COMBUSTION AIR.
(1) EVERY SOLID FUEL-FIRED FIREPLACE, INCLUDING A FACTORY-BUILT FIREPLACE, SHALL HAVE A SUPPLY OF COMBUSTION AIR FROM OUTDOORS IN ACCORDANCE WITH SENTENCES (2) TO (7).
(2) THE COMBUSTION AIR SHALL BE SUPPLIED BY A NONCOMBUSTIBLE AND CORROSION-RESISTANT SUPPLY DUCT.
(3) THE SUPPLY DUCT SHALL HAVE,
(a) A DIAMETER OF NOT LESS THAN 100mm OR EQUIVALENT AREA, AND
(b) AN EXTERIOR INTAKE FOR ENTRY OF AIR FROM THE OUTDOORS.
(4) THE SUPPLY DUCT SHALL CONTAIN A TIGHT-FITTING DAMPER THAT SHALL BE LOCATED CLOSE TO THE INTERIOR OUTLET AND BE OPERABLE FROM THE ROOM CONTAINING THE FIREPLACE.
(5) THE OPERATING MECHANISM SHALL CLEARLY INDICATE THE ACTUAL POSITION OF THE DAMPER.
(6) THE INTERIOR OUTLET SHALL,
(a) BE LOCATED AS CLOSE AS POSSIBLE TO THE OPENING IN THE FACE OF THE FIREPLACE, AND
(b) BE DESIGNED TO PREVENT EMBERS FROM ENTERING THE SUPPLY DUCT.
(7) WHERE A SUPPLY OF COMBUSTION AIR IS PROVIDED DIRECTLY TO THE FIRE CHAMBER OF A FIREPLACE, INCLUDING A FACTORY-BUILT FIREPLACE OR A STEEL FIREPLACE LINER, THE INSTALLATION SHALL COMPLY WITH THE "OUTDOOR AIR SUPPLY" REQUIREMENTS PROVIDED IN CAN/CSA-A405-M, "Design and Construction of Masonry Chimneys and Fireplaces".

9.22.2.1. FIREPLACE LINERS, BRICK OR STEEL LINERS.
(1) EXCEPT WHERE A FIREPLACE IS EQUIPPED WITH A STEEL LINER, EVERY FIREPLACE SHALL HAVE A FIREBRICK LINER.

9.22.2.2. FIREPLACE LINERS, FIREBRICK LINERS.
(1) FIREPLACE LINERS SHALL BE NOT LESS THAN,
(a) 50mm THICK FOR THE SIDES AND BACK, AND
(b) 25mm THICK FOR THE FLOOR.
(2) FIREBRICK LINERS SHALL BE LAID WITH HIGH TEMPERATURE CEMENT MORTAR CONFORMING TO CAN/CGSB-10.3, "Air Setting Refractory Mortar".
(3) JOINTS BETWEEN A FIREBRICK LINER AND THE ADJACENT BACK-UP MASONRY SHALL BE OFFSET.

9.22.2.3. FIREPLACE LINERS, STEEL LINERS.
(1) STEEL LINERS FOR FIREPLACES SHALL CONFORM TO CAN/ULC-S639M, "Steel Liner Assemblies for Solid-Fuel Burning Masonry Fireplaces", AND SHALL BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS IN THAT STANDARD.

9.22.3.1. THICKNESS OF FIREPLACE WALLS.
(1) EXCEPT AS PROVIDED IN SENTENCE (2), THE THICKNESS OF THE BACK AND SIDES OF A FIREPLACE, INCLUDING THE THICKNESS OF ANY FIREBRICK LINER, SHALL BE NOT LESS THAN 190mm WHERE A METAL LINER OR A FIREBRICK LINER LESS THAN 51mm THICK IS USED.
(2) WHEN A STEEL FIREPLACE LINER IS USED WITH AN AIR CIRCULATING CHAMBER SURROUNDING THE FIREBOX, THE BACK AND SIDES OF THE FIREPLACE SHALL CONSIST OF,
(a) SOLID MASONRY UNITS NOT LESS THAN 90mm THICK, OR
(b) HOLLOW MASONRY UNITS NOT LESS THAN 190mm THICK.

9.22.5.1. HEARTH EXTENSION.
(1) EXCEPT AS REQUIRED IN SENTENCE (2), FIREPLACES SHALL HAVE A NONCOMBUSTIBLE HEARTH EXTENDING NOT LESS THAN 400mm IN FRONT OF THE FIREPLACE OPENING MEASURED FROM THE FACING, AND NOT LESS THAN 200mm BEYOND EACH SIDE OF THE FIREPLACE OPENING.
(2) WHERE THE FIRE CHAMBER FLOOR IS ELEVATED MORE THAN 150mm ABOVE THE HEARTH, THE DIMENSION OF THE HEARTH MEASURED PERPENDICULAR TO THE PLANE OF THE FIREPLACE OPENING SHALL BE INCREASED BY NOT LESS THAN,
(a) 50mm FOR AN ELEVATION ABOVE 150mm AND NOT MORE THAN 300mm, AND
(b) AN ADDITIONAL 25mm FOR EVERY 50mm IN ELEVATION ABOVE 300mm.

9.22.5.2. SUPPORT OF HEARTH.
(1) EXCEPT AS PERMITTED IN SENTENCE (2), THE FIRE CHAMBER FLOOR AND HEARTH SHALL BE SUPPORTED ON A REINFORCED CONCRETE SLAB NOT LESS THAN 100mm THICK AT ITS SUPPORTS AND, IF CANTILEVERED, NOT LESS THAN 50mm THICK AT ITS UNSUPPORTED EDGE.
(2) A HEARTH FOR A FIREPLACE WITH AN OPENIGN RAISED NOT LESS THAN 200mm FRO A COMBUSTIBLE FLOOR IS PERMITTED TO BE SUPPORTED ON THAT FLOOR PROVIDED THE REQUIREMENTS OF CLAUSES 5.3.6.5. TO 5.3.6.7. OF CAN/CSA-A405-M, "Design and Construction of Masonry Chimneys and Fireplaces", ARE FOLLOWED.

9.22.6.1. REQUIRED DAMPER AND SIZE.
(1) THE THROAT OF EVERY FIREPLACE SHALL BE EQUIPPED WITH A METAL DAMPER SUFFICIENTLY LARGE TO COVER THE FULL AREA OF THAT THROAT OPENING.

9.22.7.1. SMOKE CHAMBER, SLOPE OF SMOKE CHAMBER.
(1) THE SIDES OF THE SMOKE CHAMBER CONNECTING A FIREPLACE THROAT WITH A FLUE SHALL NOT BE SLOPED AT AN ANGLE GREATER THAN 45° TO THE VERTICAL.

9.22.7.2. SMOKE CHAMBER, WALL THICKNESS.
(1) THE THICKNESS OF MASONRY WALLS SURROUNDING THE SMOKE CHAMBER SHALL BE NOT LESS THAN 190mm AT THE SIDES, FRONT AND BACK, EXCEPT THAT THE PORTIONS OF THE BACK EXPOSED TO THE OUTSIDE MAY BE 140mm THICK.

9.22.9.1. FIREPLACES, CLEARANCE OF COMBUSTIBLE MATERIAL, CLEARANCE TO THE FIREPLACE OPENING.
(1) COMBUSTIBLE MATERIAL SHALL NOT BE PLACED ON OR NEAR THE FACE OF A FIREPLACE WITHIN 150mm OF THE FIREPLACE OPENING, EXCEPT THAT WHERE THE COMBUSTIBLE MATERIAL PROJECTS MORE THAN 38mm OUT FROM THE FACE OF THE FIREPLACE ABOVE THE OPENING, SUCH MATERIAL SHALL BE AT LEAST 300mm ABOVE THE TOP OF THE OPENING.

9.22.9.2. FIREPLACES, CLEARANCE OF COMBUSTIBLE MATERIAL, METAL EXPOSED TO THE INTERIOR.
(1) METAL EXPOSED TO THE INTERIOR OF A FIREPLACE SUCH AS THE DAMPER CONTROL MECHANISM SHALL HAVE AT LEAST A 50mm CLEARANCE FROM ANY COMBUSTIBLE MATERIAL ON THE FACE OF THE FIREPLACE WHERE SUCH METAL PENETRATES THROUGH THE FACE OF THE FIREPLACE.

9.22.9.3. FIREPLACES, CLEARANCE OF TO COMBUSTIBLE FRAMING.
(1) NOT LESS THAN A 100mm CLEARANCE SHALL BE PROVIDED BETWEEN THE BACK AND SIDES OF A SOLID FUEL-BURNING FIREPLACE AND COMBUSTIBLE FRAMING, EXCEPT THAT A 50mm CLEARANCE IS PERMITTED WHERE THE FIREPLACE IS LOCATED IN AN EXTERIOR WALL.
(2) NOT LESS THAN A 50mm CLEARANCE SHALL BE PROVIDED BETWEEN THE BACK AND SIDES OF THE SMOKE CHAMBER OF A SOLID FUEL-BURNING FIREPLACE AND COMBUSTIBLE FRAMING, EXCEPT THAT A 25mm CLEARANCE IS PERMITTED WHERE THE FIREPLACE IS LOCATED IN AN EXTERIOR WALL.

9.22.9.4. FIREPLACES, CLEARANCE OF COMBUSTIBLE MATERIAL, HEAT CIRCULATING DUCT OPENINGS.
(1) THE CLEARANCE OF COMBUSTIBLE MATERIAL ABOVE HEAT CIRCULATING DUCT OPENINGS FROM THOSE OPENINGS SHALL BE NOT LESS THAN,
(a) 300mm WHERE THE COMBUSTIBLE MATERIAL PROJECTS NOT LESS THAN 38mm FROM THE FACE, AND
(b) 150mm WHERE THE PROJECTION IS LESS THAN 38mm.

9.22.10.1. FIREPLACE INSERTS AND HEARTH-MOUNTED STOVES, APPLIANCE STANDARD.
(1) FIREPLACE INSERTS AND HEARTH MOUNTED STOVES VENTED THROUGH THE THROAT OF A FIREPLACE SHALL CONFORM TO ULC-S628, "Fireplace Inserts".

9.23.6.1. ANCHORAGE OF BUILDING FRAMES.
(1) BUILDING FRAMES SHALL BE ANCHORED TO THE FOUNDATION UNLESS A STRUCTURAL ANALYSIS OF WIND AND EARTH PRESSURES SHOWS ANCHORAGE IS NOT REQUIRED.
(2) EXCEPT AS PROVIDED IN ARTICLE 9.23.6.3., ANCHORAGE SHALL BE PROVIDED BY EMBEDDING THE ENDS OF THE FIRST FLOOR JOISTS IN CONCRETE, OR FASTENING THE SILL PLATE TO THE FOUNDATION WITH NOT LESS THAN 12.7mm DIA. ANCHOR BOLTS SPACED NOT MORE THAN 2.40m O.C.
(3) ANCHOR BOLTS REFERRED TO IN SENTENCE (2) SHALL BE FASTENED TO THE SILL PLATE WITH NUTS AND WASHERS AND SHALL BE EMBEDDED NOT LESS THAN 100mm IN THE FOUNDATION AND SO DESIGNED THAT THEY MAY BE TIGHTENED WITHOUT WITHDRAWING THEM FROM THE FOUNDATION.

9.23.6.2. ANCHORAGE OF COLUMNS AND POSTS.
(1) EXCEPT AS PROVIDED IN SENTENCES (2) AND (3), EXTERIOR COLUMNS AND POSTS SHALL BE ANCHORED TO RESIST UPLIFT AND LATERAL MOVEMENT.
(2) EXCEPT AS PROVIDED IN SENTENCE (3), WHERE COLUMNS OR POSTS SUPPORT BALCONIES, DECKS, VERANDAS AND OTHER EXTERIOR PLATFORMS, AND THE COLUMNS OR POSTS EXTEND NOT MORE THAN 600mm ABOVE FINISHED GROUND LEVEL, THE SUPPORTED JOISTS OR BEAMS SHALL BE,
(a) ANCHORED TO A FOUNDATION TO RESIST UPLIFT AND LATERAL MOVEMENT, OR
(b) DIRECTLY ANCHORED TO THE GROUND TO RESIST UPLIFT.
(3) ANCHORAGE IS NOT REQUIRED FOR PLATFORMS DESCRIBED IN SENTENCE (2) THAT,
(a) ARE NOT MORE THAN 1 STOREY,
(b) ARE NOT MORE THAN 55m² IN AREA,
(c) DO NOT SUPPORT A ROOF, AND
(d) ARE NOT ATTACHED TO ANOTHER STRUCTURE, UNLESS IT CAN BE DEMONSTRATED THAT DIFFERENTIAL MOVEMENT WILL NOT ADVERSELY AFFECT THE PERFORMANCE OF THE STRUCTURE.

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9.23.7.1. SIZE OF SILL PLATES.
(1) WHERE SILL PLATES PROVIDE BEARING FOR THE FLOOR SYSTEM THEY SHALL BE NOT LESS THAN 38mm BY 89mm MATERIAL.

9.23.7.2. LEVELLING OF SILL PLATES.
(1) SILL PLATES SHALL BE,
(a) LEVELLED BY SETTING THEM ON A FULL BED OF MORTAR, OR
(b) LAID DIRECTLY ON THE FOUNDATION WHERE THE TOP OF THE FOUNDATION IS LEVEL.
(2) THE JOINT BETWEEN THE SILL PLATE FOR EXTERIOR WALLS AND THE FOUNDATION SHALL BE SEALED IN ACCORDANCE WITH SUBSECTION 9.25.3.

9.23.9.1. END BEARING FOR JOISTS.
(1) EXCEPT WHEN SUPPORTED ON RIBBON BOARDS, FLOOR JOISTS SHALL HAVE NOT LESS THAN 38mm LENGTH OF END BEARING.
(2) RIBBON BOARDS REFERRED TO IN SENTENCE (1) SHALL BE NOT LESS THAN 19mm BY 89mm LUMBER LET INTO THE STUDS.

9.23.9.2. JOISTS SUPPORTED BY BEAMS.
(1) FLOOR JOISTS MAY BE SUPPORTED ON THE TOPS OF BEAMS OR MAY BE FRAMED INTO THE SIDES OF BEAMS.
(2) WHEN FRAMED INTO THE SIDE OF A WOOD BEAM, JOISTS REFERRED TO IN SENTENCE (1) SHALL BE SUPPORTED ON,
(a) JOIST HANGERS OR OTHER ACCEPTABLE MECHANICAL CONNECTORS, OR
(b) NOT LESS THAN 38mm BY 64mm LEDGER STRIPS NAILED TO THE BEAM, EXCEPT THAT 38mm BY 38mm LEDGER STRIPS MAY BE USED PROVIDED EACH JOIST IS NAILED O THE BEAM BY AT LEAST FOUR 89mm NAILS, IN ADDITION TO THE NAILING FOR THE LEDGER STRIP REQUIRED IN TABLE 9.23.3.4.
(3) WHEN FRAMED INTO THE SIDE OF A STEEL BEAM, JOISTS REFERRED TO IN SENTENCE (1) SHALL BE SUPPORTED ON THE BOTTOM FLANGE OF THE BEAM OR ON NOT LESS THAN 38mm BY 38mm LUMBER BOLTED TO THE WEB WITH NOT LESS THAN 6.3mm DIA. BOLTS SPACED NOT MORE THAN 600mm APART.
(4) JOISTS REFERRED TO IN SENTENCE (3) SHALL BE SPLICED ABOVE THE BEAM WITH NOT LESS THAN 38mm BY 38mm LUMBER AT LEAST 600mm LONG TO SUPPORT THE FLOORING.
(5) NOT LESS THAN A 12mm SPACE SHALL BE PROVIDED BETWEEN THE SPLICE REQUIRED IN SENTENCE (4) AND THE BEAM TO ALLOW FOR SHRINKAGE OF THE WOOD JOISTS.

9.23.13.8. RIDGE SUPPORT.
(1) EXCEPT AS PROVIDED IN SENTENCE (4), ROOF RAFTERS AND JOISTS SHALL BE SUPPORTED AT THE RIDGE OF THE ROOF BY,
(a) A LOADBEARING WALL EXTENDING FROM RIDGE TO SUITABLE BEARING, OR
(b) A RIDGE BEAM SUPPORTED BY NOT LESS THAN 89mm LENGTH OF BEARING.
(2) EXCEPT AS PROVIDED IN SENTENCE (3), THE RIDGE BEAM REFERRED TO IN SENTENCE (1) SHALL CONFORM TO THE SIZES AND SPANS SHOWN IN TABLE A-12, PROVIDED,
(a) THE SUPPORTED RAFTER OR JOIST LENGTH DOES NOT EXCEED 4.90m, AND
(b) THE ROOF DOES NOT SUPPORT ANY CONCENTRATED LOADS.
(3) THE RIDGE BEAM REFERRED TO IN SENTENCE (1) NEED NOT COMPLY WITH SENTENCE (2) WHERE,
(a) THE BEAM IS OF NOT LESS THAN 38mm BY 140mm MATERIAL, AND
(b) THE BEAM IS SUPPORTED AT INTERVALS NOT EXCEEDING 1.20m BY NOT LESS THAN 38mm BY 89mm MEMBERS EXTENDING VERTICALLY FROM THE RIDGE TO SUITABLE BEARING.
(4) WHEN THE ROOF SLOPE IS 1 IN 3 OR MORE, RIDGE SUPPORT NEED NOT BE PROVIDED WHEN THE LOWER ENDS OF THE RAFTERS ARE ADEQUATELY TIED TO PREVENT OUTWARD MOVEMENT.
(5) TIES REQUIRED IN SENTENCE (4) ARE PERMITTED TO CONSIST OF TIE RODS OR CEILING JOISTS FORMING A CONTINUOUS TIE FOR OPPOSING RAFTERS AND NAILED IN ACCORDANCE WITH TABLE 9.23.13.8.
(6) CEILING JOISTS REFERRED TO IN SENTENCE (5) SHALL BE FASTENED TOGETHER WITH AT LEAST ONE MORE NAIL PER JOIST SPLICE THAN REQUIRED FOR THE RAFTER TO JOIST CONNECTION SHOWN IN TABLE 9.23.13.8.
(7) MEMBERS REFERRED TO IN SENTENCE (6) ARE PERMITTED TO BE FASTENED TOGETHER EITHER DIRECTLY OR THROUGH A GUSSET PLATE.

9.25.3.1. REQUIRED BARRIER TO AIR LEAKAGE.
(1) WALL, CEILING AND FLOOR ASSEMBLIES THAT ARE SEPARATE CONDITIONED SPACES FROM UNCONDITIONED SPACES OR FROM THE GROUND SHALL BE CONSTRUCTED SO AS TO INCLUDE AN AIR BARRIER SYSTEM THAT WILL PROVIDE A CONTINUOUS BARRIER TO AIR LEAKAGE,
(a) FROM THE INTERIOR OF THE BUILDING INTO WALL, FLOOR, ATTIC OR ROOF SPACES SUFFICIENT TO PREVENT EXCESSIVE MOISTURE CONDENSATION IN SUCH SPACES DURING THE HEATING SEASON, AND
(b) FROM THE EXTERIOR INWARD SUFFICIENT TO PREVENT MOISTURE CONDENSATION ON THE ROOM SIDE DURING THE HEATING SEASON.
(2) THE CONTINUITY OF THE AIR BARRIER SYSTEM SHALL EXTEND THROUGHOUT THE BASEMENT.

9.25.3.3. CONTINUITY OF THE AIR BARRIER SYSTEM.
(1) WHERE THE AIR BARRIER SYSTEM CONSISTS OF AN AIR-IMPERMEABLE PANEL-TYPE MATERIAL, ALL JOINTS SHALL BE SEALED TO MINIMIZE AIR LEAKAGE.
(2) WHERE THE AIR BARRIER SYSTEM CONSISTS OF FLEXIBLE SHEET MATERIAL, ALL JOINTS SHALL BE,
(a) SEALED WITH COMPATIBLE MATERIAL SUCH AS TAPE OR FLEXIBLE SEALANT,OR
(b) EXCEPT AS REQUIRED BY SENTENCE (3), LAPPED NOT LESS THAN 100mm AND CLAMPED, SUCH AS BETWEEN FRAMING MEMBERS, FURRING OR BLOCKING AND RIGID PANELS.
(3) WHERE AN AIR BARRIER SYSTEM CONSISTING OF FLEXIBLE SHEET MATERIAL IS INSTALLED AT LOCATIONS WHERE IT IS NOT SUPPORTED BY AN INTERIOR FINISH, SUCH AS BEHIND A BATH TUB, SHOWER ENCLOSURE OR FIREPLACE, THE CONTINUITY OF THE AIR BARRIER SHALL BE MAINTAINED BY SEALING ITS JOINTS.
(4) WHERE AN INTERIOR WALL MEETS AN EXTERIOR WALL, CEILING, FLOOR OR ROOF REQUIRED TO BE PROVIDED WITH AN AIR BARRIER PROTECTION, THE AIR BARRIER SYSTEM SHALL EXTEND ACROSS THE INTERSECTION AND SHALL BE SEALED IN ACCORDANCE WITH SENTENCES (1) AND (2).
(5) WHERE AN INTERIOR WALL PROJECTS THROUGH A CEILING OR EXTENDS TO BECOME AN EXTERIOR WALL, SPACES IN THE WALL SHALL BE BLOCKED TO PROVIDE CONTINUITY ACROSS THOSE SPACES WITH THE AIR BARRIER SYSTEM IN THE ABUTTING WALLS OR CEILING BY,
(a) SEALING EACH AIR BARRIER TO THE BLOCKING, OR
(b) WRAPPING EACH AIR BARRIER AROUND THE TRANSITION AND SEALING IN ACCORDANCE WITH SENTENCES (1) AND (2).
(6) WHERE AN INTERIOR FLOOR PROJECTS THROUGH AN EXTERIOR WALL OR EXTENDS TO BECOME AN EXTERIOR FLOOR, CONTINUITY OF THE AIR BARRIER SYSTEM SHALL BE MAINTAINED FROM THE ABUTTING WALLS ACROSS THE FLOOR ASSEMBLY.
(7) WHERE AN INTERIOR FLOOR PROJECTS THROUGH AN EXTERIOR WALL TO BECOME AND EXTERIOR FLOOR,
(a) THE AIR BARRIER OF THE WALL UNDER THE FLOOR SHALL BE CONTINUOUS WITH OR SEALED TO THE SUBFLOOR OR THE AIR BARRIER ON THE UNDERSIDE OF THE FLOOR,
(b) THE AIR BARRIER OF THE WALL ABOVE THE FLOOR SHALL BE CONTINUOUS WITH OR SEALED TO THE SUBFLOOR OR THE AIR BARRIER ON THE TOP OF THE FLOOR, AND
(c) THE SPACES BETWEEN FLOOR JOISTS SHALL BE BLOCKED AND SEALED.
(8) WHERE A HEADER WRAP IS USED AS AN AIR BARRIER, IT SHALL BE SEALED OR LAPPED TO THE WALL AIR BARRIER ABOVE AND BELOW IN ACCORDANCE WITH SENTENCES (1) AND (2).
(9) PENETRATIONS OF THE AIR BARRIER SYSTEM, SUCH AS THOSE CREATED BY THE INSTALLATION OF ELECTRICAL WIRING, ELECTRICAL BOXES, PIPING OR DUCTWORK, SHALL BE SEALED WITH COMPATIBLE MATERIAL SUCH AS TAPE OR CAULKING TO MAINTAIN THE INTEGRITY OF THE AIR BARRIER SYSTEM OVER THE ENTIRE SURFACE.
(10) PENETRATIONS OF THE AIR BARRIER SYSTEM, SUCH AS THOSE CREATED BY THE INSTALLATION OF DOORS, WINDOWS AND OTHER FENESTRATION SHALL BE SEALED TO MAINTAIN THE INTEGRITY OF THE AIR BARRIER SYSTEM OVER THE ENTIRE SURFACE.
(11) WHERE AN INTERIOR AIR BARRIER IS PENETRATED BY DOORS, WINDOWS AND OTHER FENESTRATION, THE AIR BARRIER SHALL BE SEALED TO THE DOOR FRAME OR WINDOW FRAME WITH,
(a) COMPATIBLE TAPE, OR
(b) SPRAY FOAM INSULATION.
(12) WHERE AN EXTERIOR AIR BARRIER IS PENETRATED BY DOORS, WINDOWS AND OTHER FENESTRATION, THE AIR BARRIER SHALL BE SEALED TO THE DOOR FRAME OR WINDOW FRAME WITH,
(a) COMPATIBLE FLEXIBLE FLASHING MATERIAL,
(b) CAULKING, OR
(c) SPRAY FOAM INSULATION.
(13) AN ACCESS HATCH INSTALLED THROUGH AN ASSEMBLY CONSTRUCTED WITH AN AIR BARRIER SYSTEM SHALL BE WEATHERSTRIPPED AROUND THE PERIMETER TO MINIMIZE AIR LEAKAGE.
(14) CLEARANCES BETWEEN CHIMNEYS OR GAS VENTS AND THE SURROUNDING CONSTRUCTION THAT WOULD PERMIT AIR LEAKAGE FROM WITHIN THE BUILDING INTO A WALL OR ATTIC OR ROOF SPACE SHALL BE SEALED BY NONCOMBUSTIBLE MATERIAL TO PREVENT SUCH LEAKAGE AND SHALL BE SEALED TO THE AIR BARRIER WITH TAPE OR ANOTHER COMPATIBLE MATERIAL, AND TO THE VENT WITH HIGH TEMPERATURE CAULKING IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
(15) WHERE THE FOUNDATION WALL AND FLOOR SLAB ARE SUED AS AN AIR BARRIER, THEY SHALL BE CAULKED AT ALL JOINTS, INTERSECTIONS AND PENETRATIONS.
(16) SUMP PIT COVERS SHALL BE SEALED TO MAINTAIN CONTINUITY OF THE AIR BARRIER SYSTEM.

9.25.4.1. REQUIRED BARRIER TO VAPOUR DIFFUSION.
(1) THERMALLY INSULATED WALL, CEILING AND FLOOR ASSEMBLIES SHALL BE CONSTRUCTED WITH A VAPOUR BARRIER SUFFICIENT TO PREVENT CONDENSATION IN THE WALL SPACES, FLOOR SPACES OR ATTIC OR ROOF SPACES.

9.25.4.3. INSTALLATION OF VAPOUR BARRIERS.
(1) PRODUCTS INSTALLED TO FUNCTION AS THE VAPOUR BARRIER SHALL PROTECT THE WARM SIDE OF WALL, CEILING AND FLOOR ASSEMBLIES.
(2) WHERE DIFFERENT PRODUCTS ARE USED FOR THE VAPOUR BARRIER AND THE INSULATIN, THE VAPOUR BARRIER SHALL BE INSTALLED SUFFICIENTLY CLOSE TO THE WARM SIDE OF THE INSULATION TO PREVENT CONDENSATION AT DESIGN CONDITIONS.
(3) WHERE THE SAME PRODUCT IS USED FOR THE VAPOUR BARRIER AND THE INSULATION, THE PRODUCT SHALL BE INSTALLED SUFFICIENTLY CLOSE TO THE WARM SIDE OF THE ASSEMBLY TO PREVENT CONDENSATION AT DESIGN CONDITIONS.

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9.26.4.3. VALLEY FLASHING.
(1) WHERE SLOPING SURFACES OF SHINGLED ROOFS INTERSECT TO FORM A VALLEY, THE VALLEY SHALL BE FLASHED.
(2) VALLEY FLASHING SHALL BE INSTALLED OVER CONTINUOUS SHEATHING.
(3) CLOSED VALLEYS SHALL NOT BE USED WITH RIGID SHINGLES ON SLOPES OF LESS THAN 1 IN 1.2.
(4) CLOSED VALLEY FLASHING SHALL CONSIST OF SHEET METAL, SELF SEALING COMPOSITE MEMBRANES CONSISTING OF POLYETHYLENE AND BITUMINOUS MATERIAL OR ONE LAYER OF EITHER TYPE S SMOOTH SURFACE ROLL ROOFING TO TYPE M MINERAL SURFACE ROLL ROOFING (mineral surface down) NOT LESS THAN 600mm WIDE, AND NAILS SHALL NOT PENETRATE THE FLASHING WITHIN 75mm OF ITS EDGE OR 124mm OF THE BOTTOM OF THE VALLEY CENTRELINE.
(5) OPEN VALLEYS SHALL BE FLASHED WITH,
(a) AT LEAST ONE LAYER OF SHEET METAL NOT LESS THAN 600mm WIDE, OR
(b) NO FEWER THAN TWO LAYERS OF ROLL ROOFING.
(6) THE BOTTOM LAYER OF ROOFING REQUIRED IN SENTENCE (4) SHALL CONSIST OF NOT LESS THAN TYPE S SMOOTH ROLL ROOFING OR TYPE M MINERAL SURFACE ROLL ROOFING (mineral surface down) NOT LESS THAN 457mm WIDE, CENTRED IN THE VALLEY AND FASTENED WITH NAILS SPACED NOT MORE THAN 450mm O.C. LOCATED 25mm AWAY FROM THE EDGES.
(7) THE TOP LAYER OF ROOFING REQUIRED IN SENTENCE (4) SHALL CONSIST OF NOT LESS THAN TYPE M MINERAL SURFACE ROLL ROOFING (mineral surface up), 914mm WIDE, CENTRED IN THE VALLEY, APPLIED OVER A 100mm WIDE STRIP OF CEMENT ALONG EACH EDGE OF THE BOTTOM LAYER, AND FASTENED WITH A SUFFICIENT NUMBER OF NAILS TO HOLD IT IN PLACE UNTIL THE SHINGLES ARE APPLIED.

9.26.4.4. INTERSECTION OF SHINGLE ROOFS AND MASONRY.
(1) THE INTERSECTION OF SHINGLE ROOFS AND MASONRY WALLS OR CHIMNEYS SHALL BE PROTECTED WITH FLASHING.
(2) COUNTER FLASHING REQUIRED IN SENTENCE (1) SHALL BE EMBEDDED NOT LESS THAN 25mm IN THE MASONRY AND SHALL EXTEND NOT LESS THAN 150mm DOWN THE MASONRY AND LAP THE LOWER FLASHING NOT LESS THAN 100mm.
(3) FLASHING ALONG THE SLOPES OF A ROOF DESCRIBED IN SENTENCE (1) SHALL BE STEPPED SO THAT THERE IS NOT LESS THAN A 75mm HEAD LAP IN BOTH THE LOWER FLASHING AND COUNTER FLASHING.
(4) WHERE THE ROOF DESCRIBED IN SENTENCE (1) SLOPES UPWARDS FROM THE MASONRY, THE FLASHING SHALL EXTEND UP THE ROOF SLOPE TO A POINT EQUAL IN HEIGHT TO THE FLASHING ON THE MASONRY, BUT NOT LESS THAN 1.5 TIMES THE SHINGLE EXPOSURE.

9.26.4.5. INTERSECTION OF SHINGLE ROOFS AND WALLS OTHER THAN MASONRY.
(1) THE INTERSECTION OF SHINGLE ROOFS AND WALLS CLAD WITH OTHER THAN MASONRY SHALL BE PROTECTED WITH FLASHING.
(2) FLASHING REQUIRED IN SENTENCE (1) SHALL BE INSTALLED SO THAT IT EXTENDS UP THE WALL NOT LESS THAN 75mm BEHIND THE SHEATHING PAPER, AND EXTENDS NOT LESS THAN 75mm HORIZONTALLY.
(3) ALONG THE SLOPE OF THE ROOF, THE FLASHING REQUIRED IN SENTENCE (1) SHALL BE STEPPED WITH NOT LESS THAN A 75mm HEAD LAP.

9.26.4.6. INTERSECTION OF BUILT-UP ROOFS AND MASONRY.
(1) THE INTERSECTION OF BUILT-UP ROOFS WITH MASONRY WALLS OR CHIMNEYS SHALL HAVE A CANT STRIP AT THE INTERSECTION AND A ROOFING MEMBRANE SHALL BE MOPPED OVER THE CANT STRIP AND NOT LESS THAN 150mm UP THE WALL.
(2) COUNTER FLASHING INSTALLED OVER THE INTERSECTION REFERRED TO IN SENTENCE (1) SHALL BE EMBEDDED NOT LESS THAN 25mm IN THE MASONRY, AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND DOWN NOT LESS THAN 150mm, LAPPING THE MEMBRANE ON THE MASONRY NOT LESS THAN 100mm.

9.26.4.7. INTERSECTION OF BUILT-UP ROOFS AND WALLS OTHER THAN MASONRY.
(1) THE INTERSECTION OF BUILT-UP ROOFS WITH WALLS OTHER THAN MASONRY SHALL HAVE A CANT STRIP AT THE INTERSECTION.
(2) THE ROOFING MEMBRANE SHALL BE MOPPED OVER THE CANT STRIP REFERRED TO IN SENTENCE (1).
(3) FLASHING PLIES SHALL EXTEND NOT LESS THAN 150mm UP THE WALL REFERRED TO IN SENTENCE (1) BEHIND THE SHEATHING PAPER.

9.26.4.8. CHIMNEY SADDLES.
(1) EXCEPT AS OTHERWISE PERMITTED IN SENTENCE (5), CHIMNEY SADDLES SHALL BE INSTALLED WHERE THE UPPER SIDE OF A CHIMNEY ON A SLOPING ROOF IS MORE THAN 750mm WIDE.
(2) CHIMNEY SADDLES SHALL BE COVERED WITH SHEET METAL OR ROOFING MATERIAL OF WEIGHT AND QUALITY EQUIVALENT TO THE ROOFING.
(3) SADDLES SHALL BE FLASHED WHERE THEY INTERSECT THE ROOF.
(4) THE INTERSECTION OF THE SADDLE AND THE CHIMNEY SHALL BE FLASHED AND COUNTER-FLASHED AS REQUIRED IN ARTICLE 9.26.4.4.
(5) A CHIMNEY SADDLE NEED NOT BE INSTALLED IF THE INTERSECTION BETWEEN THE CHIMNEY AND ROOF IS PROTECTED BY SHEET METAL FLASHING THAT EXTENDS UP THE CHIMNEY TO A HEIGHT EQUAL TO AT LEAST ONE-SIXTH THE WIDTH OF THE CHIMNEY, BUT NOT LESS THAN 150mm, AND UP THE ROOF SLOPE TO A POINT EQUAL IN HEIGHT TO THE FLASHING ON THE CHIMNEY, BUT NOT LESS THAN 1.5 TIMES THE SHINGLE EXPOSURE.
(6) FLASHING DESCRIBED IN SENTENCE (5) AT THE CHIMNEY SHALL BE COUNTER-FLASHED AS REQUIRED BY ARTICLE 9.26.4.4.

9.26.5.1. REQUIRED EAVE PROTECTION.
(1) EXCEPT AS PROVIDED IN SENTENCE (2), EAVE PROTECTION SHALL BE PROVIDED ON SHINGLE, SHAKE OR TILE ROOFS, EXTENDING FROM THE EDGE OF THE ROOF A MINIMUM OF 900mm UP THE ROOF SLOPE TO A LINE NOT LESS THAN 300mm INSIDE THE INNER FACE OF THE EXTERIOR WALL.
(2) EAVE PROTECTION IS NOT REQUIRED,
(a) OVER UNHEATED GARAGES, CARPORTS, AND PORCHES,
(b) WHERE THE ROOF OVERHANG EXCEEDS 900mm MEASURED ALONG THE ROOF SLOPE FROM THE EDGE OF THE ROOF TO THE INNER FACE OF THE EXTERIOR WALL,
(c) ON ROOFS OF ASPHALT SHINGLES INSTALLED IN ACCORDANCE WITH SUBSECTION 9.26.8.
(d) ON ROOFS WITH SLOPES OF 1 IN 1.5 OR GREATER, OR
(e) IN REGIONS WITH 3,500 OR FEWER DEGREE-DAYS.

9.26.5.2. EAVE PROTECTION MATERIALS.
(1) EAVE PROTECTION SHALL BE LAID BENEATH THE STARTER STRIP AND SHALL CONSIST OF,
(a) No.15 ASPHALT-SATURATED FELT LAID IN TWO PLIES LAPPED 480mm AND CEMENTED TOGETHER WITH LAP CEMENT,
(b) TYPE M OR S ROLL ROOFING LAID WITH NOT LESS THAN 100mm HEAD AND END LAPS CEMENTED TOGETHER WITH LAP CEMENT,
(c) GLASS FIBRE OR POLYESTER FIBRE COATED BASE SHEETS, OR
(d) SELF-SEALING COMPOSITE MEMBRANES CONSISTING OF MODIFIED BITUMINOUS COATED MATERIAL.

9.31.4.4. FLOOR DRAINS.
(1) A FLOOR DRAIN SHALL BE INSTALLED IN A BASEMENT FORMING PART OF A DWELLING UNIT.

9.32.3.8. MECHANICAL VENTILATION, PROTECTION AGAINST DEPRESSURIZATION.
(1) WHEN DETERMINING THE NEED TO PROVIDE PROTECTION AGAINST DEPRESSURIZATION, CONSIDERATION MUST BE GIVEN TO,
(a) WHETHER THE PRESENCE OF SOIL GAS IS DEEMED TO BE A PROBLEM, AND
(b) THE PRESENCE OF SOLID FUEL-FIRED COMBUSTION APPLIANCES.
(2) WHERE A SOLID FUEL-FIRED COMBUSTION APPLIANCE IS INSTALLED, THE VENTILATION SYSTEM SHALL INCLUDE A HEAT RECOVERY VENTILATOR THAT IS DESIGNED TO OPERATE SO THAT THE FLOW OF EXHAUST AIR DOES NOT EXCEED THE FLOW OF INTAKE AIR IN ANY OPERATING MODE, AND THAT COMPLIES WITH THE REQUIREMENTS OF ARTICLE 9.32.3.11.
(3) THE PROVISION OF MAKE-UP AIR IS NOT REQUIRED FOR MECHANICAL EXHAUSTING DEVICES OPERATING A SUBFLOOR DEPRESSURIZATION SYSTEM INSTALLED FOR THE PURPOSE OF REDUCING THE RISK OF RADON INGRESS.

Ontario Building Code, 2012:

9.33.4.2. LOCATION OF CARBON MONOXIDE ALARMS.
(1) WHERE A FUEL-BURNING APPLIANCE IS INSTALLED IN A SUITE OF RESIDENTIAL OCCUPANCY, A CARBON MONOXIDE ALARM SHALL BE INSTALLED ADJACENT TO EACH SLEEPING AREA IN THE SUITE.
(2) WHERE A FUEL-BURNING APPLIANCE IS INSTALLED IN A SERVICE ROOM THAT IS NOT IN A SUITE OF RESIDENTIAL OCCUPANCY, A CARBON MONOXIDE ALARM SHALL BE INSTALLED,
(a) ADJACENT TO EACH SLEEPING AREA IN EVERY SUITE OF RESIDENTIAL OCCUPANCY THAT IS ADJACENT TO THE SERVICE ROOM, AND
(b) IN THE SERVICE ROOM.
(3) WHERE A STORAGE GARAGE IS LOCATED IN A BUILDING CONTAINING A RESIDENTIAL OCCUPANCY, A CARBON MONOXIDE ALARM SHALL BE INSTALLED ADJACENT TO EACH SLEEPING AREA IN EVERY SUITE OF RESIDENTIAL OCCUPANCEY THAT IS ADJACENT TO THE STORAGE GARAGE.
(4) WHERE A STORAGE GARAGE SERVES ONLY THE DWELLING UNIT TO WHICH IT IS ATTACHED OR BUILT IN, A CARBON MONOXIDE ALARM SHALL BE INSTALLED ADJACENT TO EACH SLEEPING AREA IN THE DWELLING UNIT.
(5) A CARBON MONOXIDE ALARM SHALL BE MECHANICALLY FIXED,
(a) AT THE MANUFACTURER'S RECOMMENDED HEIGHT, OR
(b) IN THE ABSENCE OF SPECIFIC INSTRUCTIONS, ON OR NEAR THE CEILING.

9.33.4.3. CARBON MONOXIDE ALARMS, INSTALLATION AND CONFORMANCE STANDARDS.
(1) THE CARBON MONOXIDE ALARM REQUIRED BY ARTICLE 9.33.4.2. SHALL,
(a) EXCEPT AS PERMITTED IN SENTENCE (2), BE PERMANENTLY CONNECTED TO AN ELECTRICAL CIRCUIT AND SHALL HAVE NO DISCONNECT SWITCH BETWEEN THE OVERCURRENT DEVICE AND THE CARBON MONOXIDE ALARM.
(b) BE WIRED SO THAT ITS ACTIVATION WILL ACTIVATE ALL CARBON MONOXIDE ALARMS WITHIN THE SUITE, WHERE LOCATED WITHIN A SUITE OR RESIDENTIAL OCCUPANCY.
(c) BE EQUIPPED WITH AN ALARM THAT IS AUDIBLE WITHIN BEDROOMS WHEN THE INTERVENING DOORS ARE CLOSED, WHERE LOCATED ADJACENT TO A SLEEPING AREA, AND
(d) CONFORM TO,
(i) CAN/CSA-6.19, "Residential Carbon Monoxide Alarming Devices", OR
(ii) UL 2034, "Single and Multiple Station Carbon Monoxide Alarms".
(2) WHERE THE BUILDING IS NOT SUPPLIED WITH ELECTRICAL POWER, CARBON MONOXIDE ALARMS ARE PERMITTED TO BATTERY OPERATED.

2.1.1.6. (SB-12) INSULATION OF FOUNDATION WALLS.
(1) FOUNDATION WALLS ENCLOSING HEATED SPACE SHALL BE INSULATED FROM THE UNDERSIDE OF THE SUBFLOOR TO NOT MORE THAN 200mm ABOVE THE FINISHED FLOOR LEVEL OF THE BASEMENT.
(2) THE INSULATION REQUIRED BY SENTENCE (1) MAY BE PROVIDED BY A SYSTEM INSTALLED,
(a) ON THE INTERIOR OF THE FOUNDATION WALL,
(b) ON THE EXTERIOR FACE OF THE FOUNDATION WALL, OR
(c) PARTIALLY ON THE INTERIOR AND PARTIALLY ON THE EXTERIOR, PROVIDED THE THERMAL PERFORMANCE OF THE SYSTEM IS EQUIVALENT TO THAT PERMITTED IN CLAUSES (A) OR (B).
(3) IF A FOUNDATION WALL IS CONSTRUCTED OF HOLLOW MASONRY UNITS, ONE OR MORE OF THE FOLLOWING SHALL BE USED TO CONTROL CONVECTION CURRENTS IN THE CORE SPACES,
(a) FILLING THE CORE SPACES,
(b) AT LEAST ONE ROW OF SEMI-SOLID BLOCKS AT OR BELOW GRADE, OR
(c) OTHER SIMILAR METHODS.
(4) MASONRY WALLS OF HOLLOW UNITS THAT PENETRATE THE CEILING SHALL BE SEALED AT OR NEAR THE CEILING ADJACENT TO THE ROOF SPACE TO PREVENT AIR WITHIN THE VOIDS FROM ENTERING THE ATTIC OR ROOF SPACE BY,
(a) CAPPING WITH MASONRY UNITS WITHOUT VOIDS, OR
(b) INSTALLATION OF FLASHING MATERIAL EXTENDING ACROSS THE FULL WIDTH OF THE MASONRY.
(5) EXCEPT AS PROVIDED IN SENTENCES (6) AND (7), WHERE A PORTION OF A BASEMENT SLAB OR A PORTION OF A BASEMENT SLAB EDGE IS THE ONLY PART OF THE SLAB THAT IS AT THE EXTERIOR GROUND LEVEL SUCH AS A WALK-OUT BASEMENT, OR WITHIN 600mm OF THE EXTERIOR GROUND LEVEL, THOSE PORTIONS SHALL HAVE PERIMETER INSULATION EXTEND NOT LESS THAN 600mm BELOW THE SLAB LEVEL.
(6) WHERE THE ENTIRE CONCRETE SLAB IS WITHIN 600mm OF THE EXTERIOR GROUND LEVEL, THE ENTIRE SURFACE OF THE SLAB SHALL BE INSULATED.
(7) WHERE A SLAB CONTAINS HEATING DUCTS, PIPES, TUBES OR CABLES, THE ENTIRE HEATED SURFACE OF THE SLAB THAT IS IN CONTACT WITH THE GROUND SHALL BE INSULATED.

Energy Efficiency for Housing, Additions

ACCEPTABLE SOLUTIONS FOR ENERGY EFFICIENCY COMPLIANCE AFTER DECEMBER 31, 2016.
(EFFECTIVE DATE JULY 7, 2016)

3.1.1.11. ADDITIONS TO EXISTING BUILDINGS.

(1) EXCEPT AS PROVIDED IN SENTENCES (2) AND (3), AN ADDITION TO AN EXISTING BUILDING SHALL COMPLY WITH,
(a) ONE OF THE APPLICABLE COMPLIANCE PACKAGES IN ARTICLE 3.1.1.2. OR 3.1.1.3. IN ACCORDANCE WITH THIS SUBSECTION, OR
(b) SENTENCES 3.1.1.1.(7) TO (9), EXCEPT THAT THE TABLES REFERENCED IN SENTENCES 3.1.1.1.(7) AND (8) ARE PERMITTED TO BE SUBSTITUTED WITH TABLE 3.1.1.11.
(2) FOR THE PURPOSES OF SENTENCES 3.1.1.1. (7) TO (9) AND SUBSECTION 3.1.2., THE ADDITION MAY BE CONSIDERED INDEPENDENTLY OR IN COMBINATION WITH THE EXISTING BUILDING, REGARDLESS OF THE THERMAL CHARACTERISTICS OF THE EXISTING BUILDING ENVELOPE.
(3) A ONE-STOREY SUNROOM ADDITION TO AN EXISTING BUILDING SHALL BE DEEMED TO BE IN COMPLIANCE WITH ARTICLES 3.1.1.2. AND 3.1.1.3. AND SUBSECTION 3.1.2., PROVIDED THAT THE OVERALL COEFFICIENT OF HEAT TRANSFER OF
(a) DOORS, WINDOWS AND WALLS HAVING A MAXIMUM U-VALUE OF
(i) 1.4 IF THE BUILDING DOES NOT USE ELECTRIC SPACE HEATING, AND
(ii) 1.2 IF THE BUILDING USES ELECTRIC SPACE HEATING, AND
(b) ROOFS AND SKYLIGHTS HAVE A MAXIMUM U-VALUE OF 2.6.

SCHEDULE 1: DESIGNER INFORMATION

I BRIAN MATTHEWS DECLARE THAT I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER SUBSECTION 3.2.2.2. OF THE BUILDING CODE.
INDIVIDUAL BCIN: 41322
FIRM BCIN: 44237
SIGNATURE;

Drawings must NOT be scaled. Contractor must check and verify all dimensions, specifications and drawings on site and report any discrepancies to the designer prior to proceeding with any of the work.

PRELIMINARY, NOT FOR CONSTRUCTION

5	09.09.13	ISSUED FOR HERITAGE REVIEW
4	09.05.17	ISSUED FOR HERITAGE REVIEW
3	03.23.17	ISSUED FOR HERITAGE REVIEW
2	09.30.16	ISSUED FOR HERITAGE REVIEW
1	08.25.16	ISSUED FOR COORDINATION
NO.	DATE	ISSUED/REVISED
REF.	DATE:	DESCRIPTION:

REVISIONS / ISSUANCE:

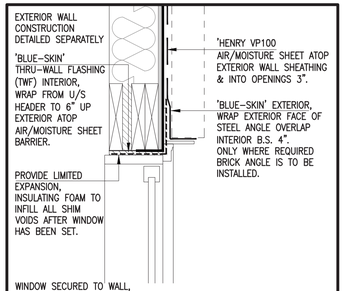
btM
btM Drafting & Design
32 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y2
of. 905.393.8005
ce. 905.912.2337
em. btmdrafting@gmail.com

CLIENT:
915 NORTH SERVICE RD.

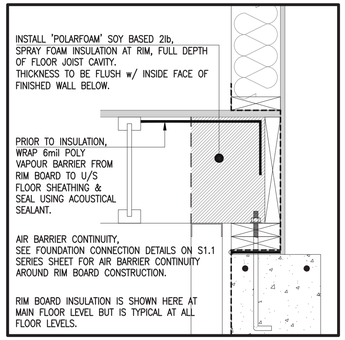
ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
2012 BUILDING CODE, CONSTRUCTION NOTES

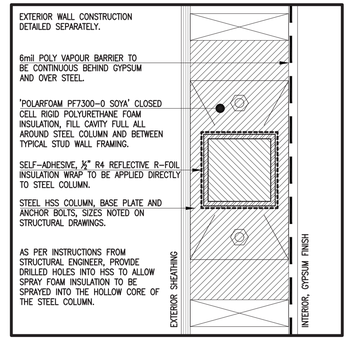
DRAWN: B.T.M.
DATE: 7.26.2017 SCALE: N/A
JOB NUMBER: 174-15
SHEET NUMBER: **A3.1.2**



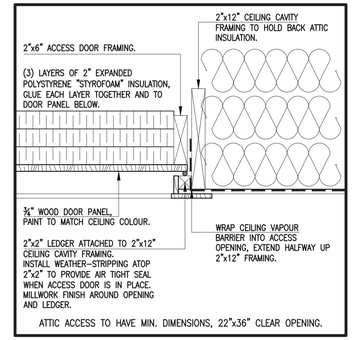
3 / A3.2 — Window Head Waterproofing, Air/Moisture Barrier Wrap. SCALE, 1½" = 1'-0"



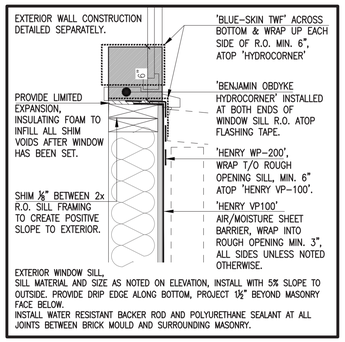
4 / A3.2 — Rim Joist Insulation, Air/Moisture Barrier Continuity SCALE, 1½" = 1'-0"



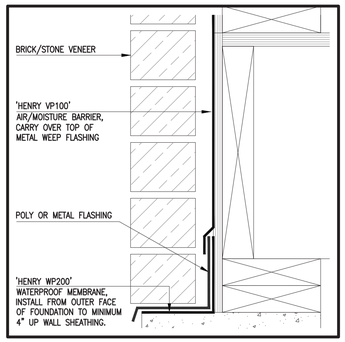
5 / A3.2 — Thermal Break, Insulation around Steel Column. SCALE, 3" = 1'-0"



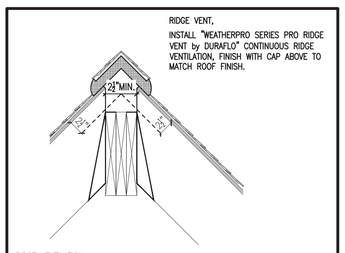
6 / A3.2 — Attic Access Hatch, Construction and Insulation. SCALE, 1½" = 1'-0"



9 / A3.2 — Window Sill/Jamb Waterproofing, Air/Moisture Barrier Wrap. SCALE, 1½" = 1'-0"



10 / A3.2 — Flashing Detail, Brick/Stone Weeping Flashing. SCALE, 3" = 1'-0"



RIDGE VENTILATION,
SLOPED EITHER SIDE BETWEEN 3:12 & 12:12

STRUCTURALLY, HANG ROOF JOISTS FROM RIDGE BEAM, RIDGE TO BE SET TO ALLOW MINIMUM 2½" AIR SPACE BETWEEN UNDERSIDE OF ROOF SHEATHING.

ROOF SHEATHING ON EITHER SIDE OF RIDGE TO BE CUT BACK TO ALLOW MINIMUM 2½" GAP.

13 / A3.2 — Roof Ventilation, Continuous Ridge Vent. SCALE, 1" = 1'-0"

Structural Notes and Instructions:

REFERENCE STANDARD/CODES AND ACTS

1. CONFORM WITH THE ONTARIO BUILDING CODE LATEST REVISION, ANY APPLICABLE ACTS OF ANY AUTHORITY HAVING JURISDICTION.
2. WHERE THERE ARE DIFFERENCES BETWEEN THE DOCUMENTS AND THE STANDARDS, CODES AND ACTS, THE MOST STRINGENT SHALL GOVERN.

SUBMITTALS

1. SHOP DRAWINGS
   A. SUBMIT FOR REVIEW BY THE CONSULTANT, DETAILED SHOP DRAWINGS FOR REINFORCING STEEL, ROOF TRUSSES, ENGINEERED JOISTS, STRUCTURAL STEEL.
   B. THE STRUCTURAL DRAWINGS SHALL NOT BE REPRODUCED IN WHOLE OR IN PART, FOR USE AS SHOP DRAWINGS.
   C. EACH SHOP DRAWING FOR STRUCTURAL STEEL, ENGINEERED JOISTS, PRE-ENGINEERED ROOF TRUSSES SUBMITTED FOR REVIEW IS TO BEAR THE STAMP OF A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.

NOTIFICATION

1. CONTRACTOR IS TO NOTIFY ENGINEER OF COMMENCEMENT OF CONSTRUCTION.
2. CONTRACTOR IS TO NOTIFY ENGINEER 48 HOURS PRIOR TO FIRST FOUNDATION WALL POUR FOR REBAR INSPECTION.
3. CONTRACTOR IS TO CONTACT ENGINEER FOR FINAL FRAMING INSPECTION.

MATERIALS

1. PROVIDE ONLY NEW STRUCTURAL MATERIALS IN ACCORDANCE WITH THE REFERENCE STANDARDS AND THE FOLLOWING, UNLESS NOTED OTHERWISE.
   A. CONCRETE: F'C = 32 MPA AT 28 DAYS, SLUMP 75mm (3"), NOT EXPOSED TO WEATHER.
      EXPOSED TO WEATHER: F'C = 32 MPA, AIR CONTENT 3% TO 6%.
   B. REINFORCING STEEL: GRADE 400 MPa.
   C. STRUCTURAL STEEL:
      (i) STRUCTURAL WIDE FLANGE (W) TO CONFORM TO CAN/CSA-G40.20/G40.21 GRADE 350W, OR ASTM A992/A992M GRADE 50 (345 MPA).
      (ii) ANGLES, PLATES AND CHANNELS (L, C) TO CONFORM TO CAN/CSA-G40.20/G40.21 GRADE 300W.
      (iii)HOLLOW STRUCTURAL SECTIONS (HSS) TO CONFORM TO CAN/CSA-G40.20/G40.21 GRADE 350W CLASS C.
   D. STRUCTURAL BOLTS, NUTS AND WASHERS: CONFORM TO ASTM A325M.
   E. ANCHOR BOLTS: GRADE A307 OR 300W THREADED ROD CONFORMING TO CSA G40.21-M.
   F. NON-SHRINK GROUT = COMPRESSIVE STRENGTH OF 35 MPA AT 28 DAYS.
   G. BLOCK: COMPRESSIVE STRENGTH = 15.0 MPA (MIN.) ON NET AREA.
   H. MORTAR: TYPE S FOR LOAD BEARING WALLS.
   I. MASONRY GROUT: CONFORM TO CSA A179, 15 MPA MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, 250MM (10") SLUMP, MAXIMUM AGGREGATE SIZE 10mm (3/8").
   J. SAWN LUMBER: SPRUCE – PINE – FIR (S-P-F), NO. 2 GRADE OR BETTER, CONFORM TO CSA-0141. ALL TIMBER EXPOSED TO WEATHER IS TO BE PRESSURE TREATED.
   K. STRUCTURAL GLUED-LAMINATED TIMBER: CONFORM TO CSA 0122.
   L. PLYWOOD: CONFORM TO CSA 0121 (DOUGLAS FIR PLYWOOD) OR TO CSA 1051 (CANADIAN SOFTWOOD PLYWOOD).

EXECUTION

1. FOUNDATIONS
   A. CONSTRUCT FOOTINGS ON SOIL WITH BEARING CAPACITY AS NOTED ON NOTES ON FOUNDATION PLAN. SOIL BEARING CAPACITY SPECIFIED MUST BE VERIFIED BY THE SOIL ENGINEER PRIOR TO PLACING OF FOOTINGS AND ANY NON-CONFORMANCE WITH THE SPECIFIED MINIMUM CAPACITIES MUST BE IMMEDIATELY REPORTED TO THE STRUCTURAL ENGINEER.
   B. CONSTRUCT ALL FOOTINGS EXPOSED TO FROST ACTION A MINIMUM OF 1,375mm (4'-6") BELOW FINISHED GRADE.
   C. DO NOT EXCEED A RISE OF 7 IN A RUN OF 10 IN THE LINE OF SLOPE BETWEEN ADJACENT FOOTING EXCAVATIONS OR ALONG STEPPED FOOTINGS.
   D. FOR STEPPED FOOTINGS, USE STEPS NOT EXCEEDING 600mm (2'-0") IN HEIGHT AND 1,200mm (4'-0") (MIN.) IN LENGTH.
2. CONCRETE
   A. THE CONTRACTOR SHALL ENSURE THAT REINFORCING STEEL IS ADEQUATELY BRACED AGAINST MOVEMENT DURING CONCRETE PLACING.
   B. COMPLETELY FILL VOIDS BENEATH STEEL BASES ON CONCRETE WITH AN APPROVED NON-SHRINK 36MPA (5KSI) GROUT.
3. STRUCTURAL STEEL
   A. PAINT ALL STRUCTURAL STEEL TO REQUIREMENTS OF CISC/CPMA 2-75. TOUCH UP ALL FIELD WELDS.
   B. ALL STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE GALVANIZED IN ACCORDANCE WITH CSA G164.
   C. ALL WELDS SHALL CONFORM TO CSA STANDARDS W59-1989.
   D. ANY ORGANIZATION PERFORMING WELDING ON THIS PROJECT SHALL BE CERTIFIED BY THE CANADIAN WELDING BUREAU UNDER DIVISION 1 OR DIVISION 2.1. OF W47.1.
   E. DO NOT SPLICE STRUCTURAL STEEL SECTIONS WITHOUT PRIOR APPROVAL OF THE CONSULTANT.
   F. PROVIDE SLOTTED HOLES AND FRICTION TYPE BOLTED CONNECTIONS TO CONNECT NEW STEEL TO EXISTING WORK.
4. MASONRY
   A. PROVIDE A MINIMUM LENGTH OF 200mm (8") OF 100% SOLID MASONRY UNITS FOR BEARING OF STEEL, CONCRETE OR REINFORCED MASONRY LINTELS.
   B. DO NOT FILL MASONRY CELLS WITH MORTAR.
5. TIMBER FRAMING
   A. ALL FRAMING, BRIDGING, NAILING, PROTECTION, HARDWARE AND OTHER FRAMING DETAILS ARE TO BE IN ACCORDANCE WITH PART 9 OF THE ONTARIO BUILDING CODE, LATEST EDITION.
   B. EXTERIOR WALL SHEATHING TO BE 12mm (½") EXTERIOR GRADE PLYWOOD OR STRAND BOARD NAILED AT 150mm (6") c/c ALONG EDGES AND 300mm (12") c/c ON INTERMEDIATE FRAMING MEMBERS. SHEATHING PROVIDES LATERAL SUPPORT FOR FRAMING AND MUST BE NAILED TO EACH STUD.
   C. FLOOR SHEATHING TO BE 19mm (¾") T&G FIR PLYWOOD SUB FLOOR AS INDICATED ON PLAN, GLUED AND NAILED SECURELY TO ALL JOISTS.
   D. ROOF SHEATHING TO BE 12mm (½") EXTERIOR GRADE PLYWOOD NAILED AT 150mm (6") c/c ALONG EDGES AND 300mm (12") c/c ON INTERMEDIATE FRAMING MEMBERS, COMPLETE WITH H-CLIPS. PROVIDE 3mm (⅛") GAP BETWEEN SHEATHING PIECES.
   E. CONNECT BOTTOM CHORD OF WOOD TRUSSES TO TOP OF NON-LOAD BEARING WALLS WITH SLIDING CONNECTORS ALLOWING FOR 1" OF VERTICAL MOVEMENT.
   F. UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, THE CONTRACTOR SHALL PROVIDE STANDARD CONNECTORS (SIMPSON STRONG-TIE) OR APPROVED ALTERNATIVE FOR ALL JOIST HANGERS, BEAM HANGERS, BEAM SEATS, POST ANCHORS, ETC.
   G. MEMBERS SHALL BE ALIGNED LEVEL AND PLUMB, WITHIN A TOLERANCE OF 1 IN 500.
   H. MAKE ADEQUATE PROVISIONS FOR ERECTION STRESSES AND FOR SUFFICIENT TEMPORARY BRACING TO KEEP THE STRUCTURAL FRAME PLUMB AND IN TRUE ALIGNMENT UNTIL THE COMPLETION OF THE ENTIRE FRAMING INCLUDING INSTALLATION OF THE FLOOR AND WALL SHEATHING.
   I. FRAME AROUND ALL OPENINGS WITH DOUBLE HEADERS AND TRIMMERS NAILED TOGETHER WITH TWO ROWS OF 89mm (3½") SPIRAL NAILS AT 200mm (8") c/c STAGGERED UNLESS NOTED OTHERWISE. DO NOT SPLICE MEMBERS BETWEEN SUPPORTS.
   J. FOR ALL BUILT UP BEAMS SUPPORTED ON TIMBER WALLS, SUPPORT BEAMS ON POSTS WITH AN EQUAL NUMBER OF LAMINATIONS UNLESS NOTED OTHERWISE OR CONNECT TO OTHER BEAMS WITH METAL BEAM HANGERS.
   K. PROVIDE A MINIMUM OF 1-2"x6" (38x140) WOOD ON TOP OF ALL STEEL BEAMS BOLTED WITH ½" DIAMETER THROUGH BOLTS AT 24" (600mm) STAGGERED ON EACH SIDE OF THE FLANGE.
   L. WHEN SUPPORTING WOOD BEAMS OR JOISTS ON STEEL FLUSH BEAMS WITH FACE MOUNT HANGERS BLOCK THE WEB WITH CONTINUOUS SOLID SAWN LUMBER TO CLEAR FLANGES. BOLT BLOCKING PIECES WITH ½" DIAMETER BOLTS AT 24" (600mm) TO THE STEEL BEAM WEB STAGGERED TOP AND BOTTOM.
   M. ALL BUILT UP BEAM TO BE NAILED TOGETHER WITH TWO ROWS OF 89mm (3½") SPIRAL NAILS AT 200mm (8") c/c, STAGGER ROWS TOP AND BOTTOM. DO NOT SPLICE MEMBERS BETWEEN SUPPORTS.
   N. ALL BEAMS SUPPORTED ON TIMBER WALLS ARE TO BEAR ON BUILT UP POSTS OR BE CONNECTED TO OTHER BEAMS WITH METAL BEAM HANGERS.
   O. ALL BUILT UP POSTS ARE TO BE CONSTRUCTED CONTINUOUSLY TO THE FOUNDATION WITH TRANSFER BLOCKING AT EACH FLOOR FRAMING. POSTS ARE TO CONTINUE TO FOUNDATIONS EVEN IF SUPPORTED ON LOAD BEARING STUD WALLS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   P. BUILT UP POSTS OF 2, 3 OR 4 PLY SHALL BE NAILED TOGETHER AT 150mm (6") c/c STAGGERED UNLESS NOTED OTHERWISE.
   Q. PROVIDE DOUBLE FLOOR JOISTS AT ALL NON-LOAD BEARING AND LOAD BEARING PARTITION WALLS SPANNING PARALLEL TO THE FLOOR FRAMING UNLESS OTHERWISE NOTED.
   R. PROVIDE SOLID BLOCKING, MATCHING JOIST MEMBER SIZE, UNDER ALL LOAD BEARING WALLS OFFSET FROM THE SUPPORTS BELOW FOR FLOOR JOISTS SPANNING PERPENDICULAR TO THE WALL.
   S. PROVIDE SOLID BLOCKING BETWEEN JOISTS OVER SUPPORT AT ALL CANTILEVERED CONDITIONS.
   T. PROVIDE THE FOLLOWING HEADERS UNLESS NOTED OTHERWISE ON THE DRAWINGS:
   I. WINDOW AND DOOR OPENING < 2100mm (7'-0"): 2-38x235 (2"x10") No.2
   II. WINDOW AND DOOR OPENING < 3000mm (10'-0"): 3-38x235 (2"x10") No.2
   U. PROVIDE 38x38 (2"x2") DIAGONAL CROSS BRIDGING AT MAXIMUM 2,400mm (8'-0") c/c UNLESS NOTED OTHERWISE, FOR ALL SAWN JOIST LOCATIONS.
   V. PROVIDE MINIMUM BEARING OF 50mm (2") FOR ALL JOISTS.
   W. PROVIDE MINIMUM BEARING OF 100mm (4") FOR ALL BEAMS.
   X. NO SAWN LUMBER SHALL BE NOTCHED OR DRILLED IN THE FIELD WITHOUT THE PERMISSION OF THE CONSULTANT.
   Y. WOOD IS NOT PERMITTED TO BEAR DIRECTLY ON MASONRY OR CONCRETE WITHOUT PROTECTION. PROVIDE EITHER PRESSURE TREATED WOOD OR POLYETHYLENE SHEET BETWEEN THE WOOD AND MASONRY CONCRETE.
   Z. ALL NAILERS TO BE ANCHORED WITH 12mm (½") DIAMETER ANCHOR BOLTS x 300mm (12") LONG AT 1,200mm (4'-0") ON CENTER. STAGGER ANCHOR BOLTS.

19 / A3.2 — Structural Notes and Instructions. SCALE, N/A

SCHEDULE 1: DESIGNER INFORMATION

I BRIAN MATTHEWS DECLARE THAT I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER SUBSECTION 3.2.2.2. OF THE BUILDING CODE.
INDIVIDUAL BCIN: 41322
FIRM BCIN: 44237
SIGNATURE:

Drawings must NOT be scaled. Contractor must check and verify all dimensions, specifications and drawings on site and report any discrepancies to the designer prior to proceeding with any of the work.

PRELIMINARY, NOT FOR CONSTRUCTION

LICENSED PROFESSIONAL ENGINEER — B.B.B.H. MATTHEWS — 100135202 — 13-09-2017 — PROVINCE OF ONTARIO

REVIEWED & SEALED FOR STRUCTURE ONLY

NO.	DATE	ISSUED/REVISED
5	09.09.13	ISSUED FOR HERITAGE REVIEW
4	09.05.17	ISSUED FOR HERITAGE REVIEW
3	03.23.17	ISSUED FOR HERITAGE REVIEW
2	09.30.16	ISSUED FOR HERITAGE REVIEW
1	08.25.16	ISSUED FOR COORDINATION
REF.	DATE:	DESCRIPTION:

REVISIONS / ISSUANCE:

btM Drafting & Design
37 GUMBLER PLACE, HAMILTON, ONTARIO, L8M 2Y2
of. 905.393.8005
ce. 905.912.2337
em. btmdrafting@gmail.com

CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
DETAILS AND INSTRUCTIONS

DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: AS NOTED
JOB NUMBER: 174-15
SHEET NUMBER: **A3.2**

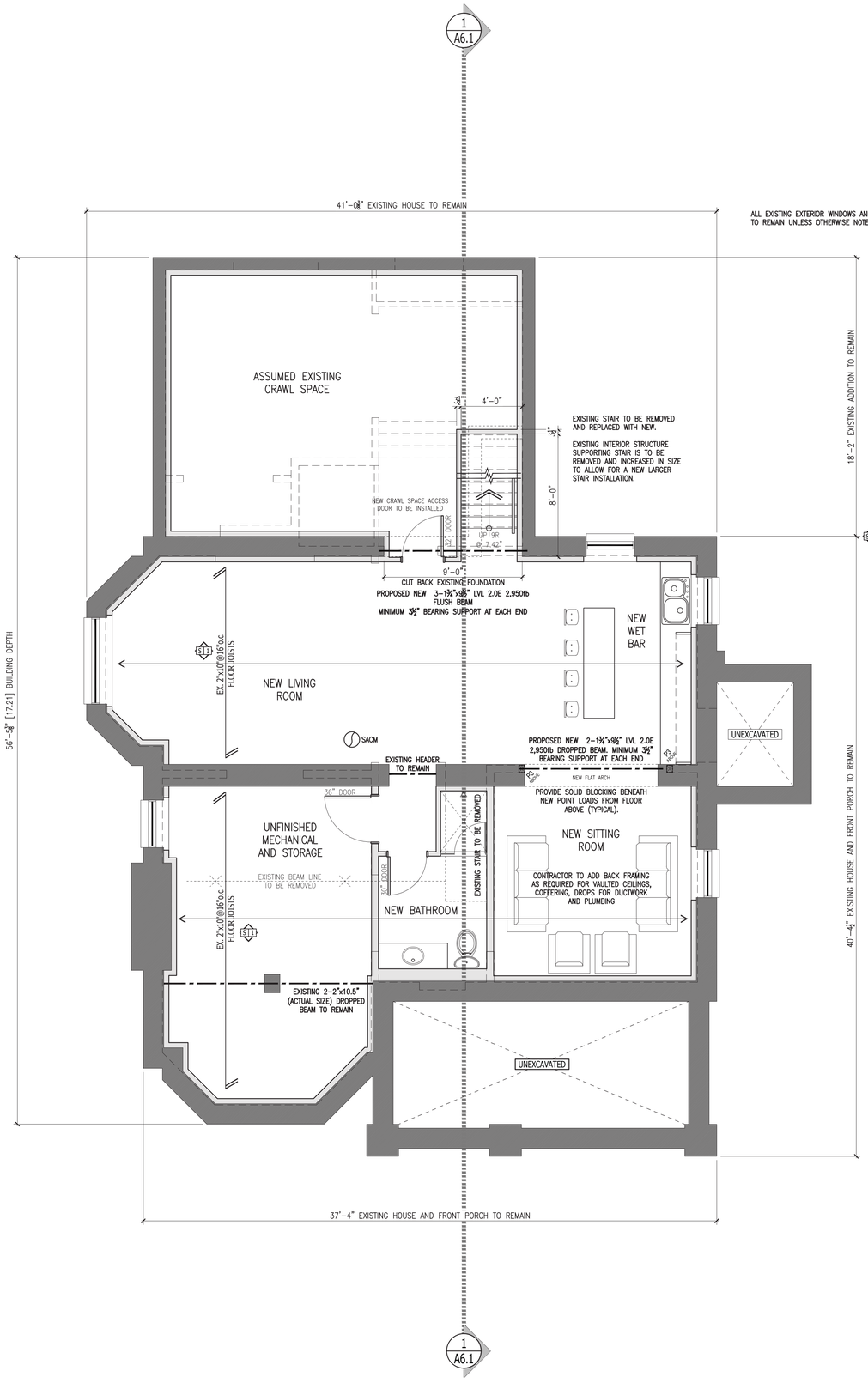
LOADING CHART; MISSISSAUGA, ONTARIO					
SPECIFIED SNOW LOADING, O.B.C. 4.2.2.					
Ss:	23 psf	Sr:	8.4 psf	Cb:	0.55 (O.B.C. 9.4.2.2)
SNOW LOAD:	(Cb x Ss) + Sr				21 psf

ROOF JOIST LOADING:		CEILING JOIST LOADING:	
SNOW LOAD, PARTS:	21.0 PSF	LIVE LOAD, ATTIC:	10.0 PSF
DEAD LOAD:	7.50 PSF	DEAD LOAD:	7.50 PSF
COLLAR TIE L.LOAD:	0.00 PSF	COLLAR TIE D.LOAD:	7.50 PSF

FLOOR LOADING;	
STANDARD FLOOR LOAD:	40.0 PSF
FLOOR DEAD LOAD:	15.0 PSF
UPPER FLOOR, BEDROOM LIVE LOAD:	40.0 PSF
MECHANICAL ROOM FLOOR LOAD:	75.0 PSF
ASSUMED ALLOWABLE SOIL BEARING CAPACITY = 2,000 PSF.	

FOUNDATION WALL INSULATION,

REFER TO 2.1.1.6. (SB-12) ON CONSTRUCTION NOTES FOR ALL APPLICABLE FOUNDATION WALL INSULATION REFERENCES TO THE 2012 ONTARIO BUILDING CODE.



NEW FOUNDATION WALL AND FOOTINGS TO EXISTING: (TYPICAL, ALL LOCATIONS)

PROVIDE 15M DOWELS (18" LONG) @ 8"o.c. VERTICALLY (MIDDLE OF EACH BLOCK COURSE). FILL END CORE OF EXISTING BLOCK FOUNDATION WITH CONCRETE TO SECURE DOWELS.

FOOTING CONNECTION:

TIE NEW FOOTINGS TO EXISTING USING (2)15M DOWELS (12" LONG, 6" EMBEDMENT INTO EXISTING) REBAR, EPOXIED WITH "RED HEAD A7" ACRYLIC EPOXY, OR HILTI HY 150 MAX-SD.

RENOVATION NOTE:

EXISTING STRUCTURE DIRECTIONS AND SIZES ARE ALL ASSUMED AND DESIGNED BY OTHERS. CONTRACTOR IS TO SITE VERIFY ALL EXISTING STRUCTURE AT DEMOLITION PHASE OF PROJECT AND REPORT ANY DISCREPANCIES TO PROJECT STRUCTURAL ENGINEER AND ARCHITECTURAL DESIGNER PRIOR TO PROCEEDING WITH ANY WORK.

S1.1 EXISTING FLOOR JOIST REINFORCEMENT NOTES:

EXISTING 2"x10" FLOOR JOISTS ARE TO REMAIN, SISTER NEW 2"x10" S.P.F. TO EACH JOIST TO REINFORCE.

FASTEN NEW FLOOR JOISTS TO EXISTING FOLLOWING REQUIREMENTS OF SECTION 9.23.8.3 (7) OF THE 2012 O.B.C. PROVIDE "PL PREMIUM" CONSTRUCTION ADHESIVE IN A SERPENTINE PATTERN (16" SEGMENTS) AT THE INTERFACE OF NEW AND EXISTING FLOOR JOISTS.

9.23.8.3 (7),
WHERE 38mm MEMBERS ARE LAID ON EDGE TO FORM A BUILT-UP BEAM, INDIVIDUAL MEMBERS SHALL BE NAILED TOGETHER WITH A DOUBLE ROW OF NAILS NOT LESS THAN 89mm IN LENGTH, SPACED NOT MORE THAN 450mm APART IN EACH ROW WITH THE END NAILS LOCATED 100mm TO 150mm FROM THE END OF EACH PIECE.

FOR ALL CONSTRUCTION ASSEMBLIES, GENERAL NOTES, ENERGY EFFICIENCY AND SPECIFICATIONS REFER TO COVER SHEET OF DRAWING PACKAGE.
FOR STRUCTURAL INFORMATION REFER TO 'S' SERIES DRAWINGS LOCATED AT THE END OF THIS DRAWING PACKAGE.
THE DESIGN AND CONSTRUCTION OF THIS BUILDING SHALL COMPLY WITH THE ONTARIO BUILDING CODE AS AMENDED.

DIAMOND NOTE LEGEND, REFERENCE TO COVER SHEET.	
E1.1	EXTERIOR WALL ASSEMBLIES AND WATERPROOFING.
I1.1	INTERIOR WALL AND CEILING NOTES.
INS1.1	INSULATION NOTES.
P1.1	PORCH CONSTRUCTION AND FINISH NOTES.
WDP1.1	WATER AND DAMP-PROOFING NOTES.
SP1.1	SOUND-PROOFING NOTES.
SC1.1	SPECIAL CONSTRUCTION NOTES.
F1.1	FLOOR FINISH NOTES.
R1.1	ROOF STRUCTURE AND FINISH NOTES.
D1.1	DORMER TRIM AND FINISH NOTES.
C1.1	CHIMNEY CONSTRUCTION AND FINISH NOTES.
T1.1	EXTERIOR TRIM NOTES.

STRUCTURAL COLUMN SCHEDULE:

SPF WOOD COLUMNS:
P2: 2-2"x6"
P3: 3-2"x6"
P4: 4-2"x6"
P5: 5-2"x6"

PT6: 6"x6" PRESSURE TREATED POST, C/W (2) LC4 POST CAPS AND PB66 POST BASE, OR STRUCTURAL EQUIVALENTS.

PSL: 5¼"x5¼" PSL COLUMN, 2.0E 'WEYERHAEUSER PARALLAM' OR EQUIVALENT.

STEEL COLUMNS:
HSS 4"x4"x0.25"
CAP PLATE: 5⅝"x10"x⅝" W/ 4-¾" BOLTS,
BASE PLATE: 5⅝"x10"x⅝" W/ 2-½" ANCHOR BOLTS.
BASE PLATE OVERHANGS INTERIOR FACE OF FOUNDATION WALL. ANCHOR BOLTS ARE TO BE INSTALLED 2" OFF EXTERIOR FACE OF BASE PLATE, TO ENSURE MINIMUM 1½" SPACE BETWEEN ANCHOR BOLTS AND INTERIOR FACE OF FOUNDATION WALL TO AVOID SPALL IN THE CONCRETE IN THAT AREA.

WOOD BEAMS:
ALL STRUCTURAL COMPOSITE LUMBER (SCL)TO BE: 2.0E, 2,950Fb OR GREATER.
ALL SCL BEAMS TO HAVE:
a) FULL BEARING ON JACK STUDS FOR HEADERS.
b) FULL BEARING WITHIN LOAD RATED HANGERS.
c) 3" BEARING UNLESS OTHERWISE NOTED.

STEEL BEAMS:
ALL STEEL BEAMS INSTALLED INSIDE AND PARALLEL w/ EXTERIOR WALLS ARE TO BE FULLY COVERED WITH ½" R-FOIL INSULATION.
ALL STEEL BEAMS INSTALLED w/ ENDS TERMINATING IN EXTERIOR WALLS ARE TO BE WRAPPED WITH ½" R-FOIL INSULATION A MINIMUM OF 36" INTO CONDITIONED SPACE.

ADDITIONAL STRUCTURAL NOTES:
ALL WORK TO CONFORM TO THE LATEST VERSION OF THE ONTARIO BUILDING CODE.

INTERIOR DOOR NOTES:
ALL INTERIOR DOOR SIZES AND FLAT ARCHES ARE TO CONFORM TO 9.5.11. 2012 ONTARIO BUILDING CODE, UNLESS OTHERWISE STATED.

WIDTHS, ALL WIDTHS NOTED BELOW ARE MINIMUM REQUIREMENTS SET FORTH BY DESIGNER.
BEDROOM DOORS, STAIRS TO BASEMENT TO BE 32" WIDE, MIN.
BATHROOM, POWDER, ENSUITE DOORS TO BE 30" WIDE, MIN.

HEIGHTS:
DOOR HEIGHTS FOR THIS PROJECT SHALL MATCH EXISTING.

INTERIOR ARCHWAYS, DOORS & BEAM FINISH HEIGHTS,

ALL INTERIOR ARCHWAYS AND DOORS ARE TO MATCH HEIGHT OF STANDARD EXTERIOR DOOR FRAMES, OR WINDOW HEIGHTS. WHEN FINISHED THE TRIM LINES OF INTERIOR DOORS SHOULD MATCH THE HEIGHTS OF THE TRIM LINES AROUND THE EXTERIOR DOORS AND WINDOWS.

INTERIOR BEAM FINISH, WHERE INTERIOR BEAMS ARE DROPPED THEY ARE TO BE FRAMED AS PER INTERIOR ARCHES, FRAME THEM DOWN AND OUT TO SUIT.

WHERE INTERIOR ARCHWAYS, BEAMS AND PILASTERS ARE SHOWN TO BE 11" DIMENSION THEY SHALL BE FRAMED AS SUCH (2-2"x6" SIDE BY SIDE) AND DRYWALLED TO A FINISHED 12" DIMENSION, THIS INCLUDES THE PILASTER AS WELL AS THE FLAT ARCH ABOVE.

PILASTERS ARE TO MATCH WIDTH OF FLAT ARCH AND ARE TO BE PROUD OF THE SURROUNDING WALL BY 6" UNLESS NOTED OTHERWISE.

BULKHEAD NOTES:
1. ENSURE BULKHEADS ARE PROPERLY FIRE-STOPPED BETWEEN FLOORS. EXTEND GYPSUM BOARD ON WALL TO UNDERSIDE OF FLOOR SHEATHING ABOVE AS PER 9.10.16.1. (2) WHERE WE HAVE BULKHEADS IN THE CEILING BELOW.
2. ALL BULKHEAD HEIGHTS DIMENSIONED ARE FOR DESIGN PURPOSES ONLY AT 12" DEEP.
3. HVAC REQUIREMENTS MAY CHANGE DEPTH OF ANY OR ALL BULKHEADS ON SITE.
4. CONTRACTOR TO COORDINATE DEPTHS WITH HVAC DESIGN, IF DEPTH OF BULKHEADS CHANGE BY MORE THAN +/- 3", THEN CONTRACTOR TO CONSULT DESIGNER.
5. ALL BULKHEADS TO BE FRAMED WITH LIGHT GAUGE STEEL TO ENSURE A FLAT CONTOUR IS MAINTAINED.

FIREPLACE AND CHIMNEY NOTES,

REFER TO 9.21.-9.22. ON CONSTRUCTION NOTES FOR ALL APPLICABLE FIREPLACE AND CHIMNEY REFERENCES TO THE 2012 ONTARIO BUILDING CODE.

NOTES TO BUILDING CONTRACTOR:

1. ALL CONSTRUCTION ASSEMBLIES, WATERPROOFING AND INSULATING DETAILS CAN BE FOUND ON COVER SHEET.
2. ALL STRUCTURAL DETAILS, NOTES, INSTRUCTIONS AND INSPECTION REQUIREMENTS CAN BE FOUND ON 'S' SERIES SHEETS AND COVER SHEET.
3. CONTRACTOR IS TO PROVIDE P.ENG SEALED SITE (TEMPORARY) SHORING DRAWINGS TO PREVENT DAMAGE TO ADJACENT PROPERTY/STRUCTURES PRIOR TO CONSTRUCTION.
4. ADDITIONAL SHOP DRAWINGS, INCLUDING BUT NOT LIMITED TO STRUCTURAL STEEL, LIMESTONE, PRECAST CONCRETE AND WINDOWS MUST PROVIDED TO DESIGNER AND STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION. ADDITIONAL FEES AND PERMIT REVISION WILL BE REQUIRED AND INVOICED DIRECTLY TO CONTRACTOR.

SCHEDULE 1: DESIGNER INFORMATION

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INDIVIDUAL BCIN: 41322
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PRELIMINARY, NOT FOR CONSTRUCTION

STRUCTURAL DESIGN BY:
centric ENGINEERING

LICENSED PROFESSIONAL ENGINEER
D.B.B.H. MATTHEWS
100135202
13-09-2017
PROVINCE OF ONTARIO

REVIEWED & SEALED FOR STRUCTURE ONLY

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5	09.09.13	ISSUED FOR HERITAGE REVIEW
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33 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y7
of. 905.393.8005
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em. btmdrafting@gmail.com

CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
BASEMENT PLAN

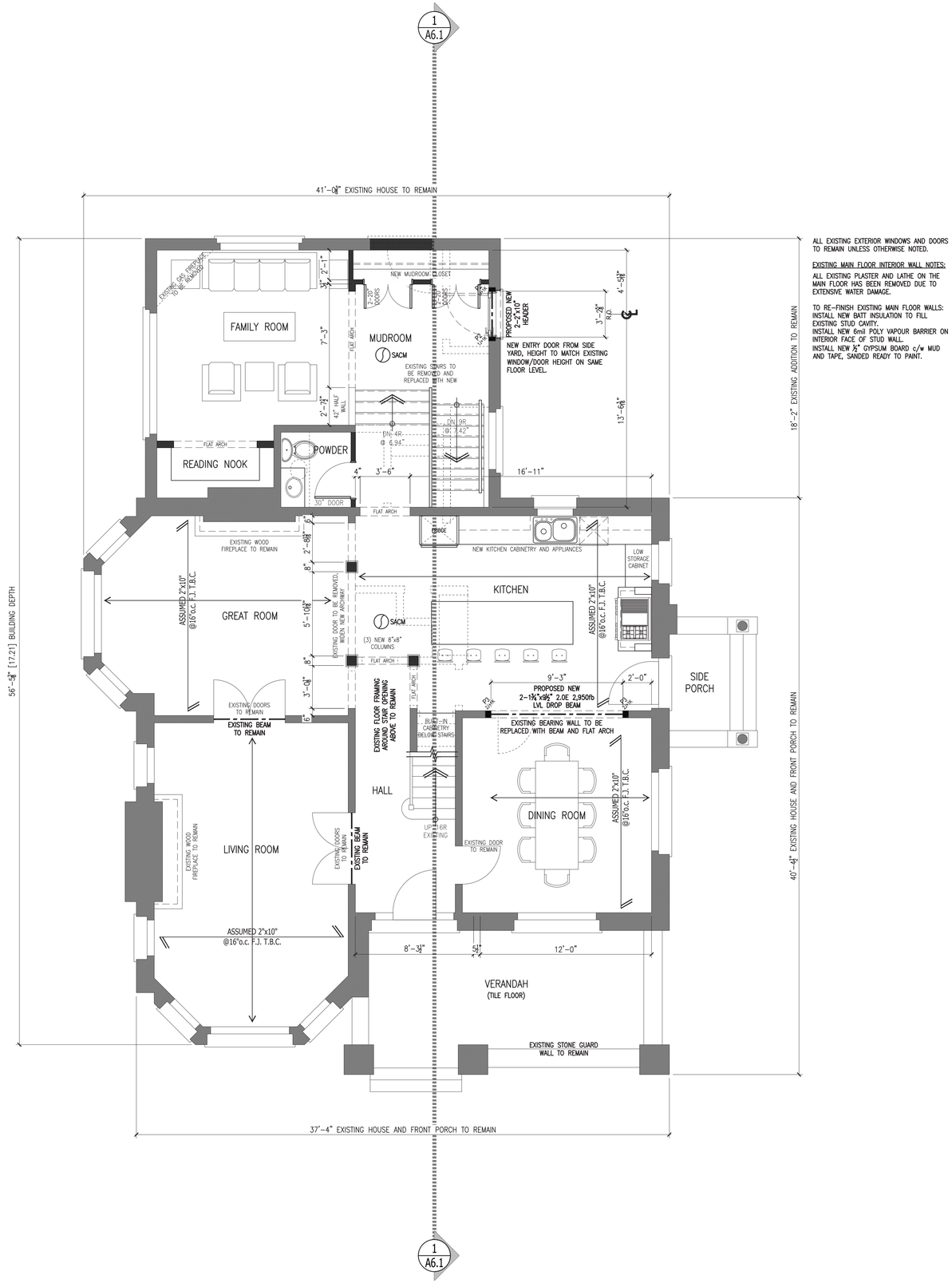
DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: 1/4" = 1'-0"
JOB NUMBER: 174-15
SHEET NUMBER: **A4.1**

\\BTM-HQ\DATA\SERVER\BTM DESIGN\DOCUMENTS\00 BTM DESIGN\001 PROJECT FILES\174-15 915 NORTH SERVICE ROAD, MISSISSAUGA\174-15 915 N SERVICE ROAD DRAWINGS.DWG

LOADING CHART; MISSISSAUGA, ONTARIO					
SPECIFIED SNOW LOADING, O.B.C. 4.2.2.					
Ss:	23 psf	Sr:	8.4 psf	Cb:	0.55 (O.B.C. 9.4.2.2)
SNOW LOAD:	(Cb x Ss) + Sr				21 psf

ROOF JOIST LOADING:		CEILING JOIST LOADING:	
SNOW LOAD, PART3:	21.0 PSF	LIVE LOAD, ATTIC:	10.0 PSF
DEAD LOAD:	7.50 PSF	DEAD LOAD:	7.50 PSF
COLLAR TIE L.LOAD:	0.00 PSF	COLLAR TIE D.LOAD:	7.50 PSF

FLOOR LOADING;	
STANDARD FLOOR LOAD:	40.0 PSF
FLOOR DEAD LOAD:	15.0 PSF
UPPER FLOOR, BEDROOM LIVE LOAD:	40.0 PSF
MECHANICAL ROOM FLOOR LOAD:	75.0 PSF
ASSUMED ALLOWABLE SOIL BEARING CAPACITY = 2,000 PSF.	



ALL EXISTING EXTERIOR WINDOWS AND DOORS TO REMAIN UNLESS OTHERWISE NOTED.

EXISTING MAIN FLOOR INTERIOR WALL NOTES:

ALL EXISTING PLASTER AND LATHE ON THE MAIN FLOOR HAS BEEN REMOVED DUE TO EXTENSIVE WATER DAMAGE.

TO RE-FINISH EXISTING MAIN FLOOR WALLS:
INSTALL NEW BATT INSULATION TO FILL EXISTING STUD CAVITY.
INSTALL NEW 6mil POLY VAPOUR BARRIER ON INTERIOR FACE OF STUD WALL.
INSTALL NEW ½" GYPSUM BOARD c/w MUD AND TAPE, SANDED READY TO PAINT.

FOR ALL CONSTRUCTION ASSEMBLIES, GENERAL NOTES, ENERGY EFFICIENCY AND SPECIFICATIONS REFER TO COVER SHEET OF DRAWING PACKAGE.
FOR STRUCTURAL INFORMATION REFER TO 'S' SERIES DRAWINGS LOCATED AT THE END OF THIS DRAWING PACKAGE.
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DIAMOND NOTE LEGEND, REFERENCE TO COVER SHEET.	
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I1.2	INTERIOR WALL AND CEILING NOTES.
INS1.2	INSULATION NOTES.
P1.2	PORCH CONSTRUCTION AND FINISH NOTES.
WMP1.2	WATER AND DAMP-PROOFING NOTES.
SOP1.2	SOUND-PROOFING NOTES.
SC1.2	SPECIAL CONSTRUCTION NOTES.
F1.2	FLOOR FINISH NOTES.
R1.2	ROOF STRUCTURE AND FINISH NOTES.
D1.2	DORMER TRIM AND FINISH NOTES.
C1.2	CHIMNEY CONSTRUCTION AND FINISH NOTES.
T1.2	EXTERIOR TRIM NOTES.

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HEIGHTS:
DOOR HEIGHTS FOR THIS PROJECT SHALL MATCH EXISTING.

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BULKHEAD NOTES:
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3. HVAC REQUIREMENTS MAY CHANGE DEPTH OF ANY OR ALL BULKHEADS ON SITE.
4. CONTRACTOR TO COORDINATE DEPTHS WITH HVAC DESIGN, IF DEPTH OF BULKHEADS CHANGE BY MORE THAN +/- 3", THEN CONTRACTOR TO CONSULT DESIGNER.
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FIREPLACE AND CHIMNEY NOTES,
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NOTES TO BUILDING CONTRACTOR:
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PRELIMINARY, NOT FOR CONSTRUCTION

STRUCTURAL DESIGN BY:
centric ENGINEERING

LICENSED PROFESSIONAL ENGINEER
D.G.B.H. TUTTASTRA
100135202
DEC 09-2013
PROVINCE OF ONTARIO
REVIEWED & SEALED FOR STRUCTURE ONLY

NO.	DATE	REVISIONS / ISSUANCE:
5	09.09.13	ISSUED FOR HERITAGE REVIEW
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btM Drafting & Design
33 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y7
of. 905.393.8005
ce. 905.912.2337
em. btmdrafting@gmail.com

CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
MAIN FLOOR PLAN

DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: 1/4" = 1'-0"
JOB NUMBER: 174-15
SHEET NUMBER: **A4.2**

\\BTM\HOME\DESIGN\DESIGN\DOCUMENTS\2016 BTM DESIGN\004 PROJECT FILES\174-15 915 NORTH SERVICE ROAD, MISSISSAUGA\174-15 915 N SERVICE ROAD.PDWG

LOADING CHART; MISSISSAUGA, ONTARIO					
SPECIFIED SNOW LOADING, O.B.C. 4.2.2.					
Ss:	23 psf	Sr:	8.4 psf	Cb:	0.55 (O.B.C. 9.4.2.2)
SNOW LOAD:	(Cb x Ss) + Sr				21 psf

ROOF JOIST LOADING:		CEILING JOIST LOADING:	
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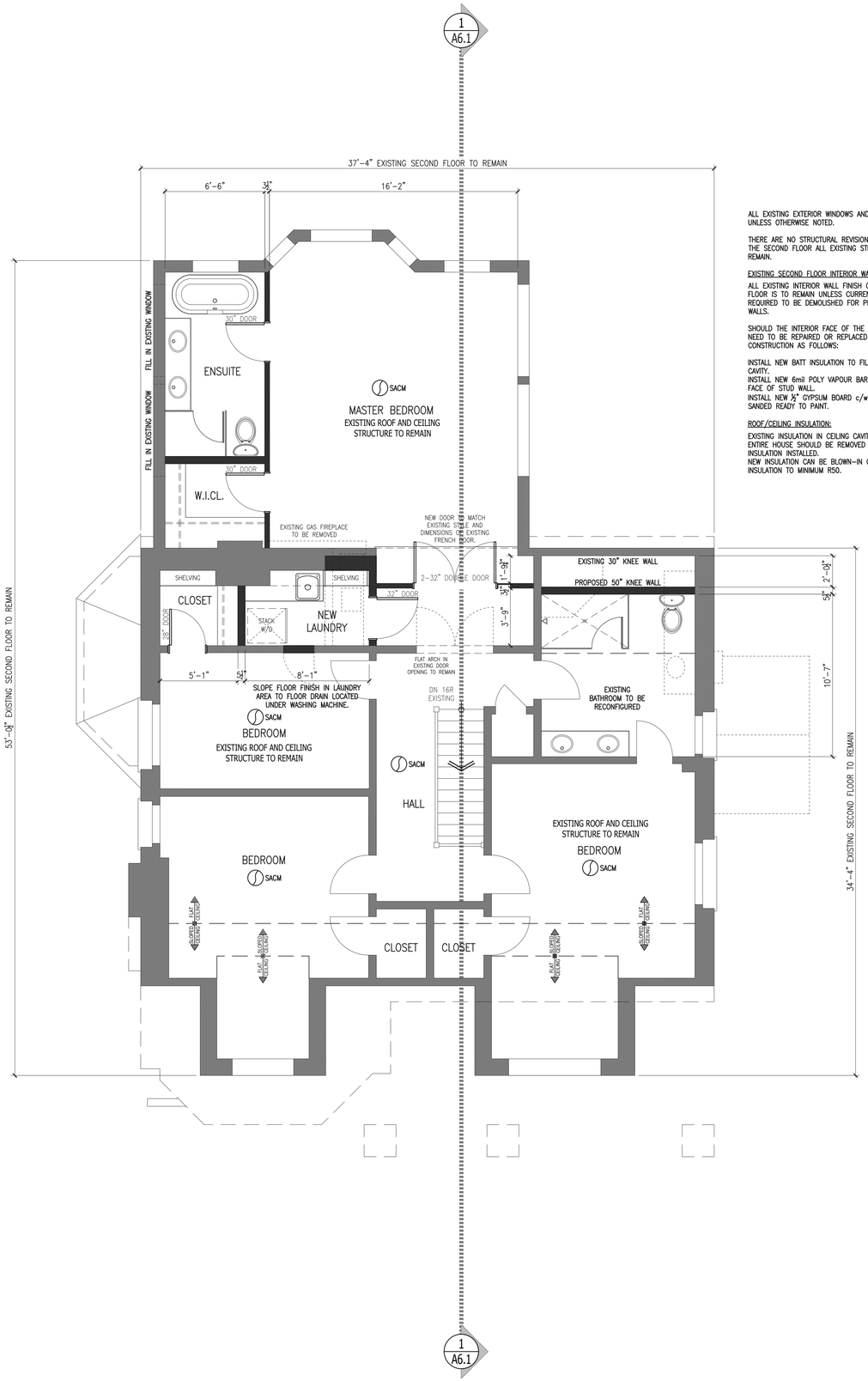
ASSUMED ALLOWABLE SOIL BEARING CAPACITY = 2,000 PSF.	



ALL EXISTING EXTERIOR WINDOWS AND DOORS TO REMAIN UNLESS OTHERWISE NOTED.

THERE ARE NO STRUCTURAL REVISIONS PROPOSED ON THE SECOND FLOOR ALL EXISTING STRUCTURE IS TO REMAIN.

EXISTING SECOND FLOOR INTERIOR WALL NOTES:

ALL EXISTING INTERIOR WALL FINISH ON THE SECOND FLOOR IS TO REMAIN UNLESS CURRENTLY DAMAGED OR REQUIRED TO BE DEMOLISHED FOR PROPOSED NEW WALLS.

SHOULD THE INTERIOR FACE OF THE EXTERIOR WALLS NEED TO BE REPAIRED OR REPLACED PROVIDE NEW CONSTRUCTION AS FOLLOWS:

INSTALL NEW BATT INSULATION TO FILL EXISTING STUD CAVITY.
INSTALL NEW 6mil POLY VAPOUR BARRIER ON INTERIOR FACE OF STUD WALL.
INSTALL NEW ½" GYPSUM BOARD c/w MUD AND TAPE, SANDED READY TO PAINT.

ROOF/CEILING INSULATION:

EXISTING INSULATION IN CEILING CAVITY THROUGHOUT ENTIRE HOUSE SHOULD BE REMOVED AND NEW INSULATION INSTALLED.
NEW INSULATION CAN BE BLOWN-IN OR BATT INSULATION TO MINIMUM R50.

FOR ALL CONSTRUCTION ASSEMBLIES, GENERAL NOTES, ENERGY EFFICIENCY AND SPECIFICATIONS REFER TO COVER SHEET OF DRAWING PACKAGE.
FOR STRUCTURAL INFORMATION REFER TO 'S' SERIES DRAWINGS LOCATED AT THE END OF THIS DRAWING PACKAGE.
THE DESIGN AND CONSTRUCTION OF THIS BUILDING SHALL COMPLY WITH THE ONTARIO BUILDING CODE AS AMENDED.

DIAMOND NOTE LEGEND, REFERENCE TO COVER SHEET.	
{E1.#}	EXTERIOR WALL ASSEMBLIES AND WATERPROOFING.
{I1.#}	INTERIOR WALL AND CEILING NOTES.
{INS1.#}	INSULATION NOTES.
{P1.#}	PORCH CONSTRUCTION AND FINISH NOTES.
{WPR1.#}	WATER AND DAMP-PROOFING NOTES.
{SPR1.#}	SOUND-PROOFING NOTES.
{SC1.#}	SPECIAL CONSTRUCTION NOTES.
{F1.#}	FLOOR FINISH NOTES.
{R1.#}	ROOF STRUCTURE AND FINISH NOTES.
{D1.#}	DORMER TRIM AND FINISH NOTES.
{C1.#}	CHIMNEY CONSTRUCTION AND FINISH NOTES.
{T1.#}	EXTERIOR TRIM NOTES.

STRUCTURAL COLUMN SCHEDULE:

SPF WOOD COLUMNS:
P2: 2-2"x6"
P3: 3-2"x6"
P4: 4-2"x6"
P5: 5-2"x6"
PT6: 6"x6" PRESSURE TREATED POST, C/W (2) LC4 POST CAPS AND PB66 POST BASE, OR STRUCTURAL EQUIVALENTS.
PSL: 5¼"x5¼" PSL COLUMN, 2.0E 'WEYERHAEUSER PARALLAM' OR EQUIVALENT.

STEEL COLUMNS:
HSS 4"x4"x0.25"
CAP PLATE: 5⅝"x10"x⅝" W/ 4-¾" BOLTS,
BASE PLATE: 5⅝"x10"x⅝" W/ 2-½" ANCHOR BOLTS.
BASE PLATE OVERHANGS INTERIOR FACE OF FOUNDATION WALL. ANCHOR BOLTS ARE TO BE INSTALLED 2" OFF EXTERIOR FACE OF BASE PLATE, TO ENSURE MINIMUM 1½" SPACE BETWEEN ANCHOR BOLTS AND INTERIOR FACE OF FOUNDATION WALL TO AVOID SPALL IN THE CONCRETE IN THAT AREA.

WOOD BEAMS:
ALL STRUCTURAL COMPOSITE LUMBER (SCL)TO BE:
2.0E, 2,950Fb OR GREATER.
ALL SCL BEAMS TO HAVE:
a) FULL BEARING ON JACK STUDS FOR HEADERS.
b) FULL BEARING WITHIN LOAD RATED HANGERS.
c) 3" BEARING UNLESS OTHERWISE NOTED.

STEEL BEAMS:
ALL STEEL BEAMS INSTALLED INSIDE AND PARALLEL w/ EXTERIOR WALLS ARE TO BE FULLY COVERED WITH ½" R-FOIL INSULATION. ALL STEEL BEAMS INSTALLED w/ ENDS TERMINATING IN EXTERIOR WALLS ARE TO BE WRAPPED WITH ½" R-FOIL INSULATION A MINIMUM OF 36" INTO CONDITIONED SPACE.

ADDITIONAL STRUCTURAL NOTES:
ALL WORK TO CONFORM TO THE LATEST VERSION OF THE ONTARIO BUILDING CODE.

INTERIOR DOOR NOTES:
ALL INTERIOR DOOR SIZES AND FLAT ARCHES ARE TO CONFORM TO 9.5.11. 2012 ONTARIO BUILDING CODE, UNLESS OTHERWISE STATED.
WIDTHS, ALL WIDTHS NOTED BELOW ARE MINIMUM REQUIREMENTS SET FORTH BY DESIGNER.
BEDROOM DOORS, STAIRS TO BASEMENT TO BE 32" WIDE, MIN.
BATHROOM, POWDER, ENSUITE DOORS TO BE 30" WIDE, MIN.
HEIGHTS:
DOOR HEIGHTS FOR THIS PROJECT SHALL MATCH EXISTING.

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ALL INTERIOR ARCHWAYS AND DOORS ARE TO MATCH HEIGHT OF STANDARD EXTERIOR DOOR FRAMES, OR WINDOW HEIGHTS. WHEN FINISHED THE TRIM LINES OF INTERIOR DOORS SHOULD MATCH THE HEIGHTS OF THE TRIM LINES AROUND THE EXTERIOR DOORS AND WINDOWS.
INTERIOR BEAM FINISH, WHERE INTERIOR BEAMS ARE DROPPED THEY ARE TO BE FRAMED AS PER INTERIOR ARCHES, FRAME THEM DOWN AND OUT TO SUIT.
WHERE INTERIOR ARCHWAYS, BEAMS AND PILASTERS ARE SHOWN TO BE 11" DIMENSION THEY SHALL BE FRAMED AS SUCH (2-2"x6" SIDE BY SIDE) AND DRYWALLED TO A FINISHED 12" DIMENSION, THIS INCLUDES THE PILASTER AS WELL AS THE FLAT ARCH ABOVE.
PILASTERS ARE TO MATCH WIDTH OF FLAT ARCH AND ARE TO BE PROUD OF THE SURROUNDING WALL BY 6" UNLESS NOTED OTHERWISE.

BULKHEAD NOTES:
1. ENSURE BULKHEADS ARE PROPERLY FIRE-STOPPED BETWEEN FLOORS. EXTEND GYPSUM BOARD ON WALL TO UNDERSIDE OF FLOOR SHEATHING ABOVE AS PER 9.10.16.1. (2) WHERE WE HAVE BULKHEADS IN THE CEILING BELOW.
2. ALL BULKHEAD HEIGHTS DIMENSIONED ARE FOR DESIGN PURPOSES ONLY AT 12" DEEP.
3. HVAC REQUIREMENTS MAY CHANGE DEPTH OF ANY OR ALL BULKHEADS ON SITE.
4. CONTRACTOR TO COORDINATE DEPTHS WITH HVAC DESIGN, IF DEPTH OF BULKHEADS CHANGE BY MORE THAN +/- 3", THEN CONTRACTOR TO CONSULT DESIGNER.
5. ALL BULKHEADS TO BE FRAMED WITH LIGHT GAUGE STEEL TO ENSURE A FLAT CONTOUR IS MAINTAINED.

FIREPLACE AND CHIMNEY NOTES,
REFER TO 9.21.-9.22. ON CONSTRUCTION NOTES FOR ALL APPLICABLE FIREPLACE AND CHIMNEY REFERENCES TO THE 2012 ONTARIO BUILDING CODE.

NOTES TO BUILDING CONTRACTOR:
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2. ALL STRUCTURAL DETAILS, NOTES, INSTRUCTIONS AND INSPECTION REQUIREMENTS CAN BE FOUND ON 'S' SERIES SHEETS AND COVER SHEET.
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I BRIAN MATTHEWS DECLARE THAT I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER SUBSECTION 3.2.2.2. OF THE BUILDING CODE.
INDIVIDUAL BCIN: 41322
FIRM BCIN: 44237
SIGNATURE:

Drawings must NOT be scaled. Contractor must check and verify all dimensions, specifications and drawings on site and report any discrepancies to the designer prior to proceeding with any of the work.

PRELIMINARY, NOT FOR CONSTRUCTION

STRUCTURAL DESIGN BY:
centric ENGINEERING

LICENSED PROFESSIONAL ENGINEER
D.D.B.H. TIVENSTRA
100135202
03-09-2017
PROVINCE OF ONTARIO
REVIEWED & SEALED FOR STRUCTURE ONLY

NO.	DATE	ISSUED/REVISED
5	09.09.13	ISSUED FOR HERITAGE REVIEW
4	09.05.17	ISSUED FOR HERITAGE REVIEW
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2	09.30.16	ISSUED FOR HERITAGE REVIEW
1	08.25.16	ISSUED FOR COORDINATION
REF.	DATE:	DESCRIPTION:

REVISIONS / ISSUANCE:

btM Drafting & Design
32 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y2
of. 905.393.8005
ce. 905.912.2337
em. btmdrafting@gmail.com

CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
SECOND FLOOR PLAN

DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: 1/4" = 1'-0"
JOB NUMBER: 174-15
SHEET NUMBER: **A4.3**

LOADING CHART; MISSISSAUGA, ONTARIO					
SPECIFIED SNOW LOADING, O.B.C. 4.2.2.					
Ss:	23 psf	Sr:	8.4 psf	Cb:	0.55 (O.B.C. 9.4.2.2)
SNOW LOAD:	(Cb x Ss) + Sr				21 psf

ROOF JOIST LOADING:		CEILING JOIST LOADING:	
SNOW LOAD, PART3:	21.0 PSF	LIVE LOAD, ATTIC:	10.0 PSF
DEAD LOAD:	7.50 PSF	DEAD LOAD:	7.50 PSF
COLLAR TIE L.LOAD:	0.00 PSF	COLLAR TIE D.LOAD:	7.50 PSF

FLOOR LOADING;	
STANDARD FLOOR LOAD:	40.0 PSF
FLOOR DEAD LOAD:	15.0 PSF
UPPER FLOOR, BEDROOM LIVE LOAD:	40.0 PSF
MECHANICAL ROOM FLOOR LOAD:	75.0 PSF
ASSUMED ALLOWABLE SOIL BEARING CAPACITY = 2,000 PSF.	

ROOF SPACES, VENTILATION.

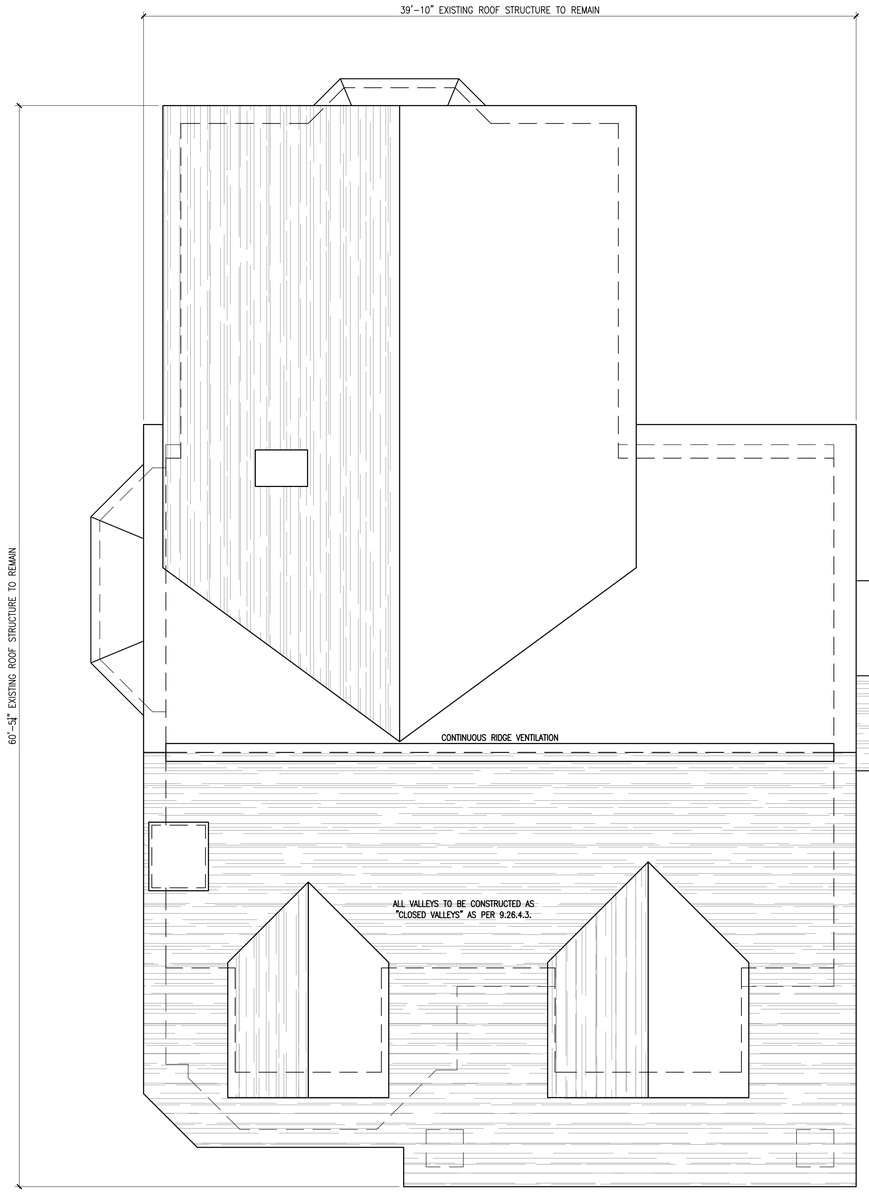
REFER TO 9.19. OF 2012 ONTARIO BUILDING CODE FOR ALL APPLICABLE ROOF SPACE VENTING REFERENCES.

PROJECT SPECIFIC REQUIREMENTS:

INSTALL CONTINUOUS RIDGE VENTILATION HIGH ROOF VENTS ALONG ALL RIDGE LINES.

LOW SIDE ROOF VENTS SHALL BE BUILT INTO A CONTINUOUS STRIP WITHIN THE SOFFIT OR FRIEZE MOULDING WITH "COR-A-VENT". IF OTHER VENTILATION IS USED ENSURE BUG-SCREENING IS INSTALLED BEHIND.

ENSURE MIN. 2⅜" AIR SPACE IS PROVIDED BETWEEN THE TOP OF INSULATION AND U/S OF ROOF SHEATHING.
INSTALL BAFFLES AS REQUIRED, SEE A6.1 FOR FURTHER DETAIL.



EXISTING ROOF FINISH TO BE REMOVED DOWN TO EXISTING ROOF SHEATHING.
REPLACE WITH NEW ASPHALT SHINGLES TO MATCH EXISTING COLOUR.
SHEATHING TO BE INSPECTED AND REPLACED AS NEEDED.
NEW PRE-FINISHED METAL FLASHING TO BE INSTALLED BETWEEN ALL ROOF/WALL INTERSECTIONS AND ALL VALLEYS.

FOR ALL CONSTRUCTION ASSEMBLIES, GENERAL NOTES, ENERGY EFFICIENCY AND SPECIFICATIONS REFER TO COVER SHEET OF DRAWING PACKAGE.
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INDIVIDUAL BCIN: 41322
FIRM BCIN: 44237
SIGNATURE:

Drawings must NOT be scaled. Contractor must check and verify all dimensions, specifications and drawings on site and report any discrepancies to the designer prior to proceeding with any of the work.

PRELIMINARY, NOT FOR CONSTRUCTION

STRUCTURAL DESIGN BY:
centric ENGINEERING

NO	DATE	DESCRIPTION:
5	09.09.13	ISSUED FOR HERITAGE REVIEW
4	09.05.17	ISSUED FOR HERITAGE REVIEW
3	03.23.17	ISSUED FOR HERITAGE REVIEW
2	09.30.16	ISSUED FOR HERITAGE REVIEW
1	08.25.16	ISSUED FOR COORDINATION
NO	DATE	ISSUED/REVISED
REF.	DATE:	DESCRIPTION:

REVISIONS / ISSUANCE:

btM Drafting & Design
32 GILMOUR PLACE, HAMILTON, ONTARIO, L8M 2Y2
of. 905.393.8005
ce. 905.912.2337
em. btmdrafting@gmail.com

CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
ROOF PLAN

DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: 1/4" = 1'-0"
JOB NUMBER: 174-15
SHEET NUMBER: **A4.4**

1 A5.1 SCALE: -

2 A5.1 EAST ELEVATION, FRONT
SCALE: 1/4" = 1'-0"

3 A5.1 SCALE: -

4 A5.1 WEST ELEVATION, REAR
SCALE: 1/4" = 1'-0"

SCHEDULE 1: DESIGNER INFORMATION

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CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
EAST & WEST ELEVATIONS, FRONT & REAR

DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: 1/4" = 1'-0"
JOB NUMBER: 174-15
SHEET NUMBER: **A5.1**

1 A5.2 SCALE: -

2 A5.2 **SOUTH ELEVATION, LEFT SIDE**
SCALE: 1/4" = 1'-0"

3 A5.2 SCALE: -

4 A5.2 **NORTH ELEVATION, RIGHT SIDE**
SCALE: 1/4" = 1'-0"

SCHEDULE 1: DESIGNER INFORMATION

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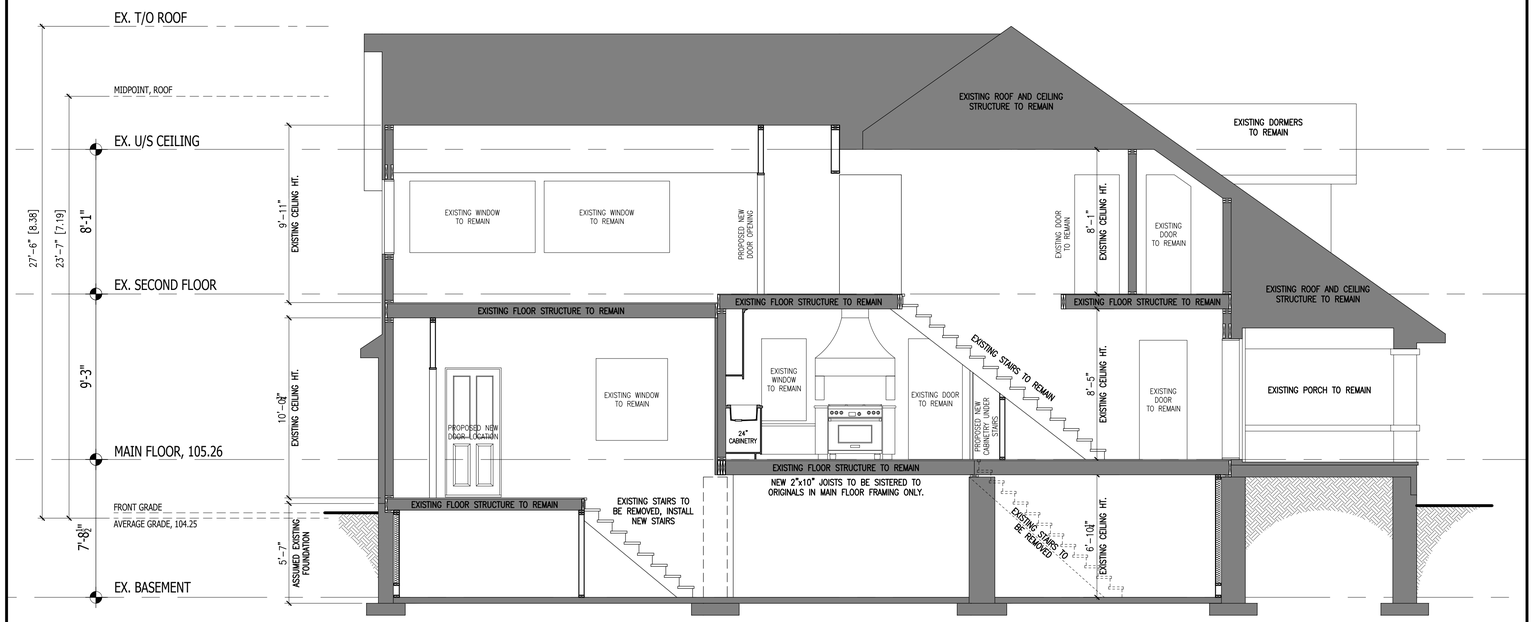
em. btmdrafting@gmail.com

CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
NORTH & SOUTH ELEVATIONS, SIDE ELEVATIONS

DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: 1/4" = 1'-0"
JOB NUMBER: 174-15
SHEET NUMBER: **A5.2**



1 A6.1 SCALE: -

2 A6.1 **SECTION, THRU STAIRS**
SCALE: 1/4" = 1'-0"

3 A6.1 SCALE: -

SCHEDULE 1: DESIGNER INFORMATION

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CLIENT:
915 NORTH SERVICE RD.

ADDRESS: 915 NORTH SERVICE ROAD,
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
BUILDING SECTION

DRAWN: B.T.M.
DATE: 7.26.2017
SCALE: 1/4" = 1'-0"
JOB NUMBER: 174-15
SHEET NUMBER: **A6.1**

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A , Project Information

Building number, street name Builder to fill in completely			Unit no.	Lot/con./Part
915 North Service Road				
Municipality: Mississauga	Postal code:	Plan number/ other description: Sb12-Reno		

B. Individual who reviews and takes responsibility for design activities , .

Name			Firm GLS Total Hvac Design	
George R Leach				
Street address: 5149 White Church Rd			Unit no.	Lot/con.
Municipality: Mt Hope	Postal code: L0R 1W0	Province: Ontario	E-mail:	
Telephone number: (905) 692 3522	Fax number: (905) 692 3522		Cell number: ( )	

C: Design activities undertaken by individual identified Section B. [Building Code Table 3.5.2.1 of Division C]

☐ House	■ HVAC - House	☐ Building Structural
☐ Small Buildings	☐ Building Services	☐ Plumbing - House
☐ Large Buildings	☐ Detection, Lighting and Power	☐ Plumbing - All Buildings
☐ Complex Buildings	☐ Fire Protection	☐ On-site Sewage Systems

Description of designer's work

HVAC Calculations &Drawings

D. Declaration of Designer

I _____**George R Leach** _____declare that (choose one as appropriate):

(print name)

☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code, I am qualified, and the firm is registered, in the appropriate classes/ categories.

Individual BCIN:_____

Firm BCIN : _____

■ I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer " under subsection 3.2.5 of Division C of the Building Code,

Individual BCIN: _____ 26175_____

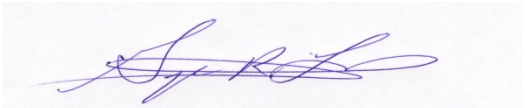
Basis for exemption from registration;_____

☐ The design work is exempt from the registration and qualification requirements of the Building Code.
Basis for exemption from registration and qualification:_____

I certify that:

1 The information contained in this schedule is true to the best of my knowledge.
2 I have submitted this application with the knowledge and consent of the firm

9/14/2017



Date /Signature of Designer

NOTE:

1 For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7.(1)(d),of Division C, Article 3.2.5.1. of Division C . and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5 Division C

2 Schedule 1 is not required to be completed by a holder of a licence, temporary licence or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1is also not required to be completed by a holder of a licence to practise, a limited licence to practise , or a certificate of authorization ,issued by the Association of Professional Engineers of Ontario

Application for a Permit to Construct or Demolish –Effective January 1,2014

*******COMPUTER GENERATED ORIGINAL FORM AND SIGNATURE ******

Heat loss and gain calculation summary sheet

CSA-F280-M12
Standard Form No. 1

These documents issued for the use of **btM Drafting & Design** and may not be used by any other persons without authorization.

Project no. T17-063

Building location

Model:	Sb12-Reno	Site:	
Address:	915 North Service Road	Lot:	915 North Service Road
City and Province:	Mississauga	Postal code:	

Calculations based on

Dimensional information based on: Supplied Drawings

Attachment:	Detached			Front facing: Southeast	Assumed? No
Number of storeys:	2 + basement			Air tightness: Loose (Pre-1945) (ACH=10.35)	Assumed? Yes
Weather location:	Mississauga, ON, CA	Ventilated:	Included	Wind exposure: Light local shielding	
HRV?	Vanee 200H			Internal shading: (none)	Occupants: 5
Recovery %:	75 %			Units: Imperial (I-P)	

Heating design conditions

Outdoor temp: 0 °F Indoor temp: 72 °F Mean soil temp: 50 °F

Cooling design conditions

Outdoor temp: 86 °F Indoor temp: 72 °F Latitude: 44 °N STrange: 16 °F

Above grade walls

Style A:	n,ne,sw,w,nw - R16
Style B:	ne,e,se,s,sw,w,nw - R12Mf (Frm wall, brk 4" ext, 3/8" wood shth, r-12 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud)
Style C:	ne,e,se,s,sw,w,nw - R20Bw (Blk wall, 2"x6" wood int frm, 8" thk, r-20 cav ins, 1/2" gypsum board int fnsh)
Style D:	

Below grade walls

Style A:	BCIN_1: Bsmnt, 7 ft BG, conc fndatn, wall R-21.12, flr unins
Style B:	BCNN_1: Bsmnt, 7 ft BG, conc fndatn, wall unins, flr unins, brick on fndatn
Style C:	
Style D:	

Floors on soil

Style A:	BCIN_1: Bsmnt, 7 ft BG, conc fndatn, wall R-21.12, flr unins HLR=3794 Btuh
Style B:	BCNN_1: Bsmnt, 7 ft BG, conc fndatn, wall unins, flr unins, brick on fndatn HLR=4416 Btuh

Ceilings

Style A:	R40 (Attic ceiling, asphalt shingles roof mat, r-50 ceil ins)
Style B:	
Style C:	

Exposed floors

Style A:	R8P (Part floor, carpet flr fnsh, r-8 ins, frm flr, 8" thkns, 1/2" gypsum board int fnsh)
Style B:	

Doors

Style A:	se - 23E0 (Door, mtl pur core type)
Style B:	
Style C:	

Windows

Style A:	n,ne,se,sw,w,nw - Existng (existing R 2.13; 6.67 ft head ht)
Style B:	ne,e,se,s,sw,w,nw - 19B0 (1 glazing, clr glz, mtl no brk frm mat, 1/8" thk, clr strm; clear; 6.67 ft head ht)
Style C:	se - 19B0 (1 glazing, clr glz, mtl no brk frm mat, 1/8" thk, clr strm; clear; 8 ft overhang (4.7 ft window ht, 1 ft sep.); 6.67 ft head ht)
Style D:	se - 19B0 (1 glazing, clr glz, mtl no brk frm mat, 1/8" thk, clr strm; clear; 8 ft overhang (7 ft window ht, 1 ft sep.); 6.67 ft head ht)

Skylights

Style A:	
Style B:	

Attached documents:

Notes: A logical analysis of the building structure including insulation,window,door type As per the prints submitted to GLS by the builder,municipality ,contractor/owner.GLS Hvac Design is not responsible for changes in structure or duct design,by the builder contractor/ owner during construction,Or on site inspections.Losses based on worst case senarios. THIS DESIGN ONLY VALID FOR ADDRESS STATED ABOVE

Calculations performed by

Name:	George Leach
Company:	GLS Total Hvac Design
Address:	5149 White Church rd
City and Province:	Mt Hope Ont
Postal code:	L0R 1W0
Telephone:	905 692 3522
Fax:	
E-mail:	Glshvacdesign@rogers.com

wrightsoft®

BCIN cert.#: 26175 (Loads,Ducts)

Heat Loss/Heat Gain

GLS Total Hvac Design

5149 White Church Rd
Mt Hope
Ontario
L0R 1W0
905-692-3522
BCIN-26175

SUBMITTED TO	**Phone**	**Issue Date**	**Expire Date**
btM Drafting and Design	(905) 393-8005	9/14/2017	9/14/2018
JOB & STREET 915 North Service Road	**JOB NUMBER** T17-063		
CITY Mississauga	**SB12 & or Model** Sb12-Reno		

Foot Notes

Design valid for stated address only
This design is F280-12 Compliant
All duct sizes may be changed to stock equivalents
Drawing is a representation only
Exact location of S/a, R/a grills and ducts to be determined by HVAC contractor on site
HRV to be installed as per manufactures specifications , When required
All HVAC installed in **unconditioned spaces** to be insulated and sealed as per OBC
HVAC to be installed as per Manufacturers specifications, Gas , Plumbing , Electrical, Municipal, & OBC codes
Equipment may be substituted with comparable make or models

R/A Equivalents

14x3.25 = 45.5sq”
2-14x3.25 = 91sq”
3-14x3.25 = 136 sq”

Principle exhaust fan to be installed in most commonly used bathroom
Supplemental fan
R/a on main floor to be L/wall
R/a on 2nd floor or higher to be H/wall

Authorized Signature;; George Leach

This heat loss is valid for 12 months from issue date

CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code and good engineering practice. The undersigned has reviewed and takes responsibility for this design, and has the qualifications and meets the requirements set out in the Building Code to be a designer.

Name: George Leach

Phone: 905 692 3522

BCIN# 26175

HRAI Ventilation Certification #

HRAI Heat Loss/Gain Certification OO5382

HRAI Duct Design Certification#

Signature: *George Leach*

6) HEAT RECOVERY VENTILATOR (HRV)

Make/|Model: Vanee 200 H

192 cfm high	82 cfm low

7) HEATING APPLIANCE

Make/Model: Luxaire TM9Y120D20MP11

Heating Output	Total Design Heat Loss
115000 BTUH	106001 BTUH

8) COOLING APPLIANCE

Make/Model: Luxaire TCJD60S41S3

Cooling Output	Total Design Cooling Load
60000 BTUH	59179 BTUH

GENERAL NOTES:

1) The principal exhaust fan shall be controlled by a manual switch centrally located in the dwelling unit and be identified with the words VENTILATION FAN.

2) The forced air heating system circulation fan shall be controlled by a manual switch located adjacent to the ventilation fan switch and shall be identified by the words CIRCULATIONS FAN.

3) Provide a rough-in for an exhaust fan when a rough-in for a bathroom is provided within the basement.

Project Summary
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

Project Information

For: btM Drafting & Design
915 North Service Road, Mississauga
Phone: 905 393 8005
Email: btmdrafting@gmail.com

Notes: A logical analysis of the building structure including insulation,window,door type As per the prints submitted to GLS by the builder,municipality ,contractor/owner.GLS Hvac Design is not responsible for changes in structure or duct design,by the builder contractor/ owner during construction,Or on site inspections.Losses based on worst case senarios. THIS

Design Information

Weather: Mississauga, ON, CA

Winter Design Conditions

Outside db	0	°F
Inside db	72	°F
Design TD	72	°F

Summer Design Conditions

Outside db	86	°F
Inside db	72	°F
Design TD	14	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	46	gr/lb

Heating Summary

Structure	102893	Btuh
Ducts	0	Btuh
Central vent (SER=75% 159 cfm) Heat recovery	3108	Btuh
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	106001	Btuh

Sensible Cooling Equipment Load Sizing

Structure	48715	Btuh
Ducts	0	Btuh
Central vent (SER=75% 159 cfm) Heat recovery	601	Btuh
Blower	0	Btuh
Use manufacturer's data	y	
Rate/swing multiplier	0.90	
Equipment sensible load	44384	Btuh

Infiltration

Method	F280-12
Exposure category	Light local shielding
Const. categ.	Loose (Pre-1945) (ACH=10.35)
Number of stories	2.0

	Heating	Cooling
Area (ft²)	4802	4802
Volume (ft³)	39312	39312
Air changes/hour	0.88	0.30
Equiv. AVF (cfm)	578	194

Latent Cooling Equipment Load Sizing

Structure	8760	Btuh
Ducts	0	Btuh
Central vent (159 cfm) Heat recovery	6035	Btuh
Equipment latent load	14795	Btuh
Equipment total load	59179	Btuh
Req. total capacity at 0.77 SHR	4.8	ton

Heating Equipment Summary

Make	Luxaire
Trade	LUXAIRE
Model	TM9Y120D20MP11
AHRI ref	8413007

Efficiency	96 AFUE	
Heating input	120000	Btuh
Heating output	115000	Btuh
Temperature rise	53	°F
Actual air flow	1994	cfm
Air flow factor	0.019	cfm/Btuh
Static pressure	0.60	in H2O
Space thermostat		

Cooling Equipment Summary

Make	Luxaire
Trade	ADP
Cond	TCJD60S41S3
Coil	BV**C5(6,9)60
AHRI ref	5281747

Efficiency	10.0 EER, 13 SEER	
Sensible cooling	39655	Btuh
Latent cooling	11845	Btuh
Total cooling	51500	Btuh
Actual air flow	1994	cfm
Air flow factor	0.041	cfm/Btuh
Static pressure	0.60	in H2O
Load sensible heat ratio	0.77	

wrightsoft

Right-F280™ Worksheet
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

							Entire House				base				family			
1	Room name																	
2	Exposed wall						551.6 ft				127.0 ft				33.0 ft			
3	Room dimensions										1.0 x 1194.8 ft				1.0 x 237.0 ft			
4	Room height						8.2 ft		d		7.8 ft		heat/cool		11.1 ft		heat/cool	
	Ty	CST	R - value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
5	W	R16	15.87	n	4.6	0.5	28	20	91	9	0	0	0	0	0	0	0	0
	└G	Existng	2.13	n	34.0	19.8	8	0	284	165	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	ne	6.0	1.1	622	538	3231	577	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	84	0	5310	5397	0	0	0	0	0	0	0	0
	W	R16	15.87	ne	4.6	0.8	396	299	1363	243	0	0	0	0	0	0	0	0
	└G	Existng	2.13	ne	34.0	34.3	97	0	3291	3312	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	ne	3.4	0.6	33	16	54	10	33	16	54	10	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	17	0	1077	1095	17	0	1077	1095	0	0	0	0
	W	R12Mf	12.05	e	6.0	1.4	50	39	232	55	0	0	0	0	0	0	0	0
	└G	19B0	1.15	e	63.0	85.7	12	0	740	1007	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	e	3.4	0.8	4	4	15	3	4	4	15	3	0	0	0	0
	W	R12Mf	12.05	se	6.0	1.3	558	433	2601	542	0	0	0	0	0	0	0	0
	└G	19B0	1.15	se	63.0	85.9	26	0	1628	2221	0	0	0	0	0	0	0	0
	└G	19B0	1.15	se	63.0	39.9	26	52	1628	1033	0	0	0	0	0	0	0	0
	└G	19B0	1.15	se	63.0	39.9	18	35	1102	699	0	0	0	0	0	0	0	0
	└G	Existng	2.13	se	34.0	47.4	35	0	1191	1657	0	0	0	0	0	0	0	0
	└D	23E0	11.34	se	6.4	1.3	21	21	134	28	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	se	3.4	0.7	23	23	77	16	23	23	77	16	0	0	0	0
	W	R12Mf	12.05	s	6.0	0.8	97	74	444	62	0	0	0	0	0	0	0	0
	└G	19B0	1.15	s	63.0	61.0	24	0	1480	1434	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	s	3.4	0.5	8	8	28	4	8	8	28	4	0	0	0	0
	W	R12Mf	12.05	sw	6.0	1.3	569	493	2965	618	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	75	0	4746	6474	0	0	0	0	0	0	0	0
	W	R16	15.87	sw	4.6	1.0	396	337	1537	320	0	0	0	0	208	149	682	142
	└G	Existng	2.13	sw	34.0	47.4	59	0	1996	2777	0	0	0	0	59	0	1996	2777
	W	R20Bw	21.12	sw	3.4	0.7	21	4	14	3	21	4	14	3	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	16	0	1037	1415	16	0	1037	1415	0	0	0	0
	W	R12Mf	12.05	w	6.0	1.4	47	35	212	50	0	0	0	0	0	0	0	0
	└G	19B0	1.15	w	63.0	85.7	12	0	740	1007	0	0	0	0	0	0	0	0
	W	R16	15.87	w	4.6	1.1	28	20	91	21	0	0	0	0	0	0	0	0
	└G	Existng	2.13	w	34.0	47.2	8	0	284	394	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	w	3.4	0.8	4	4	14	3	4	4	14	3	0	0	0	0
	W	R12Mf	12.05	nw	6.0	1.1	155	148	888	158	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	8	0	472	480	0	0	0	0	0	0	0	0
	W	R16	15.87	nw	4.6	0.8	472	396	1805	322	0	0	0	0	158	122	557	99
	└G	Existng	2.13	nw	34.0	34.3	76	0	2586	2603	0	0	0	0	36	0	1225	1233
	W	R20Bw	21.12	nw	3.4	0.6	9	3	12	2	9	3	12	2	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	6	0	359	365	6	0	359	365	0	0	0	0
	C	R40	38.21	-	1.9	1.1	1678	1678	3178	1800	0	0	0	0	0	0	0	0
	F	BCIN_1	n/a	-	n/a	0.0	1195	1195	3794	0	1195	1195	3794	0	0	0	0	0
	F	BCNN_1	n/a	-	n/a	0.0	416	416	4416	0	0	0	0	0	0	0	0	0
	F	R8P	8.77	-	8.3	1.6	67	67	555	107	0	0	0	0	0	0	0	0
6	Total conductive loss/gain								57703	38490			6481	2916			4460	4252
7	a) Infiltration								45190	2936			13438	222			2217	324
	b) Ventilation								0	0			0	0			0	0
8	Internal gains: People@ 240							5		1200		0		0		0		0
	Electric/Appliances									6088				320				320
	Subtotal (lines 6 to 8)								102893	48715			19919	3459			6677	4897
9	Less external load								0	0			0	0			0	0
10	Less transfer								0	0			0	0			0	0
11	Subtotal								102893	48715			19919	3459			6677	4897
12	Distribution losses			Ducts	0%	0%			0	0	0%	0%	0	0	0%	0%	0	0
				Hydronic	0%				0		0%		0		0%		0	
	Redistribution								0	0			0	0			0	0
13	Total room load								102893	48715			19919	3459			6677	4897
14	Air required (cfm)								1994	1994			386	142			129	200

Right-F280™ Worksheet
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

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							pdr 0 ft 5.3 x 5.8 ft 11.1 ft heat/cool				mud 28.8 ft 10.0 x 18.8 ft 11.1 ft heat/cool				great 17.4 ft 1.0 x 243.4 ft 9.5 ft heat/cool			
	Ty	CST	R - value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
5	W	R16	15.87	n	4.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	n	34.0	19.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	ne	6.0	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	ne	4.6	0.8	0	0	0	0	208	167	764	136	0	0	0	0
	└G	Existng	2.13	ne	34.0	34.3	0	0	0	0	41	0	1385	1394	0	0	0	0
	W	R20Bw	21.12	ne	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	e	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	e	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	e	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	se	6.0	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	Existng	2.13	se	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	└D	23E0	11.34	se	6.4	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	se	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	s	6.0	0.8	0	0	0	0	0	0	0	0	47	35	212	29
	└G	19B0	1.15	s	63.0	61.0	0	0	0	0	0	0	0	0	12	0	740	717
	W	R20Bw	21.12	s	3.4	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	sw	6.0	1.3	0	0	0	0	0	0	0	0	71	45	273	57
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	26	0	1628	2221
	W	R16	15.87	sw	4.6	1.0	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	sw	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	sw	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	w	6.0	1.4	0	0	0	0	0	0	0	0	47	35	212	50
	└G	19B0	1.15	w	63.0	85.7	0	0	0	0	0	0	0	0	12	0	740	1007
	W	R16	15.87	w	4.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	w	34.0	47.2	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	w	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	nw	6.0	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	nw	4.6	0.8	0	0	0	0	111	111	506	90	0	0	0	0
	└G	Existng	2.13	nw	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	nw	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	C	R40	38.21	-	1.9	1.1	0	0	0	0	0	0	0	0	37	37	70	39
	F	BCIN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	BCNN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	R8P	8.77	-	8.3	1.6	0	0	0	0	0	0	0	0	0	0	0	0
6	Total conductive loss/gain								0	0			2655	1621			3875	4121
7	a) Infiltration								0	0			1320	124			1927	314
	b) Ventilation								0	0			0	0			0	0
8	Internal gains: People@ 240							0		0		0		0		0		0
	Electric/Appliances									320				320				320
	Subtotal (lines 6 to 8)								0	320			3975	2065			5802	4756
9	Less external load								0	0			0	0			0	0
10	Less transfer								0	0			0	0			0	0
11	Subtotal								0	320			3975	2065			5802	4756
12	Distribution losses			Ducts			0%	0%	0	0	0%	0%	0	0	0%	0%	0	0
				Hydronic			0%		0		0%		0		0%		0	
	Redistribution								0	0			0	0			0	0
13	Total room load								0	320			3975	2065			5802	4756
14	Air required (cfm)								0	13			77	85			112	195

Right-F280™ Worksheet
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

							foyer 7.5 ft 7.5 x 14.0 ft 9.5 ft heat/cool				kitch 25.5 ft 1.0 x 304.8 ft 9.5 ft heat/cool				dining 28.5 ft 14.0 x 14.5 ft 9.5 ft heat/cool			
1	Room name																	
2	Exposed wall																	
3	Room dimensions																	
4	Room height																	
	Ty	CST	R - value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
5	W	R16	15.87	n	4.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	n	34.0	19.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	ne	6.0	1.1	0	0	0	0	133	101	604	108	138	112	673	120
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	32	0	2044	2078	26	0	1628	1655
	W	R16	15.87	ne	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	ne	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	ne	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	e	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	e	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	e	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	se	6.0	1.3	71	33	197	41	0	0	0	0	133	107	644	134
	└G	19B0	1.15	se	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	26	26	1628	1033
	└G	19B0	1.15	se	63.0	39.9	18	18	1102	699	0	0	0	0	0	0	0	0
	└G	Existng	2.13	se	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	└D	23E0	11.34	se	6.4	1.3	21	21	134	28	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	se	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	s	6.0	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	s	63.0	61.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	s	3.4	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	sw	6.0	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	sw	4.6	1.0	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	sw	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	sw	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	w	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	w	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	w	4.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	w	34.0	47.2	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	w	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	nw	6.0	1.1	0	0	0	0	109	102	612	109	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	8	0	472	480	0	0	0	0
	W	R16	15.87	nw	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	nw	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	nw	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	C	R40	38.21	-	1.9	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	F	BCIN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	BCNN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	R8P	8.77	-	8.3	1.6	0	0	0	0	0	0	0	0	0	0	0	0
6	Total conductive loss/gain								1433	768			3732	2775			4573	2942
7	a) Infiltration								713	59			1856	212			2274	224
	b) Ventilation								0	0			0	0			0	0
8	Internal gains: People@ 240							0		0		0		0		0		0
	Electric/Appliances									320				320				320
	Subtotal (lines 6 to 8)								2146	1147			5588	3307			6847	3487
9	Less external load								0	0			0	0			0	0
10	Less transfer								0	0			0	0			0	0
11	Subtotal								2146	1147			5588	3307			6847	3487
12	Distribution losses			Ducts			0%	0%	0	0	0%	0%	0	0	0%	0%	0	0
				Hydronic			0%		0		0%		0		0%		0	
	Redistribution								0	0			0	0			0	0
13	Total room load								2146	1147			5588	3307			6847	3487
14	Air required (cfm)								42	47			108	135			133	143

wrightsoft

Right-F280™ Worksheet
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

							living 39.8 ft 1.0 x 299.4 ft 9.5 ft heat/cool				bed3 41.8 ft 1.0 x 233.6 ft 8.1 ft heat/cool				bed2 43.8 ft 1.0 x 273.5 ft 8.1 ft heat/cool			
1	Room name																	
2	Exposed wall																	
3	Room dimensions																	
4	Room height																	
	Ty	CST	R - value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
5	W	R16	15.87	n	4.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	n	34.0	19.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	ne	6.0	1.1	40	40	243	43	47	47	280	50	164	148	890	159
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	16	0	1008	1024
	W	R16	15.87	ne	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	ne	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	ne	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	e	6.0	1.4	50	39	232	55	0	0	0	0	0	0	0	0
	└G	19B0	1.15	e	63.0	85.7	12	0	740	1007	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	e	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	se	6.0	1.3	64	38	230	48	146	132	792	165	144	123	738	154
	└G	19B0	1.15	se	63.0	85.9	26	0	1628	2221	0	0	0	0	0	0	0	0
	└G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	se	34.0	47.4	0	0	0	0	14	0	476	663	21	0	715	994
	└D	23E0	11.34	se	6.4	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	se	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	s	6.0	0.8	50	39	232	32	0	0	0	0	0	0	0	0
	└G	19B0	1.15	s	63.0	61.0	12	0	740	717	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	s	3.4	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	sw	6.0	1.3	173	150	901	188	146	136	816	170	47	47	280	58
	└G	19B0	1.15	sw	63.0	85.9	24	0	1480	2019	10	0	630	859	0	0	0	0
	W	R16	15.87	sw	4.6	1.0	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	sw	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	sw	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	w	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	w	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	w	4.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	w	34.0	47.2	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	w	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	nw	6.0	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	nw	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	nw	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	nw	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	C	R40	38.21	-	1.9	1.1	60	60	113	64	234	234	443	251	274	274	518	293
	F	BCIN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	BCNN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	R8P	8.77	-	8.3	1.6	0	0	0	0	0	0	0	0	52	52	427	83
6	Total conductive loss/gain								6540	6394			3437	2158			4575	2766
7	a) Infiltration								3251	488			1590	165			2116	211
	b) Ventilation								0	0			0	0			0	0
8	Internal gains: People@ 240							0		0		1		240		1		240
	Electric/Appliances									320				320				320
	Subtotal (lines 6 to 8)								9791	7203			5027	2883			6692	3537
9	Less external load								0	0			0	0			0	0
10	Less transfer								0	0			0	0			0	0
11	Subtotal								9791	7203			5125	2983			6839	3688
12	Distribution losses			Ducts			0%	0%	0	0	0%	0%	0	0	0%	0%	0	0
				Hydronic			0%		0		0%		0		0%		0	
	Redistribution								0	0			98	100			147	151
13	Total room load								9791	7203			5125	2983			6839	3688
14	Air required (cfm)								190	295			99	122			133	151

Right-F280™ Worksheet
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

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							hall 0 ft 1.0 x 190.6 ft 8.1 ft heat/cool				knee wall 14.8 ft 14.0 x 3.3 ft 4.0 ft heat/cool				bath 10.8 ft 10.8 x 10.8 ft 8.1 ft heat/cool			
1	Room name																	
2	Exposed wall																	
3	Room dimensions																	
4	Room height																	
	Ty	CST	R - value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
5	W	R16	15.87	n	4.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	n	34.0	19.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	ne	6.0	1.1	0	0	0	0	13	13	78	14	87	77	463	83
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	10	0	630	640
	W	R16	15.87	ne	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	ne	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	ne	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	e	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	e	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	e	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	se	6.0	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	Existng	2.13	se	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	└D	23E0	11.34	se	6.4	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	se	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	s	6.0	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	s	63.0	61.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	s	3.4	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	sw	6.0	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	sw	4.6	1.0	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	sw	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	sw	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	w	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	w	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	w	4.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	w	34.0	47.2	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	w	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	nw	6.0	1.1	0	0	0	0	46	46	276	49	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	nw	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	nw	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	nw	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	C	R40	38.21	-	1.9	1.1	191	191	361	204	46	46	86	49	116	116	219	124
	F	BCIN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	BCNN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	R8P	8.77	-	8.3	1.6	0	0	0	0	0	0	0	0	0	0	0	0
6	Total conductive loss/gain								361	204			441	112			1312	847
7	a) Infiltration								167	16			204	9			607	65
	b) Ventilation								0	0			0	0			0	0
8	Internal gains: People@ 240							0		0		0		0		0		0
	Electric/Appliances									320				320				320
	Subtotal (lines 6 to 8)								528	541			645	441			1919	1232
9	Less external load								0	0			0	0			0	0
10	Less transfer								0	0			0	0			0	0
11	Subtotal								0	0			0	0			2448	1626
12	Distribution losses			Ducts			0%	0%	0	0	0%	0%	0	0	0%	0%	0	0
				Hydronic			0%		0		0%		0		0%		0	
	Redistribution								-528	-541			-645	-441			529	394
13	Total room load								0	0			0	0			2448	1626
14	Air required (cfm)								0	0			0	0			47	67

Right-F280™ Worksheet
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

							bed4 16.3 ft 1.0 x 172.1 ft 8.1 ft heat/cool				laun 0 ft 8.5 x 7.0 ft 8.1 ft heat/cool				ens 21.0 ft 7.5 x 13.5 ft 10.0 ft heat/cool			
1	Room name																	
2	Exposed wall																	
3	Room dimensions																	
4	Room height																	
	Ty	CST	R - value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
5	W	R16	15.87	n	4.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	n	34.0	19.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	ne	6.0	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	ne	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	ne	34.0	34.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	ne	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	e	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	e	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	e	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	se	6.0	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0	0	0	0	0
	├G	Existng	2.13	se	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	└D	23E0	11.34	se	6.4	1.3	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	se	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	s	6.0	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	s	63.0	61.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	s	3.4	0.5	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	sw	6.0	1.3	132	116	695	145	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	16	0	1008	1375	0	0	0	0	0	0	0	0
	W	R16	15.87	sw	4.6	1.0	0	0	0	0	0	0	0	0	135	135	616	128
	└G	Existng	2.13	sw	34.0	47.4	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	sw	3.4	0.7	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	w	6.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	w	63.0	85.7	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	w	4.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	Existng	2.13	w	34.0	47.2	0	0	0	0	0	0	0	0	0	0	0	0
	W	R20Bw	21.12	w	3.4	0.8	0	0	0	0	0	0	0	0	0	0	0	0
	W	R12Mf	12.05	nw	6.0	1.1	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	W	R16	15.87	nw	4.6	0.8	0	0	0	0	0	0	0	0	75	63	287	51
	└G	Existng	2.13	nw	34.0	34.3	0	0	0	0	0	0	0	0	12	0	408	411
	W	R20Bw	21.12	nw	3.4	0.6	0	0	0	0	0	0	0	0	0	0	0	0
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0	0	0	0	0
	C	R40	38.21	-	1.9	1.1	172	172	326	185	60	60	113	64	101	101	192	109
	F	BCIN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	BCNN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0	0	0	0	0
	F	R8P	8.77	-	8.3	1.6	0	0	0	0	0	0	0	0	0	0	0	0
6	Total conductive loss/gain								2029	1704			113	64			1503	699
7	a) Infiltration								938	130			52	5			695	53
	b) Ventilation								0	0			0	0			0	0
8	Internal gains: People@ 240							1		240		0		0		0		0
	Electric/Appliances									320				320				320
	Subtotal (lines 6 to 8)								2967	2394			165	389			2199	1073
9	Less external load								0	0			0	0			0	0
10	Less transfer								0	0			0	0			0	0
11	Subtotal								3050	2479			203	428			2199	1073
12	Distribution losses			Ducts			0%	0%	0	0	0%	0%	0	0	0%	0%	0	0
				Hydronic			0%		0		0%		0		0%		0	
	Redistribution								82	84			38	39			0	0
13	Total room load								3050	2479			203	428			2199	1073
14	Air required (cfm)								59	101			4	18			43	44

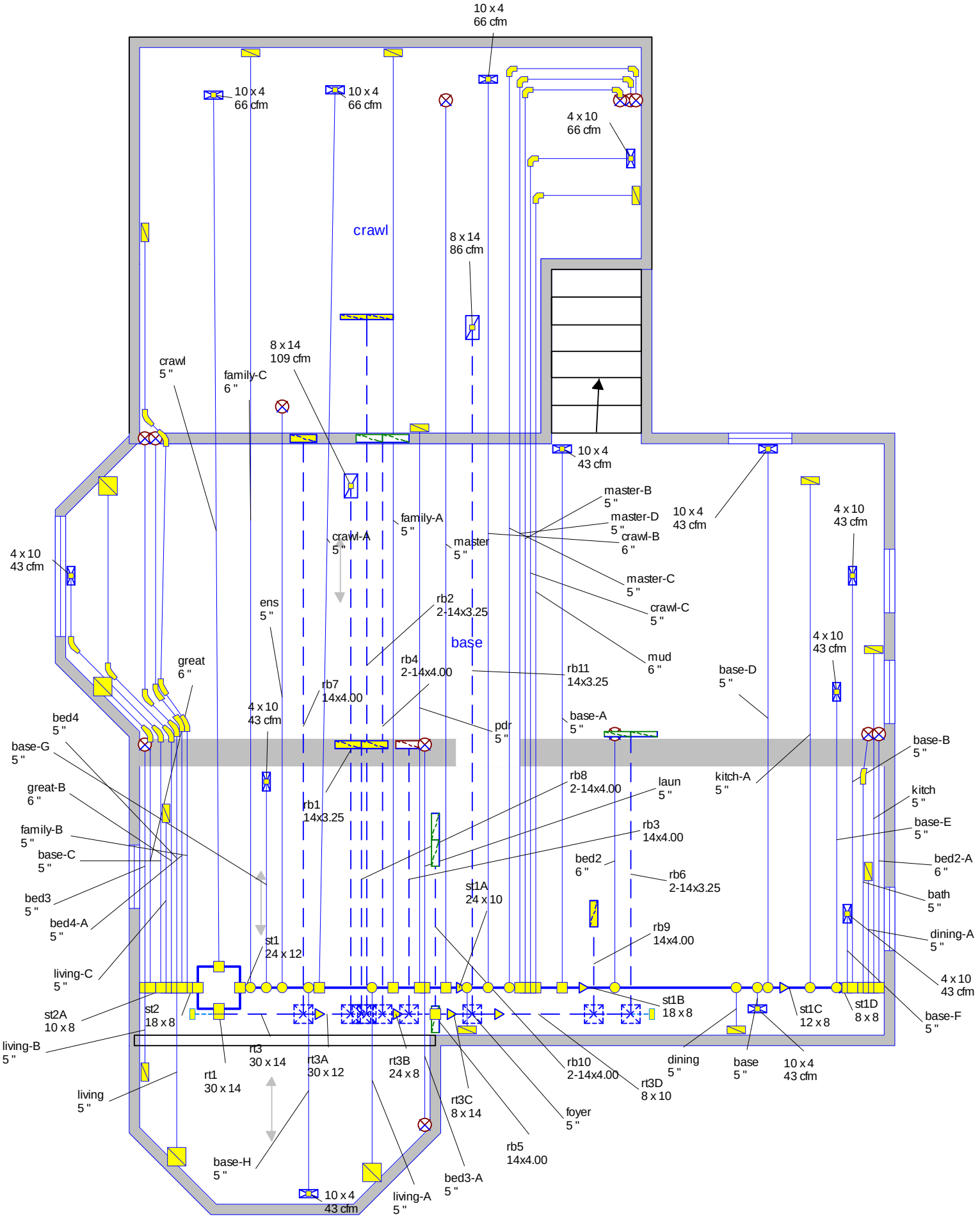
wrightsoft

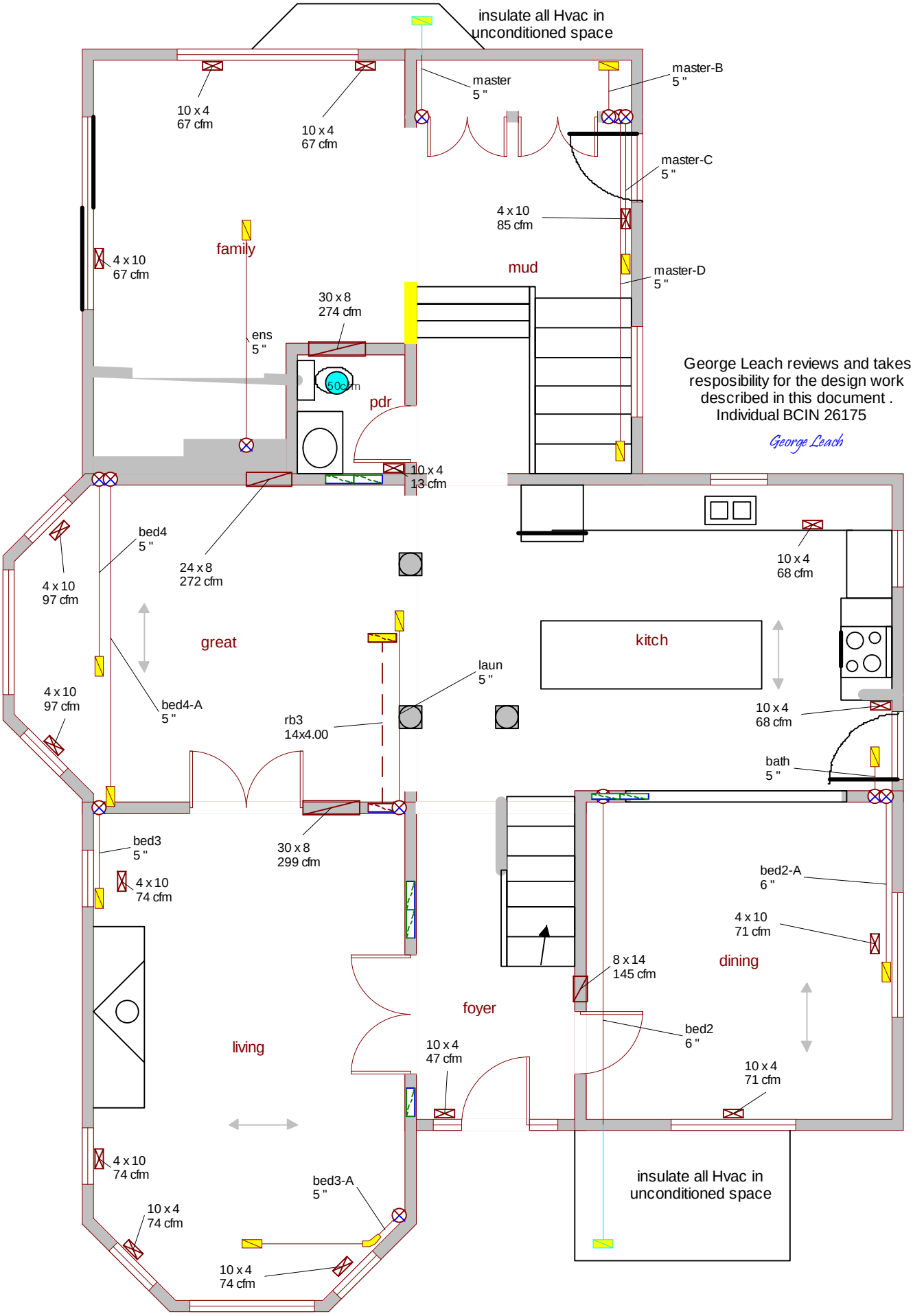
Right-F280™ Worksheet
Entire House
GLS Total Hvac Design

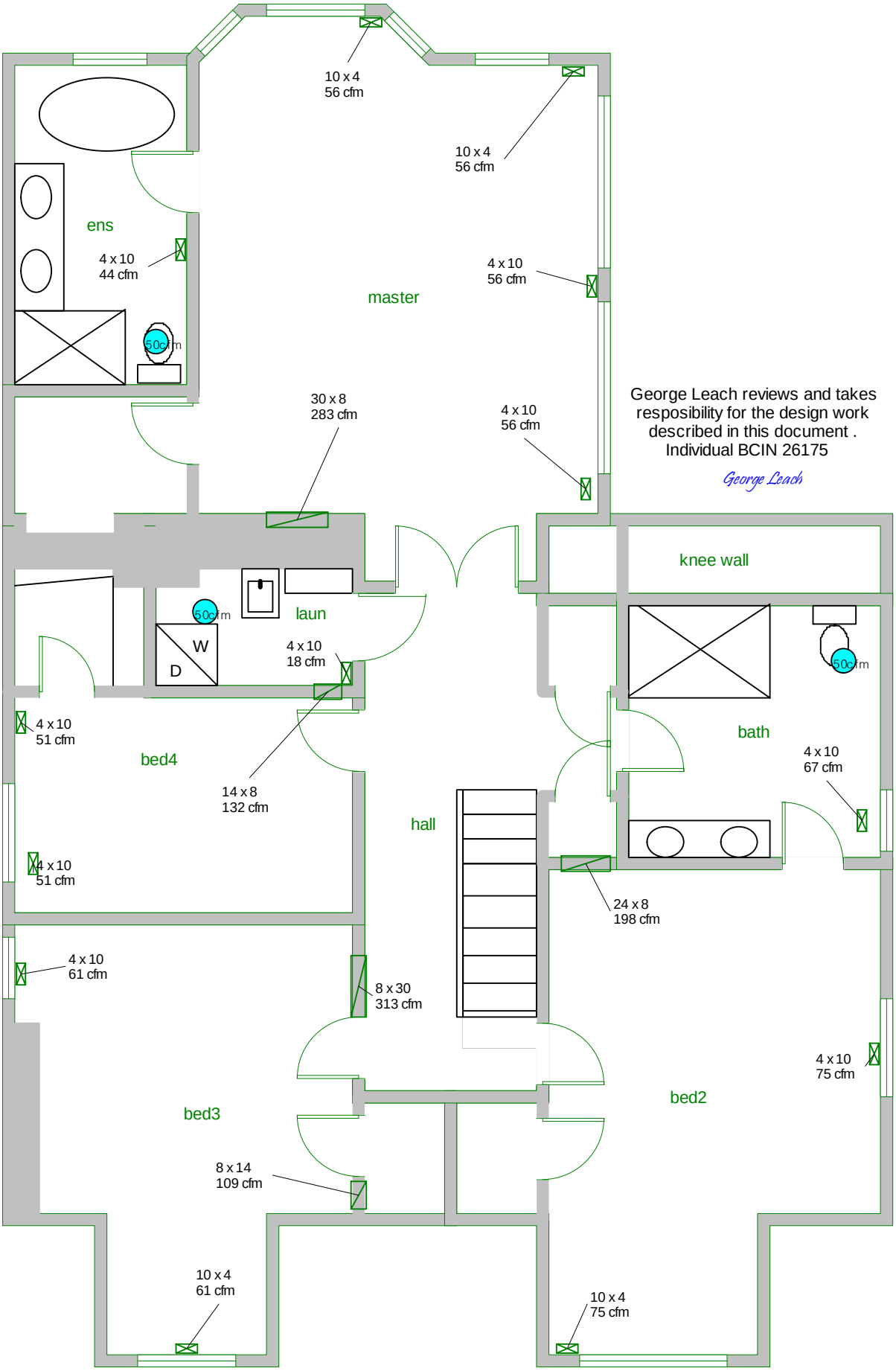
Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

1	Room name						master				crawl							
2	Exposed wall						42.4 ft				53.5 ft							
3	Room dimensions						1.0 x 389.6 ft				1.0 x 415.5 ft							
4	Room height						10.0 ft heat/cool				1.0 ft heat/cool							
	Ty	CST	R - value	Or	TD/R (Btuh/ft²)		Area (ft²) or perim (ft)		Load (Btuh)		Area (ft²) or perim (ft)		Load (Btuh)		Area or perim		Load	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
5	W	R16	15.87	n	4.6	0.5	28	20	91	9	0	0	0	0				
	└G	Existng	2.13	n	34.0	19.8	8	0	284	165	0	0	0	0				
	W	R12Mf	12.05	ne	6.0	1.1	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0				
	W	R16	15.87	ne	4.6	0.8	188	132	600	107	0	0	0	0				
	└G	Existng	2.13	ne	34.0	34.3	56	0	1906	1918	0	0	0	0				
	W	R20Bw	21.12	ne	3.4	0.6	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	ne	63.0	64.0	0	0	0	0	0	0	0	0				
	W	R12Mf	12.05	e	6.0	1.4	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	e	63.0	85.7	0	0	0	0	0	0	0	0				
	W	R20Bw	21.12	e	3.4	0.8	0	0	0	0	0	0	0	0				
	W	R12Mf	12.05	se	6.0	1.3	0	0	0	0	0	0	0	0				
	├G	19B0	1.15	se	63.0	85.9	0	0	0	0	0	0	0	0				
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0				
	├G	19B0	1.15	se	63.0	39.9	0	0	0	0	0	0	0	0				
	├G	Existng	2.13	se	34.0	47.4	0	0	0	0	0	0	0	0				
	└D	23E0	11.34	se	6.4	1.3	0	0	0	0	0	0	0	0				
	W	R20Bw	21.12	se	3.4	0.7	0	0	0	0	0	0	0	0				
	W	R12Mf	12.05	s	6.0	0.8	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	s	63.0	61.0	0	0	0	0	0	0	0	0				
	W	R20Bw	21.12	s	3.4	0.5	0	0	0	0	0	0	0	0				
	W	R12Mf	12.05	sw	6.0	1.3	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0				
	W	R16	15.87	sw	4.6	1.0	53	53	239	50	0	0	0	0				
	└G	Existng	2.13	sw	34.0	47.4	0	0	0	0	0	0	0	0				
	W	R20Bw	21.12	sw	3.4	0.7	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	sw	63.0	85.9	0	0	0	0	0	0	0	0				
	W	R12Mf	12.05	w	6.0	1.4	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	w	63.0	85.7	0	0	0	0	0	0	0	0				
	W	R16	15.87	w	4.6	1.1	28	20	91	21	0	0	0	0				
	└G	Existng	2.13	w	34.0	47.2	8	0	284	394	0	0	0	0				
	W	R20Bw	21.12	w	3.4	0.8	0	0	0	0	0	0	0	0				
	W	R12Mf	12.05	nw	6.0	1.1	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0				
	W	R16	15.87	nw	4.6	0.8	128	100	454	81	0	0	0	0				
	└G	Existng	2.13	nw	34.0	34.3	28	0	953	959	0	0	0	0				
	W	R20Bw	21.12	nw	3.4	0.6	0	0	0	0	0	0	0	0				
	└G	19B0	1.15	nw	63.0	64.0	0	0	0	0	0	0	0	0				
	C	R40	38.21	-	1.9	1.1	390	390	738	418	0	0	0	0				
	F	BCIN_1	n/a	-	n/a	0.0	0	0	0	0	0	0	0	0				
	F	BCNN_1	n/a	-	n/a	0.0	0	0	0	0	416	416	4416	0				
	F	R8P	8.77	-	8.3	1.6	16	16	128	25	0	0	0	0				
6	Total conductive loss/gain								5767	4147			4416	0				
7	a) Infiltration								2668	316			9157	0				
	b) Ventilation								0	0			0	0				
8	Internal gains: People@ 240							2		480		0		0				
	Electric/Appliances									320				320				
	Subtotal (lines 6 to 8)								8434	5264			13573	320				
9	Less external load								0	0			0	0				
10	Less transfer								0	0			0	0				
11	Subtotal								8713	5477			13573	320				
12	Distribution losses			Ducts			0%	0%	0	0	0%	0%	0	0				
				Hydronic			0%		0		0%		0					
	Redistribution								278	213			0	0				
13	Total room load								8713	5477			13573	320				
14	Air required (cfm)								169	224			263	13				


10 x 4
66 cfm
10 x 4
66 cfm
10 x 4
66 cfm
4 x 10
66 cfm
crawl
8 x 14
86 cfm
8 x 14
109 cfm
crawl
5 "
family-C
6 "
10 x 4
43 cfm
master-B
5 "
master-D
5 "
crawl-B
6 "
10 x 4
43 cfm
4 x 10
43 cfm
family-A
5 "
crawl-A
5 "
master
5 "
4 x 10
43 cfm
master-C
5 "
crawl-C
5 "
ens
5 "
rb2
2-14x3.25
base
mud
6 "
4 x 10
43 cfm
great
6 "
rb4
2-14x4.00
rb11
14x3.25
base-D
5 "
rb7
14x4.00
4 x 10
43 cfm
pdr
5 "
base-A
5 "
bed4
5 "
base-G
5 "
base-B
5 "
great-B
6 "
rb8
2-14x4.00
laun
5 "
kitch-A
5 "
kitch
5 "
rb1
14x3.25
family-B
5 "
rb3
14x4.00
base-E
5 "
base-C
5 "
bed2
6 "
bed2-A
6 "
rb6
2-14x3.25
bed3
5 "
st1A
24 x 10
bath
5 "
bed4-A
5 "
rb9
14x4.00
dining-A
5 "
st1
24 x 12
living-C
5 "
4 x 10
43 cfm
st2A
10 x 8
st2
18 x 8
st1B
18 x 8
st1C
12 x 8
st1D
8 x 8
base-F
5 "
living-B
5 "
rt3
30 x 14
rt3A
30 x 12
rt3B
24 x 8
rb10
2-14x4.00
rt3D
8 x 10
dining
5 "
base
5 "
10 x 4
43 cfm
rt1
30 x 14
rt3C
8 x 14
foyer
5 "
living
5 "
rb5
14x4.00
base-H
5 "
bed3-A
5 "
10 x 4
43 cfm
living-A
5 "


insulate all Hvac in unconditioned space
10 x 4
67 cfm
10 x 4
67 cfm
master
5 "
master-B
5 "
master-C
5 "
4 x 10
85 cfm
master-D
5 "
family
mud
4 x 10
67 cfm
30 x 8
274 cfm
ens
5 "
50cfm
pdr
10 x 4
13 cfm
George Leach reviews and takes resposibility for the design work described in this document .
Individual BCIN 26175
George Leach
bed4
5 "
4 x 10
97 cfm
24 x 8
272 cfm
10 x 4
68 cfm
great
kitch
laun
5 "
4 x 10
97 cfm
bed4-A
5 "
rb3
14x4.00
10 x 4
68 cfm
bath
5 "
bed3
5 "
30 x 8
299 cfm
4 x 10
74 cfm
bed2-A
6 "
4 x 10
71 cfm
dining
8 x 14
145 cfm
foyer
bed2
6 "
living
10 x 4
47 cfm
10 x 4
71 cfm
4 x 10
74 cfm
bed3-A
5 "
10 x 4
74 cfm
10 x 4
74 cfm
insulate all Hvac in unconditioned space


10 x 4
56 cfm
10 x 4
56 cfm
ens
4 x 10
44 cfm
master
4 x 10
56 cfm
50cfm
30 x 8
283 cfm
4 x 10
56 cfm
George Leach reviews and takes resposibility for the design work described in this document .
Individual BCIN 26175
George Leach
knee wall
laun
50cfm
W
D
4 x 10
18 cfm
50cfm
4 x 10
51 cfm
bed4
bath
4 x 10
67 cfm
14 x 8
132 cfm
hall
4 x 10
51 cfm
24 x 8
198 cfm
4 x 10
61 cfm
8 x 30
313 cfm
4 x 10
75 cfm
bed3
bed2
8 x 14
109 cfm
10 x 4
61 cfm
10 x 4
75 cfm

Duct System Summary
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

Project Information

For: btM Drafting & Design
915 North Service Road, Mississauga
Phone: 905 393 8005
Email: btmdrafting@gmail.com

	Heating	Cooling
External static pressure	0.60 in H2O	0.60 in H2O
Pressure losses	0.23 in H2O	0.23 in H2O
Available static pressure	0.37 in H2O	0.37 in H2O
Supply / return available pressure	0.185 / 0.185 in H2O	0.185 / 0.185 in H2O
Lowest friction rate	0.073 in/100ft	0.073 in/100ft
Actual air flow	1994 cfm	1994 cfm
Total effective length (TEL)	509 ft	

Supply Branch Detail Table

Name		Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
base	h	2213	43	16	0.147	5.0	0x 0	ShMt	25.5	100.0	st1B
base-A	h	2213	43	16	0.147	5.0	0x 0	ShMt	40.8	85.0	st1A
base-B	h	2213	43	16	0.098	5.0	0x 0	ShMt	48.5	140.0	st1D
base-C	h	2213	43	16	0.125	5.0	0x 0	ShMt	23.0	125.0	st2A
base-D	h	2213	43	16	0.131	5.0	0x 0	ShMt	50.5	90.0	st1B
base-E	h	2213	43	16	0.135	5.0	0x 0	ShMt	42.3	95.0	st1C
base-F	h	2213	43	16	0.101	5.0	0x 0	ShMt	32.3	150.0	st1D
base-G	h	2213	43	16	0.108	5.0	0x 0	ShMt	11.0	160.0	st1
base-H	h	2213	43	16	0.121	5.0	0x 0	ShMt	13.0	140.0	st1
bath	c	1626	47	67	0.101	5.0	0x 0	ShMt	52.3	130.0	st1D
bed2	c	1844	66	75	0.093	6.0	0x 0	ShMt	58.5	140.0	st1B
bed2-A	c	1844	66	75	0.103	6.0	0x 0	ShMt	59.0	120.0	st1D
bed3	c	1492	50	61	0.140	5.0	0x 0	ShMt	27.0	105.0	st2A
bed3-A	c	1492	50	61	0.122	5.0	0x 0	ShMt	31.3	120.0	st1
bed4	c	1239	30	51	0.106	5.0	0x 0	ShMt	44.9	130.0	st2
bed4-A	c	1239	30	51	0.097	5.0	0x 0	ShMt	50.2	140.0	st2
crawl	h	3393	66	3	0.227	5.0	0x 0	ShMt	41.3	40.0	
crawl-A	h	3393	66	3	0.105	5.0	0x 0	ShMt	46.3	130.0	st1
crawl-B	h	3393	66	3	0.092	6.0	0x 0	ShMt	54.8	145.0	st1A
crawl-C	h	3393	66	3	0.107	5.0	0x 0	ShMt	57.8	115.0	st1A
dining	c	1743	66	71	0.136	5.0	0x 0	ShMt	25.5	110.0	st1B
dining-A	c	1743	66	71	0.119	5.0	0x 0	ShMt	35.3	120.0	st1D
ens	c	1073	43	44	0.085	5.0	0x 0	ShMt	48.0	170.0	st1
family-A	c	1632	43	67	0.114	5.0	0x 0	ShMt	51.5	110.0	st1
family-B	c	1632	43	67	0.118	5.0	0x 0	ShMt	37.1	120.0	st2
family-C	c	1632	43	67	0.086	6.0	0x 0	ShMt	44.8	170.0	st1
foyer	c	1147	42	47	0.110	5.0	0x 0	ShMt	12.8	155.0	st1A
great	c	2378	56	97	0.151	6.0	0x 0	ShMt	17.4	105.0	st2A
great-B	c	2378	56	97	0.146	6.0	0x 0	ShMt	26.2	100.0	st2
kitch	c	1653	54	68	0.118	5.0	0x 0	ShMt	46.0	110.0	st1D
kitch-A	c	1653	54	68	0.118	5.0	0x 0	ShMt	51.0	105.0	st1C
laun	c	428	4	18	0.125	5.0	0x 0	ShMt	37.5	110.0	st1
living	c	1802	47	74	0.187	5.0	0x 0	ShMt	9.0	90.0	st2
living-A	c	1801	47	74	0.137	5.0	0x 0	ShMt	15.0	120.0	st1
living-B	c	1801	47	74	0.202	5.0	0x 0	ShMt	6.5	85.0	st2A
living-C	c	1801	47	74	0.148	5.0	0x 0	ShMt	9.8	115.0	st2A
master	c	1369	42	56	0.112	5.0	0x 0	ShMt	65.0	100.0	st1
master-B	c	1369	42	56	0.081	5.0	0x 0	ShMt	72.3	155.0	st1A
master-C	c	1369	42	56	0.073	5.0	0x 0	ShMt	79.3	175.0	st1A
master-D	c	1369	42	56	0.074	5.0	0x 0	ShMt	86.3	165.0	st1A
mud	c	2065	77	85	0.115	6.0	0x 0	ShMt	56.3	105.0	st1A
pdr	c	320	0	13	0.137	5.0	0x 0	ShMt	35.0	100.0	st1

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	1479	1330	0.073	739	19.0	12 x 24	ShtMetl	
st2A	Peak AVF	244	322	0.125	579	12.3	8 x 10	ShtMetl	st2
st2	Peak AVF	450	661	0.097	661	12.3	8 x 18	ShtMetl	
st1A	Peak AVF	1055	896	0.073	633	19.0	10 x 24	ShtMetl	st1
st1B	Peak AVF	635	574	0.093	635	19.0	8 x 18	ShtMetl	st1A
st1C	Peak AVF	417	396	0.098	625	19.0	8 x 12	ShtMetl	st1B
st1D	Peak AVF	320	313	0.098	720	19.0	8 x 8	ShtMetl	st1C

Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb5	14x 6	109	91	192.8	0.096	281	6.1	4.00x14	10x11	SJSp	rt3B
rb10	30x 8	225	313	190.8	0.097	403	9.0	2-4.00x14	2-10x22	SJSp	rt3B
rb4	30x 7	219	283	249.3	0.074	364	9.1	2-4.00x14	2-10x22	SJSp	rt3A
rb11	14x 5	86	31	194.8	0.095	271	5.6	3.25x14	10x9	SJSp	rt3C
rb1	14x 6	109	19	151.5	0.122	344	5.8	3.25x14	10x9	SJSp	rt3A
rb9	14x 8	114	145	202.8	0.091	373	6.8	4.00x14	10x11	SJSp	rt3D
rb8	30x 7	299	281	179.8	0.103	385	8.7	2-4.00x14	2-10x22	SJSp	rt3A
rb2	30x 7	274	254	240.3	0.077	434	8.9	2-3.25x14	2-10x18	SJSp	rt3A
rb7	24x 8	246	272	136.5	0.136	699	8.0	4.00x14	10x11	SJSp	rt3
rb3	14x 7	132	105	203.5	0.091	339	6.6	4.00x14	10x11	SJSp	rt3B
rb6	24x 6	181	198	255.0	0.073	313	8.0	2-3.25x14	2-10x18	SJSp	rt3D

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt3A	Peak AVF	1748	1722	0.073	699	21.2	12 x 30	ShtMetl	rt3
rt3B	Peak AVF	846	884	0.073	663	21.2	8 x 24	ShtMetl	rt3A
rt3C	Peak AVF	380	375	0.073	489	21.2	14 x 8	ShtMetl	rt3B
rt3D	Peak AVF	295	343	0.073	617	21.2	10 x 8	ShtMetl	rt3C
rt3	Peak AVF	1994	1994	0.073	684	21.2	14 x 30	ShtMetl	rt1
rt1	Peak AVF	1994	1994	0.073	684	21.2	14 x 30	ShtMetl	

F280 Infiltration Report
Entire House
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

Project Information

For: btM Drafting & Design
915 North Service Road, Mississauga
Phone: 905 393 8005
Email: btmdrafting@gmail.com

Design Conditions

House type	Detached
Site	Suburban, forest
Wall shielding	Light local shielding
Storeys	2.0 (w/o basement)
Highest ceiling height (ft)	20.0
Foundation	Full

Air Leakage

Air tightness	Loose (Pre-1945) (ACH=10.35)

Flues

Shielding	Heavy shielding			
	#1	#2	#3	#4
Diameter (in)	0	0	0	0

Summary

Heating

Infiltation area	4802	ft²
Infiltration volume	39312	ft³
Unadjusted air change rate	0.882	ach
Unadjusted AVF	578	cfm
Vent adjustment	0	cfm
Net AVF	578	cfm
Net air change rate	0.882	ach

Cooling

Infiltration area	4802	ft²
Infiltration volume	39312	ft³
Unadjusted air change rate	0.296	ach
Unadjusted AVF	194	cfm
Vent adjustment	0	cfm
Net AVF	194	cfm
Net air change rate	0.296	ach

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

Room Name	Level Factor	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
base	0.50	13438	222	172	15
family	0.30	2217	324	28	21
pdr	0.30	0	0	0	0
mud	0.30	1320	124	17	8
great	0.30	1927	314	25	21
foyer	0.30	713	59	9	4
kitch	0.30	1856	212	24	14
dining	0.30	2274	224	29	15
living	0.30	3251	488	42	32
bed3	0.20	1590	165	20	11
bed2	0.20	2116	211	27	14
hall	0.20	167	16	2	1
knee wall	0.20	204	9	3	1
bath	0.20	607	65	8	4
bed4	0.20	938	130	12	9
laun	0.20	52	5	1	0
ens	0.20	695	53	9	4
master	0.20	2668	316	34	21
crawl	0.50	9157	0	117	0
Entire House	0	45190	2936	578	194

F280-12 Basement/Slab Heat Loss
For BCIN_1
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

Project Information

For: btM Drafting & Design
915 North Service Road, Mississauga
Phone: 905 393 8005
Email: btmdrafting@gmail.com

Weather Station

Province	ON
Region	Mississauga

Foundation Dimensions

Floor length (ft)	65.8
Floor width (ft)	24.5
Exposed perimeter (ft)	180.5
Wall height (ft)	7.8
Depth below grade (ft)	7.0
Window area (ft²)	39.3
Door area (ft²)	0

Radiant Slab

Heated fraction	0

Design Months

Heating month	1

Foundation Loads

Heating load (Btuh)	3794

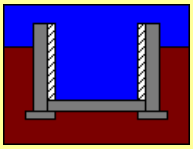
Site

Soil conductivity	High - moist soil
Water table	Normal (23-33 ft)

Insulation Configuration

Configuration	BCIN_1

Int wall insul (ft²-°F/Btuh) 21.12



- concrete walls and floor
- interior surface of wall insulated over full-height
- any first storey construction type

Load Allocation

Room	Exposed perimeter (ft)	Heating load (Btuh)
base	127.0	3794

F280-12 Basement/Slab Heat Loss
For BCNN_1
GLS Total Hvac Design

Job: T17-063
Date: 9/14/2017
By: George Leach
Plan: Sb12-Reno

Cert.#: 26175(RHLG, RASD)
5149 White Church rd, Mt Hope, Ont L0R 1W0 Phone: 905 692 3522 Email: Glshvacdesign@rogers.com License: Bcin 26175

Project Information

For: btM Drafting & Design
915 North Service Road, Mississauga
Phone: 905 393 8005
Email: btmdrafting@gmail.com

Weather Station

Province	ON
Region	Mississauga

Foundation Dimensions

Floor length (ft)	65.8
Floor width (ft)	24.5
Exposed perimeter (ft)	180.5
Wall height (ft)	1.0
Depth below grade (ft)	7.0
Window area (ft²)	0
Door area (ft²)	0

Radiant Slab

Heated fraction	0

Design Months

Heating month	1

Foundation Loads

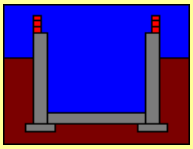
Heating load (Btuh)	4416

Site

Soil conductivity	High - moist soil
Water table	Normal (23-33 ft)

Insulation Configuration

Configuration	BCNN_1



- concrete walls and floor
- no insulation
- first storey brick veneer placed directly on basement's concrete walls

Load Allocation

Room	Exposed perimeter (ft)	Heating load (Btuh)
crawl	53.5	4416

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY
for design and performance of residential ventilation systems to OBC 206 Div. B9.32

1. Location
Township:
Civic Address:

2. Builder
Name:
Address: City:
Postal Code: Ph: Fax :

3. Designer
Name: **GEORGE LEACH**
Firm BCIN: Designer BCIN **26175**
Address **5149 Whitechurch Rd E** City Mt Hope
Postal Code: **L0R 1W0** **Phone: 905-692-3522** **Fax: 905-692-3522**

4. Heating System
[x] Forced Air [ ] Non Forced Air
[ ] Electric [ ] Gas Oil Other

5. Combustion Appliances 9.32 3.1.(1)
[x] a) Direct Vent — No Depressuization limit
[ ] b) Induced Draft ____ pa depressurization limit
[ ] c) Natural Draft — 5 pa depressurization limit
[ ] d) Solid Fuel Appliances — 5 pa depressurization limit
[ ] e) No Combustion Appliances — No Depressurization limit

6. Type of House 9.32.3.1.(2)
[x] Type 1 a) or b) type appliances only
[ ] Type 2 a) or b) type appliances with a d) type appliance
[ ] Type 3 any type c) appliance = part 6 design
[ ] Type 4 electric space heat

7. System Design Option
[ ] Exhaust only forced air system/coupled
[x] HRV with extended exhaust or simplified coupled
[ ] HRV full ducted/not coupled to forced air
[ ] Part 6 design

8. TVC Capacity [room count OBC 9.32.3.3.(1).(a)]

Bsmt & Master bedroom	2	@	21.2	CFM (10 L/S)	42.4 CFM(L/S)
Other Bedrooms	3	@	10.6	CFM (5 L/S)	31.8 CFM(L/S)
Bathroom & Kitchen	4	@	10.6	CFM (5 L/S)	42.4 CFM(L/S)
Other Habitable Rooms	4	@	10.6	CFM (5 L/S)	42.4 CFM(L/S)
Total Ventilation Capacity room count (TVC)					159.0 CFM(L/S)

10. House TVC Total Capacity
Greatest of **room count or 0.3 air change =** **159.0** CFM(L/S)

11. TVXC System
[x] HRV [ ] Central Exhaust [ ] Multiple Fans

12. Principal Exhaust Fan Capacity (PEF)

Master Bedroom	1	@	31.8	CFM(15L/s)	31.8 CFML(L/S)
Other Bedrooms	2	@	15.9	CFM7.5L/s)	31.8 CFML(L/S)
				TOTAL	63.6 CFML(L/S)

13. Principal Exhaust Fan
Fan 1 Location Basement
Manufacturer/Model Vanee200 H [x] HVI rate
Design Airflow 192 CFM(L/S) HIGH 82 CFML (L/S) LOW ____ Sones
HRV/ERV 75 % Sensible Efficiency @ 0◦C 98 watts
76 % Sensible Efficiency @-25◦C 98 watts

14. Supplemental Exhaust Fan Capacity (SEF)

Total Ventilation Capacity	159.0	CFML(L/S)
Less Principal Ventilation Capacity	159	CFML(L/S)
Required Supplemental Ventilation Capacity	0.0	CFML(L/S)

Fan 2

15. Additional Equipment
Location Pdr,bath 3 Sones
Manufacturer/Model BroanEC50 [ ] TVC
Design airflow 50 CFML(L/S)

Fan 3
Location ens 3 Sones
Manufacturer/Model BroanEC50 [ ] TVC
Design airflow 50 CFML(L/S)

Fan 4
Location laund 3 Sones
Manufacturer/Model BroanEC50 [ ] TVC
Design airflow 50 CFML(L/S)

16. Designer Consent
I, _____ have reviewed and take responsibility for the design work described in this document and I am qualified in the appropriate categories.

August 5, 2017

Proposal: **915 North Service Road, Mississauga**
Owner: Jade Capital Inc. / Rick Rye Agent
Restoration of historic Arts & Crafts House
Known as the Hedge House
Designed by Dixie Cotton Cox Architect
Designated: Part IV Ontario Heritage Act 1986
Heritage Report by Megan Hobson, M.A. Dipl. Heritage Conservation

Proposal Provider: **Murison Restoration**
288 Woodale Avenue
Oakville, Ontario
L6K – 2N6

This lovely Arts & Crafts residence, designed by Architect Dixie Cox Cotton, is currently unoccupied and subject (as you have described) to a stop work order following some demolition work at the first floor. The house is designated both for the exterior and internal elements such as windows, doors, trim, stairs & the kitchen.

The house has been flooded by water from a broken pipe on the second floor, causing damage to the interior (which has a heritage designation). Much of the interior trim has been recently looted by professional thieves who removed hardware, doors, trim, baseboards and other finish elements. The removal of the doors and trim was probably limited by the size of the vehicle used to haul the materials away because several doors were left behind on the ground floor. Seven doors were removed from the second floor with the hinge pins knocked out to allow rapid disassembly. Two disassembled doors on the ground floor remain but the mortised knobsets have been removed as well as the hinges. Screw were taken with the hinges indicating that the intent is to sell the hardware complete, when they have returned and stripped the remaining half hinges from the door jambs. Baseboards remain in one room where they were painted, not varnished. This is another indication that the thief or thieves were after varnished trim for rapid sale. A Styrofoam block has knee impressions found in the west second floor bedroom which indicates that the person removing the baseboards has issues with their knees and is not young. They use the foam block to ease the pressure when working on their knees and from the depth of impressions in the foam, (and based on my own use of such things) is lighter than me and weighs approximately 180 – 200 pounds. Entry to the house was likely through the front window which was partly open. The thief would then able to open the rear door from inside and take the doors

and trim out at the rear of the house to a parked vehicle where it would be very secluded from observation even by neighbours.

General clean up is required to prepare the house for repairs. The demolition debris of plaster, lath, insulation, strapping & wood trim will require care to see if some of the missing parts such as baseboards and mouldings are still in the house. Even if broken, profiles may be obtained from base boards, casing, jambs, crown moulds, panels, etc.. Replacement parts require this information to allow accurate reproduction of the missing items. Unless the architect has been retained to prepare shop drawings, this would have to be done as part of my work, then submitted for review and approval.

1)	Time to catalogue items	3.0 hrs.
2)	Prepare shop drawings at appropriate scale	9.0 hrs.
3)	Reproduction & copies $ 75.00	
4)	One meeting to review the drawings	2.0 hrs.
Subtotal:	14 hrs. @$45 = $ 630 + $ 75 =	$ 405.00

Secure window openings with fitted plywood panels, (5/8" exterior & interior with carriage bolts to form non-destructive "sandwich" to protect entire window openings). Use of carriage bolts makes removal very difficult from the exterior. If this is done by a third party before our work begins, we do not have to budget for it. If we have to supply & install, allowance: $1,500 for all openings.

Waste Removal by others. Bins at cost plus disposal fees and taxes. Bins with sorted waste will cost between $500 - $800 per load.

Temporary gate/chain/security system to prevent further theft during construction. This gate should be installed just inside the property line so that vehicles approaching the house must stop where visible and be prevented from accessing the rear of the house. Gate may be removed later, but must be durable. By others.

Trim cannot be replaced until the walls are corrected with firring, insulation, wiring & new wall finishes. Whether wall board, or plaster skimmed wall board, or built-up plaster on mesh is used to restore the walls, they must be made true, plumb and as square as possible to allow the trim, baseboard, crown mould, window trim etc. to be installed. This means that the preparation of the wood finishes must be coordinated with other trades with substantial allowance for correct temperatures, clear space to work, dust free conditions etc.. Normally the general contractor is involved in ensuring that this happens, but since the interior work is so important in this project, our trades can take a lead in coordination & defining when this work is done, if given this responsibility by the Owner / Developer.

All permits for restoration by other trades the responsibility of the Owner / Developer. Permits are not required for the Carpentry Restoration. However, the designation of the interior requires that we document all work and inform the Architect, Owner / Developer, and Heritage Department at each stage of the work. We would normally allow that the Architect take the lead role, since this is their expertise and professional responsibility, fees permitting. However, we recognize that the City of Mississauga may wish for timely or immediate access to review at any point during the work. Therefore, we are prepared to provide this service, if required by all parties, for an hourly rate. We anticipate that documentation can take the form of short reports, with photographs & sketches, sent as emails, as required, after regular hours. All reports should be copied automatically to the Owner / Developer, Architect & Heritage Planner.

Schedule: The work must be done with suitable environmental controls for finishes. Exterior painting must occur while temperatures are above 15 degrees C. for at least 48 hours. Prefinishing materials, especially wood trim can be done in a heated shop provided similar minimum temperatures can be maintained. The work can begin in the shop during winter but cannot be completed until the summer of 2018, (late April to early October). Sealants for windows require similar temperatures and schedule for installation.

Estimated costs for the work:

1.	Restoration of all windows as described	$ 44,750
2.	Restoration & replacement of all doors & hardware	$ 13,670
3.	Supply & install new doors at 2nd floor M.Brm. to match	$ 3,950
4.	Repair & replace baseboards & trim, varnish grade white oak, quarter sawn to match originals. Replace all missing casing, trim, surrounds, wainscot & cap rail varnish grade white oak, quarter sawn to match.	$ 28,450
5.	Replace stair treads with new quarter sawn w. oak caps & selectively replace damaged panels. Refinish complete stairs.	$ 7,960
6.	Repairs to subframing, installation of new openings & modifications to panels, crown moulds etc., new plan.	$ 5,300
7.	Preliminary work, shop drawings, coordination etc.	$ 6,100
8.	Prices for some ancilliary items such as fireplace mantles, restored fireboxes etc. included in Appendix.	$ 16,000
Subtotal:		$ 126,180
	Contingency	$ 14,820
Total:		$ 140,000

Please note: This estimate is for budget purposes only. Subject to change if more damage occurs and parts removed from the house by third parties. Materials costs subject to approval. The original quarter sawn white oak was high quality and may require considerable expense to match. The missing chestnut trim cannot be matched due to the extinction of domestic chestnut in the great blight of 1890 – 1910. White oak will be recommended as a substitute if it matches the rest of the trim. Finishes subject to approval. The original varnishes contain VOC's. We will seek to match the finishes regardless of current standards of finish, but this may require importation of certain products from outside Canada. Custom hardware may require specific fabrication to match the original, particularly for the strike plates.

The ultimate goal here, should be to match the original materials and finishes precisely. Cost may vary depending on the standards which are approved. The budget price reflects a generally high standard of work, but may need to be increased beyond the contingency for full Heritage Compliance.

Thank you for the opportunity to provide this quotation.

Tom Murison / Murison Restoration

ADDENDUM:

Missing materials are as follow:

1. Oak quarter sawn veneer/block core & solid panel doors
Closet doors (3) with hinges, passage sets & strikes
Hall doors (4) with half hinges, passage or locking sets & strikes
Double doors (2 pair) with hinges, probably full 190 degree sprung
Note: These items were included in the designation so must be reproduced to match the original units. The surviving four doors will be used as models for the new doors in detail & construction. The front door including lockset hinges & strike plate was intact. The double doors, glass or French doors, were hinged at the jambs and used for the 6 foot wide opening between principle rooms. The single panel door (missing hinges & knobset) is typical of other doors from the second floor and may be used as a model for construction, wood quality & finish. Doors 32" - 36" x 80" $950 each. Doors 24" – 28" x 80" $850 each. Subtotal 10 doors $ 10,170 supply only. Installation

2. Door surrounds including head and jamb trim, back bands (if present) Much of the millwork has been stripped and will have to be replicated from scratch. Reconstruction of partitions with gypsum wall board will require some shimming, as lath and plaster was used to "straighten" the less accurate framing of the early twentieth century. New trim will be nailed with care to conceal nails below the surface. Several techniques may have been used including "blind" nailing which required lifting a curved wedge from the surface to allow the nail to be set below. The wedge was then glued back in place to hide the nail. Evidence for this will be sought to determine the best method for installation. For consistency of design & value for marketing, it is most likely that the same details will be used throughout the second floor including the refurbished master bedroom, since the doors to this room must match those of the rest of the hallway. Doors, trim & baseboard for this room have been included in the calculations of total quantity.

3. Door hardware, including mortise locks, knobsets, strike plates & hinges. If mortise locks & knobsets are unavailable in quantity to restore the doors, new high quality locksets will have to be substituted. Emtek locks are high quality, durable and offer ferrules & knobs that are very close to those used on the doors. These units are

4. Baseboard (approx.. 8" high x ¾" thick) with moulded profile at top edge. Will the room which has painted baseboard be returned to the varnished trim condition? It may be possible to remove the paint from the surviving baseboard, but chestnut is very porous. If the varnish did not penetrate & seal every hole, some paint will be encountered below the sanded surface. Trim in this room would also have to be included if the paint cannot be successfully removed for refinishing.

5. Window benches (built-in) on rail & panel frames. The benches were not, apparently, constructed with hinged lids. The solid bench tops will require lamination of new oak slabs, minimum 1" thick. Construction of the remainder of the facing and subframe will require rail & panel details, like the stair skirting.

6. Rail & Panel wall covering (skirting) at stairs. Clean & dismantle as necessary to allow repairs to oak veneer finishes, rails & panels. Removal of plaster & lath may be necessary to allow the paneling to be freed up from the wall for these repairs. Cut nails to prevent damage to the finishes. If the skirting requires complete removal (to replace the wall board for example), new blocking and methods of attachment such as French Cleats, may be required.

7. Tongue & groove wainscot with chair rail was present in the dining room. New tongue & groove material may be installed over strapping at suitable intervals. The chair rail was normally anchored directly to the framing before installation of the plaster. This is a superior method but would require the use of J-mould and careful taping to complete the finish of the drywall where it meets the chair rail. The modern convention of nailing the chair rail through the drywall may be substituted if it can be concealed properly.

8. Stained glass windows. In situ. Must be cleaned & straightened if needed by glass expert before remounting.

9. Windows
   a). basement windows. Clean & repair only, or replace with new top hung (awning) wood windows with 4 mm. glass. (4) units. Not included in the previous scope of work. Best option is to replace windows & frames entirely with new units flashed & sealed into masonry openings. $ 3,900
   b). single hung sash windows with counterweights (25) units. Remove putty & broken glass. Repair damaged parts of sash with matching pieces in clear white pine, set in epoxy. Use brass pins where necessary to cut small muntins to patch.

Replace entire muntin with new part (mortised) by disassembly of the unit to allow rebuilding. Epoxy seal exterior surface & edges & sand smooth & square for repainting. Use 4 mm. glass as specified with non-corroding stars & putty. Prime entire unit but allow putty to dry before finish painting. Note windows require weeks of high temperatures to cure fully, so this work must be started in a heated shop or before mid-September to ensure a full cure before reinstallation. Remove old sash cord & install new cord secured within grooves on sides of windows. Remove sash wheels & refurbish with new grease to ensure smooth operation. Replace damaged parts of mechanisms. Disassembly of fragile sash boxes may result in damage to thin covering boards. Replace as needed with new material to match. Clean inside of sash boxes. Reconnect sash weights with chains before closing. Where sash weights are excessively rough from casting process they will scar the interior of the sash box and result in excessive noise during operation. Clean up sash weights with coarse sanding to make slugs smooth. This will reduce noise during operation. Where sash cords slide through drilled holes without metal grommets, add new grommets to reduce wear on the cords. Note grommets were usually made from thin sheet brass, with rounded profiles at opening. Sash chain must be solid bronze & rated for 80 lb. load starting & stopping (due to higher G-force during rapid deceleration). While the sash will weigh approx.. 25 lbs. the combined 160 lb. capacity will prevent damage during regular use. New stops must be added to replace those damaged during disassembly and repair of the sash box cover boards. Pre-paint these cover boards before reassembly. (Paint on the sash cords & in the cord opening is the primary cause of failure in single hung sash, so must be avoided.)

Epoxy & low density filler	$ 225
Primer	$ 78
Paint	$ 84
Glass	
Putty	
Clear white pine for repairs	
Supply new sash chain, solid bronze 80 lb. rating	$ 525
Supply new sash pulleys (2-1/2") twelve pieces	$ 250
Heavy duty 340 stainless steel Killian hangers 27 sash	$ 360
No.75 delux sash springbolt* (3 position locking) 25 pcs.	$ 671

(* fully closed, vent opening, fully open positions)

c). fixed windows with diamond leaded lights. Clean & repair in place if possible. If glass is loose or lead cames deformed, the units must be removed for repair on a bench by a specialist.

Removal, restoration and reinstallation $2,100

d). Repair (3) exterior storm sash with new hardware, install Remove paint & putty, sand, repair with epoxy. Install new 4 mm. glass with stars & putty. Prime sash before putty. Supply & install new hardware to hang storm sash from head of window and secure when closed. When putty cured apply final coat to units. Allow two weeks before reinstallation.

e). build (19) new exterior storm sash with new hardware, install supply & install number head nails (1) per storm unit.

10. Doors

a). refurbish entry door & hardware. Lockset may be adequate if re-keyed . Deadbolt may be considered as an upgrade.
New Emtek bronze passage or privacy knob sets with crystal knobs $235 + tax, (each). 12 pcs. Solid brass 4 x 4 hinges per pair, $60 + tax. Subtotal $3,186 + $813.60 = $ 4,020.00
Labour to install locksets, hinges & jamb plates

b). repair & refurbish kitchen door. Replace lockset & add deadbolt (optional).

c). Build (1) pair interior oak veneer doors with block cores - re-install with new jambs as swing doors or as pocket doors with permission from Mississauga Heritage department.
Repair (1) pair interior oak veneer doors with block cores. Install with new jambs as swing doors or pocket doors. Not pocket door framing will require reframing the stud walls flanking the opening & supply & installation of new hardware track & hangers, for the doors.

d). repair & reinstall door from hall to dining room

e). build (1) pair of interior oak veneer doors with block cores for second floor master bedroom.

f). build (5) passage doors to bedrooms & bathroom, (4) new closet doors, to match, at narrower widths, (2) new doors for ensuits & walk-in closet in master brm. To match.

g). fabricate & install all jamb sets, casing & trim in varnished grade w. oak to match.

h). Mortise locksets are no longer made. While efforts to recover the original hardware may be unfruitful,

11. Crown moulding. White oak, dark stained with varnish.
Dismantle, clean & refurbish crown mould from dining & living rooms. Reinstall on finished wall board after leveling, taping & painting. Provide nailing blocks below new wallboard to allow securement to continuous strapping at the stud walls behind.
12. Stairs. Remove the existing damaged veneer treads. Adjust sub-treads or replace as needed to ensure tight fit into rabbets in newel posts & housed stringer. Fabricate & install new quarter sawn white oak treads on subtreads with new nosings as needed to ensure durability. Tighten pickets & railings as required. If plugs removed to tighten double threaded railing bolts, replace with new matching plugs, stained to finish.
13. Exterior door trim & thresholds. Supply & install new sweeps behind kick boards or rabbeted into the bottom of the door for concealment. Fibre sweeps are useful for uneven stone sills. Adjustable rubber gasket sweeps are best for preventing air flow under the doors. Supply & install new copper sprung gaskets at jamb stops if required.
14. Fabricate & install new white oak door surrounds for (2) openings between dining room and kitchen, & kitchen & great room. (Modification of crown mould may be necessary if walls change for plumbing). Head & jamb trim to match other openings.
15. Restore two fireplace mantles damaged during demolition of plaster walls. (Note: Arts & Crafts design allowed for specific nosings, brackets, mouldings & proportions which may require some adjustment in the reconstruction. Disassemble the badly damaged fireplace to the hearth. Replace the hearth stone with new slate slab if existing cracked or broken. Replace lintel and/or smoke chamber if broken or defective. Remove & replace firebrick in fireplace to renew the fireplace. Reconstruct the fireplace with existing and/or new matching limestone to reproduce the damaged front. Clean & repair second fireplace front as needed with new mantle to match that destroyed.
Masonry rebuild fireplace 1, $2,600 labour. Materials at cost plus delivery & taxes. Cleaning & repointing of second fireplace, plus new liner in firebox t.b.d. New stained oak mantlepieces (2), $3,200 plus materials.

End

BIOGRAPHIC INFORMATION
- RESTORATION SERVICES -

J. T. MURISON
288 WOODALE AVENUE
OAKVILLE, ONTARIO
L6K – 2N6
TEL: (905) 334 – 9120
EMAIL: murisont@gmail.com

AWARDS

- **HERITAGE AWARD: Ancilliary Buildings Toronto Railway Heritage Museum 2011**
- **Mississauga Heritage Award: 1614 Wintergardens Drive, Mississauga**
- **Milton Historical Society Award: Waldies Blacksmith Shop & Carriage Shop**
- **Town of Blairmore, Alberta: Commendation letter for Main Street project**

SKILLS

Architectural training including extensive reading in history, structures, design theory
Years of experience with the preparation of measured, design, working drawings, renderings, sketch details, historical reconstruction drawings, graphic representation of historic events, three dimensional and topographical models of historic sites. Sequential reconstruction drawings to show evolution of buildings & sites.
Investigation and building archaeology, analysis, archival research, and preparation of Restoration proposals for funding & submission to heritage committees, councils, & grant applications.
Investigation & reports for Engineering

SELECTED PROJECTS:

- **St. Pauls Church, Hamilton, Investigation, working drawings, supervision AVS**
- **The Monument, Battlefield Park, Investigation, working drawings AVS**
- **The Custom House Hamilton, Investigation, shop drawings AVS (Alan Seymour Architect)**
- **Museum of Steam & Technology, Investigation, working drawings, AVS**
- **Glen Cedar Bridge, working drawings, AVS (Alan Seymour Architect)**
- **The Cenotaph & Lion Monument, Stoney Creek, Investigation & specifications**
- **Church of the Redeemer, working drawings (Ian McGillivray Architect)**
- **1510 Bronte Road, Investigation only.**
- **Swallowtail Lighthouse, restoration of roof, walls, foundations, dormers**
- **Swallowtail Light Keeper's duplex, marine railway & 300' timber walkway**
- **Don Station, Cabin D, Tool shed & King Street Shanty, THRA Museum, Toronto**
- **Waldies Blacksmith Shop & Milton Historical Society offices, Milton**
- **Stewart House documentation, disassembly, relocation, drawings & reassembly**
- **Simpson House, documentation, disassembly, drawings & relocation**
- **Methodist Church, Wellandport, (1815), documentation, disassembly, relocation**
- **McCutcheon House, Milton, structural repairs, waterprooing, Corinthian columns**
- **Burlington West Railway Station, structural repairs & complex straightening.**
- **Collins log farmhouse, drawings, disassembly, repair, rebuild as farmhouse.**

- **Whitevale Public Library, structural repairs & restoration**
- **Puterbaugh Log Schoolhouse, restoration as museum exhibit.**
- **Camlaren Mine, heavy timber sawyer, construction of 400' mine shaft**
- **Hammerbeam truss frame construction, assist raising & enclosing**

JOINERY, WINDOWS, STAIRS & INTERIOR WORK

- **Reproduce three 1858 dormers with single hung sash copper flashings & new exterior storm windows with custom hardware, Swalllowtail Lighthouse, North Head, Grand Manan Island. Extreme exposure required mahogany frames & sash, ½" tempered glass, & heavy duty stainless steel hardware.**
- **Mahogany shop windows & custom mouldings for Jewelry showrooms, Toronto.**
- **Refurbish & make new (2) awning, (6) single hung windows & (2) glazed carriage doors for barn/cottage, Newmarket. Build new housed stairs with winders & paneled walls (cupboard stairs).**
- **Supply & Install (14) storm windows & (4) single hung sash windows for Light Keeper's House & Winch/Boat house, Swallowtail Light station.**
- **Refurbish, fabricate, supply & Install (12) single hung sash at King Crossing Guard Shanty, (21) single hung sash at Cabin D, (3) single hung sash at Cabin D Tool Shed, (9) single hung sash at Don Station, Toronto Railway Heritage Museum. Design, fabricate & install custom laser cut powder coated guards for machinery pit. Remove, repair, & reinstall 19,000 pound cast iron computer (interlocking lever frame), circa 1894. Build new stairs. Wood panel entire building, Cabin D, Tool Shed, & Don Station with V-joint & custom trim inside & out.**
- **Design, fabricate & install (5) faux steel windows (welded aluminum with custom paint finishes) at Coaling Tower, TRHA, Toronto.**
- **Restore & reinstall (15) sliding, single hung, awning & fixed windows, Waldies Blacksmith Shop & Carriage Shop, Milton Ontario, with refurbish & build new (2) pairs double doors, (4) single doors, & (1) 2 hour rated fire door.**
- **Repair & rehang pair of Gothic church doors Boston Presbyterian Church, Milton**
- **Disassemble, tag, crate & move ornate 1860 window units (including sash boxes), (12) pcs., (8) Egyptian Revival doors with surrounds and entire masonry structure (420 tons) tagged & on pallets to new site 45 miles away in Belfountaine.**
- **Build, oil finish & install (4) new single hung sash, and (2) replica batten doors, Puterbaugh Log Schoolhouse, Pickering Museum Village, Greensville. Also build stairs & fireplace mantle.**
- **Supply, finish & install (9) replica single hung sash windows for Collins Log Cabin, Strabane, as well as disassemble, repair, & reconstruct entire cabin on new foundation. With (2) new pegged batten doors with transoms, custom fireplace mantle & custom iron hardware made by blacksmith.**
- **Dismantle, excavate provide new foundations & rebuild two fireplaces, mantles, structural repairs, & straighten roof, McCutcheon House, Milton. Strip paint & repair six columns & two half columns, & fabricate (8) new custom carved Ionic capitals for full columns at exterior verandah.**
- **Design, build & install new fireplace mantle with attached bookshelves 1860 house, Steeles Avenue, North York. Also (4) other mantlepieces.**
- **Reproduce one new fully paneled doorway through 23" thick stone walls in 1849 house, Milton.**
- **Design & build addition with paneled arch opening, Arts & Crafts fireplace with built in bookshelves, windows, doors & skylight. Oakville.**

- **Design, build & install two new Romanesque dormers with round headed windows for 1865 brick carriage house, Wintergarden Road, Mississauga. Also fabricate & install four fixed quadrant windows. Build new stairs.**
- **Design, build & install two porticos with turned columns, bases & capitals, at Georgian Revival House, Burlington. Design & install 132 dentil brackets at soffit.**
- **Repair & reinstall four columns & porch deck at Campbell House Museum, Law Society of Upper Canada, Queen & Avenue Road, Toronto.**
- **Repair damaged windows at James Gage House, Battlefield Park National Historic Site, Stoney Creek. Also repair damaged pine floors.**
- **Investigate, design & detail reproductions stairs. The Custom House, (1860) William Thomas Architect, Hamilton,**
- **Drawings for Restoration of Gothic windows & entry doors, Battlefield Monument. 1913.**
- **Design new joinery & room finishes for Victoria College Residences with Tharin Architects.**
- **Detail drawings for school library addition, Woburn Collegiate, (Scarborough), with ATA Architect.**
- **Design, fabricate & install stairs, doors & windows, skylights with wells for 662 Alexander Ave. Vancouver, Sawaii Atelier. Also heavy structural repairs, seismic design, & all interior finishes, with drawings.**
- **Cut heavy fir timbers with complex joinery for construction of 400 feet of mine shaft, Camlaren Mine, N.W.T. , age 20, lead hand & sawyer, because of experience reading drawings.**
- **Construct & Install fencing, public benches & furnishings, Main Street Revival Program, Blairmore Alberta.**
- **Raise & repair, vertical plank frame house, Rockton. Move manually to new foundation. Adjoining.**
- **Repair various single hung sash windows, stairs, & trim at houses in Moore Park, Toronto, circa 1910 – 1929.**
- **Design & build various decks including circular deck cantilevered around large Oak Tree in Ravine, The Beaches, Post Tensioned cable railings, (Vaughan), conventional decks with benche and /or railings, North York, Mississauga, Oakville. Supply & install post tensioned posts with standardized railing "ladders" on rooftop deck, Oakville.**
- **Repair Romanesque 1885 single hung sash for Sexton's Lodge, St. Judes Church, Oakville. Replicate exterior deacon's benches. Build new arch head shutters with adjustable blades. Repair trim & repaint entire building.**
- **Design, fabricate & install replica 1890 portico trim & brackets to upgrade modern porch on 1890 house, Oakville.**
- **Design, fabricate & install new pilasters, trim & custom signage for Jewelry store & insurance offices. Main Street, Milton.**



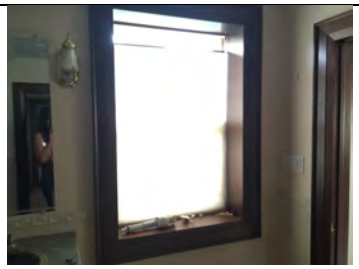
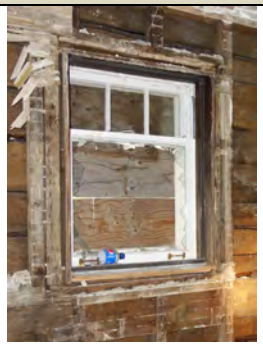
Don Station Restoration, Toronto Railway Museum

APPENDIX E: WINDOW SCHEDULE

MAIN ELEVATION				
ROOM	**TYPE**	**NO. OF UNITS**	**TREATMENT**	**PHOTO (2017)**
LIVING RM	SASH 3 OVER 1	5	REPAIR WINDOW RESTORE TRIM	
DINING RM	SASH 3 OVER 1	3	REPAIR WINDOW RESTORE TRIM	
WEST SIDE ELEVATION				
LIVING ROOM	CASEMENT 3 OVER 1	2	REPAIR WINDOW RESTORE TRIM	

LIVING ROOM	CASEMENT 3 OVER 1	2	REPAIR WINDOW RESTORE TRIM	
FAMILY RM	SASH 3 OVER 1	5	REPAIR WINDOW RESTORE TRIM	
BEDRM 2	SASH 3 OVER 1	1	RETAIN	
BEDRM 3	SASH 3 OVER 1	2	RETAIN	

BSMT	FIXED SASH SINGLE PANE	1	RETAIN	
BSMT	FIXED SASH SINGLE PANE	1	RETAIN	
EAST SIDE ELEVATION				
DINING ROOM	SASH 3 OVER 1	3	REPAIR WINDOW RESTORE TRIM	
KITCHEN	SASH 3 OVER 1	1	REPAIR WINDOW RESTORE TRIM	
BEDRM 1	SASH 3 OVER 1	2	RETAIN	

BTHRM	SASH 3 OVER 1	1	RETAIN	
BSMT	FIXED SASH SINGLE PANE	1	RETAIN	
BSMT	FIXED SASH SINGLE PANE	1	RETAIN	
REAR ELEVATION				
KITCHEN	SASH 3 OVER 1	1	REPAIR WINDOW RESTORE TRIM	
BSMT	FIXED SINGLE PANE	1	RETAIN	

City of Mississauga
Corporate Report

MISSISSAUGA

Date: 2017/09/13	Originator's files:
To: Chair and Members of Heritage Advisory Committee	
From: Paul Mitcham, P. Eng, MBA, Commissioner of Community Services	Meeting date: 2017/10/17

Subject
Request to Demolish a Heritage Listed Property: 29 Plainsman Road (Ward 11)

Recommendation
That the property at 29 Plainsman Road, which is listed on the City's Heritage Register, is not worthy of heritage designation, and consequently, that the owner's request to demolish proceed through the applicable process.

Background
Section 27.3 of the Ontario Heritage Act states that structures or buildings on property listed on the City's Heritage Register cannot be removed or demolished without at least 60 days' notice to Council. This legislation allows time for Council to review the property's cultural heritage value to determine if the property merits designation.

The owner of the subject property has submitted a heritage permit application to partially demolish the existing detached dwelling. The subject property is listed on the City's Heritage Register as it forms part of the Credit River Corridor cultural landscape. This cultural landscape is significant due to it being a "scenic rare natural landmark in the city." The Credit River is an ecologically, archaeologically and historically significant feature in the City, noted for its importance in the development of Mississauga.

Comments
The owner of the subject property has requested permission to partially demolish the existing structure. The applicant has provided a Heritage Impact Assessment compiled by Studio UA3 and an arborist report. They are attached as Appendices 1 and 2 respectively. The consultant has concluded that the house at 29 Plainsman Road is not worthy of designation. Staff concurs with this finding.

Financial Impact

There is no financial impact.

Conclusion

The owner of 29 Plainsman Road has requested permission to demolish a structure on a property that is listed on the City's Heritage Register. The applicant has submitted a documentation report which provides information which does not support the building's merit for designation under the Ontario Heritage Act.

Attachments

Appendix 1: Heritage Impact Assessment
Appendix 2: Arborist Report

Paul Mitcham, P. Eng, MBA, Commissioner of Community Services

Prepared by: P. Wubbenhorst, Senior Heritage Coordinator

Woodlot Inventory & Assessment (Arborist Report)

Prepared for:

29 Plainsman Rd.
Mississauga ON L5N 1C4

Modified:
August 10, 2017

Prepared by:
Mark Ellis

ISA Board Certified Master Arborist ON-1686BM
www.cinereaurbanforestryservices.ca
cinerea.ufs@gmail.com
905-715-5921

Table of Contents

Summary

An inventory an assessment of trees located in the ravine area was performed. Recommendations for tree removal or retention have been provided.

Introduction & Assignment (Nature of Work)

Cinerea Urban Forestry Services was commissioned by to complete a woodlot inventory/Arborist Report at 29 Plainsman Rd. Mississauga ON.

The purpose of the inventory was to determine if the woodlot in itself was a heritage feature or if any components within the woodlot had historical/heritage value. A site visit was arranged between Mark Ellis, ISA BCMA ON-1686BM and the homeowner.

The woodlot area at the rear of the property slopes down towards the credit river and is marked by a chain-link fence which acts as a boundary.

Limitations of the Assignment

This Arborist Report was compiled from field data collected from the ground. A basic visual assessment of the trees was performed. No level of ISA Tree Risk Assessment was performed. More data may be obtained regarding risk through a basic or advanced ISA Tree Risk Assessment. As trees change over time, this report noting conditions of health and structure of trees on site shall be void after a period of 1 year.

This report is in no way or fashion a tree protection plan. This report is an inventory and assessment of trees within the woodlot area only at the rear of 29 Plainsman Rd. This report does not cover aspects of tree preservation as required by City of Mississaugas' Arboricultural Consultant Report (Arborist Report)

Methods

- Tools used to assess the trees included a clinometer, metric measuring tape, metric measuring wheel, binoculars
- All trees over 10 cm dbh were inventoried using yellow flagging tape and had their GPS coordinates recorded
- All trees under the 10 cm dbh threshold are collectively referred to as regeneration

Observations

- Field work was conducted by Mark Ellis on August 9, 2017.
- Weather at time of assessment was sunny and 25°C
- Large amount of downed woody debris in woodlot
- Regeneration of native tree species very poor; woodlot floor consists of creeping charlie, garlic mustard, common buckthorn, riverbank grape, virginia creeper
- Very light regeneration noted of basswood, bur oak, and Manitoba maple

Arborist Recommendations

- Remove 15 trees as noted in the inventory (Appendix 1)
- Remove copious amounts of downed woody debris in woodlot, Fig. 38
- Replant native tree species including, bur oak, red oak, sugar maple, bitternut hickory, red maple, white pine, eastern hemlock, yellow birch
- Contact Credit Valley Conservation Authority for possible assistance with replanting
- Should any construction take place, tree protection fencing must be installed at a minimum distance to the tree's dripline; further beyond this distance is preferable

Conclusion

The woodlot is in a poor state. It is marked by numerous dead or dying trees and a large number of downed branches from previous tree removals in adjacent backyard(s). No heritage features, trees, or endangered species were found within the woodlot. The maximum estimated age of the largest trees in the woodlot is 40 years old.

Tree # 8 is infested with Emerald Ash Borer and has a lean towards the neighbour's pool and pool deck. This tree is already 50% dead. It is recommended to have this tree removed by an ISA Certified Arborist before it potentially falls onto the neighbouring property causing damage or injury.

Should the homeowner wish to undertake any management of the woodlot, they are urged to follow recommendations within this report, contact an ISA Certified Arborist for tree removal and replanting. Credit Valley Conservation may also be able to help subsidize restoration of the woodlot through replanting.

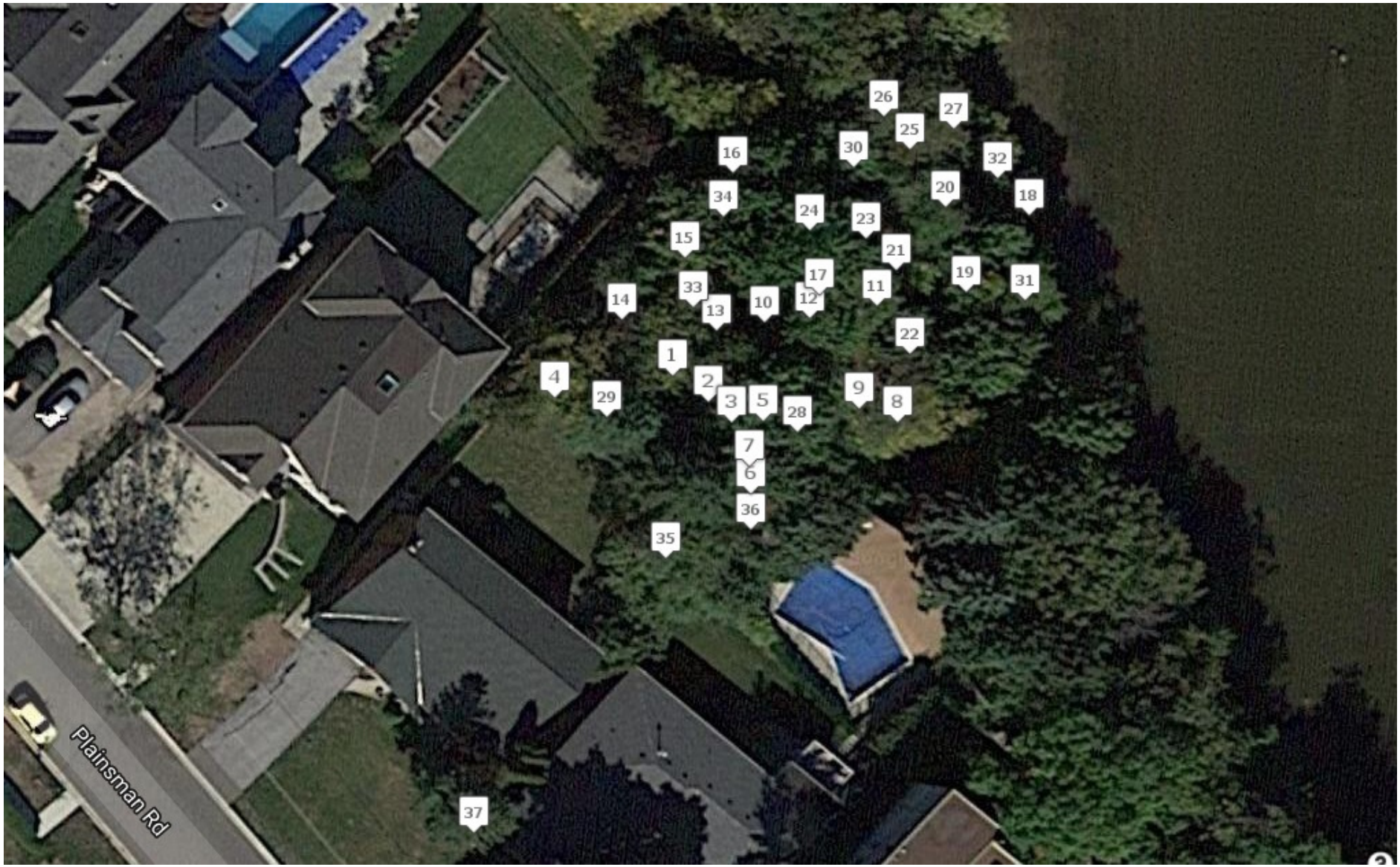
Appendix 1 – Tree Inventory

Tree #	Common Name	*Latin*	dbh (cm) @ 1.4 m	Health	Structure	Overall Condition	Location	Comments	Arborist Recommendation
1	Balsam Fir	*Abies balsamea*	15	Dead	High Risk	Dead	Woodlot		Remove
2	Silver Maple	*Acer saccharinum*	32	Fair	Fair	Fair	Woodlot		Retain
3	Carolina Poplar	*Populus x canadensis*	21	Fair	Good	Fair	Woodlot		Retain
4	Norway Maple	*Acer platanoides*	32	Good	Fair	Fair	Woodlot	30° Lean	Retain
5	One-Seeded Hawthorn	*Crataegus monogyna*	15	Poor	Poor	Poor	Woodlot	5 stems, 10-15 cm dbh 90% Dead	Remove
6	Balsam Fir	*Abies balsamea*	21	Poor	Good	Poor	Woodlot	90% Dead Only foliage at very top of tree	Remove
7	White Spruce	*Picea glauca*	14	Dead	High Risk	Dead	Woodlot		Remove
8	Red Ash	*Fraxinus pennsylvanica*	34	Poor	High Risk	Poor	Woodlot	Infested with Emerald Ash Borer 50% Dead	**Remove immediately**
9	Hawthorn	*Crataegus spp.*	27	Poor	Poor	Poor	Woodlot	Juniper-Hawthorn Rust 3 stems, 16, 20, 27 cm dbh 90% Dead	Remove
10	Hawthorn	*Crataegus spp.*	15	Dead	Dead	Dead	Woodlot	Juniper-Hawthorn Rust	Remove
11	Norway Maple	*Acer platanoides*	20	Good	Good	Good	Woodlot		Retain
12	Hawthorn	*Crataegus spp.*	20, 31	Poor	Poor	Poor	Woodlot	Juniper-Hawthorn Rust 2 stems 50% Dead	Remove
13	Hawthorn	*Crataegus spp.*	20	Poor	Fair	Poor	Woodlot	Juniper-Hawthorn Rust 5 stems, 10-20 cm dbh 75% Dead	Remove
14	Silver Maple	*Acer saccharinum*	55	Good	Fair	Fair	Woodlot	30° Lean	Retain
15	Weeping Willow	*Salix babylonica*	49	Good	Fair	Fair	Woodlot	Large dead limb	Retain
16	Hawthorn	*Crataegus spp.*	41	Poor	Poor	Poor	Woodlot	Juniper-Hawthorn Rust 75% Dead	Remove

17	Silver Maple	*Acer saccharinum*	10	Poor	Poor	Poor	Woodlot	Shade intolerant tree species growing in shade	Retain
18	Manitoba Maple	*Acer negundo*	22	Fair	Fair	Fair	Woodlot		Retain
19	Red Ash	*Fraxinus pennsylvanica*	11	Fair	Good	Fair	Woodlot	Infested with Emerald Ash Borer 25% Dead	Remove
20	Norway Maple	*Acer platanoides*	20	Good	Good	Good	Woodlot		Retain
21	Red Ash	*Fraxinus pennsylvanica*	11	Good	Poor	Fair	Woodlot	Infested with Emerald Ash Borer	Remove
22	Manitoba Maple	*Acer negundo*	21	Good	Poor	Fair	Woodlot	45° Lean	Retain
23	Basswood	*Tilia americana*	16, 23	Fair	Poor	Poor	Woodlot	Covered in Riverbank Grape	Retain
24	Basswood	*Tilia americana*	25	Fair	Poor	Poor	Woodlot	45° Lean	Retain
25	Basswood	*Tilia americana*	22	Good	Good	Good	Woodlot		Retain
26	Basswood	*Tilia americana*	16, 19	Fair	Fair	Fair	Woodlot	2 stems	Retain
27	Basswood	*Tilia americana*	38	Good	Good	Good	Woodlot		Retain
28	Norway Maple	*Acer platanoides*	22	Good	Good	Good	Woodlot		Retain
29	American Elm	*Ulmus americana*	10, 12	Dead	Dead	Dead	Woodlot	Dead due to Dutch Elm Disease	Remove
30	Hawthorn	*Crataegus spp.*	15	Poor	Poor	Poor	Woodlot	Juniper-Hawthorn Rust 5 stems, 10-15 cm dbh 90% Dead	Remove
31	Hawthorn	*Crataegus spp.*	20	Poor	Poor	Poor	Woodlot	Juniper-Hawthorn Rust 5 stems, 10-20 cm dbh 75% Dead	Remove
32	Hawthorn	*Crataegus spp.*	20	Fair	Good	Fair	Woodlot	Juniper-Hawthorn Rust 25% Dead	Retain
33	Hawthorn	*Crataegus spp.*	25	Fair	Good	Fair	Woodlot	Juniper-Hawthorn Rust 25% Dead	Retain
34	Hawthorn	*Crataegus spp.*	15	Fair	Good	Fair	Woodlot	Juniper-Hawthorn Rust 25% Dead	Retain
35	Norway Maple	*Acer platanoides*	33	Good	Fair	Fair	Back Yard		Retain
36	Norway Maple	*Acer platanoides*	16	Good	Good	Good	Back Yard		Retain
37	White Spruce	*Picea glauca*	37	Fair	Good	Fair	Front Yard		Retain

7.2 - 10

Appendix 2 – Map



Appendix 4 – Photos (Trees Are Centred)

Fig. 1 – Tree # 1 – *Abies balsamea* – Dead - Remove

Fig. 2 – Tree # 2 – *Acer saccharinum* – Fair Health – 30 Degree Lean - Retain

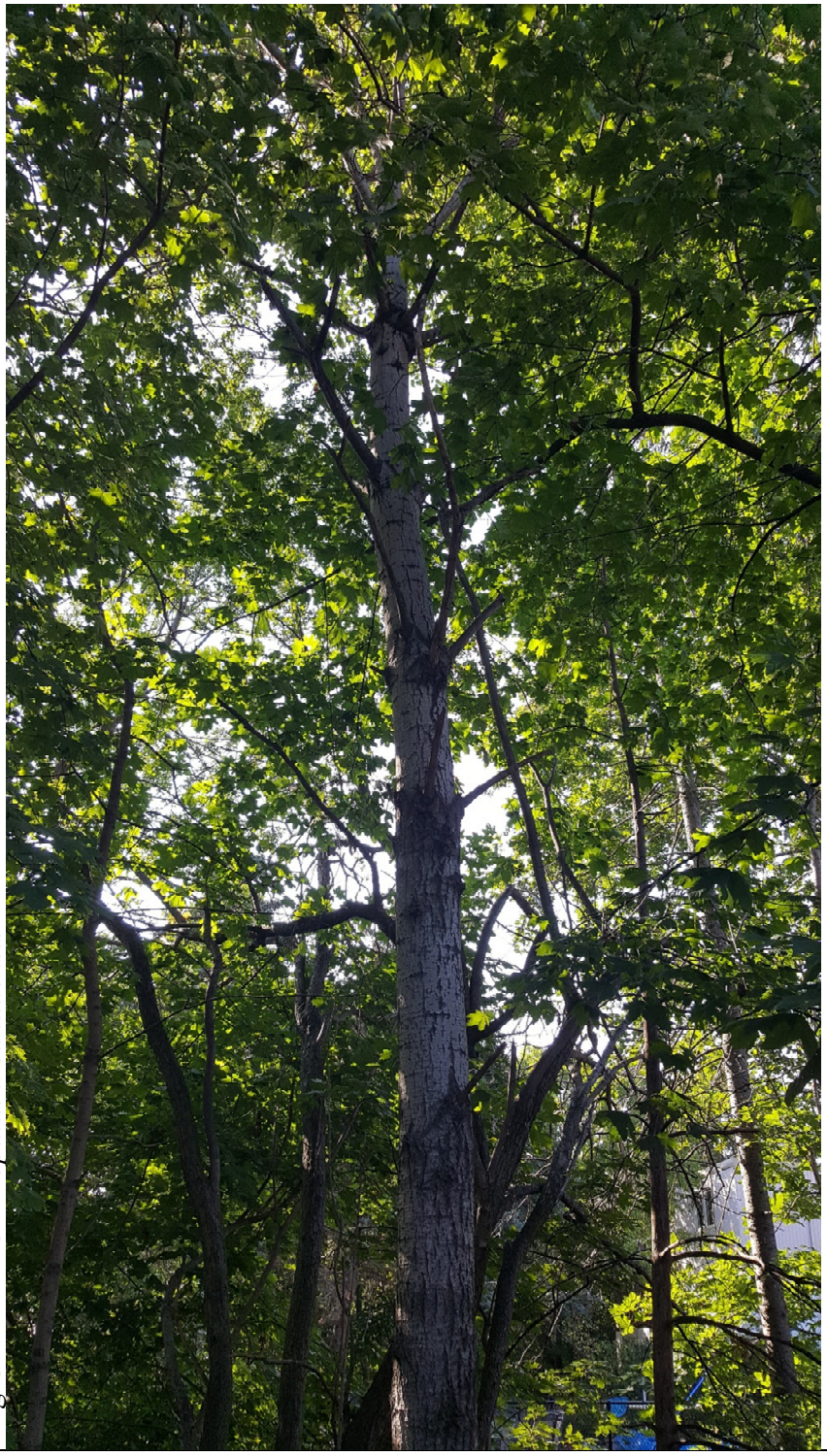


Fig. 3 – Tree # 3 – *Populus x canadensis* – Fair Health - Retain

Fig. 4 – Tree # 4 – *Acer platanoides* - Retain

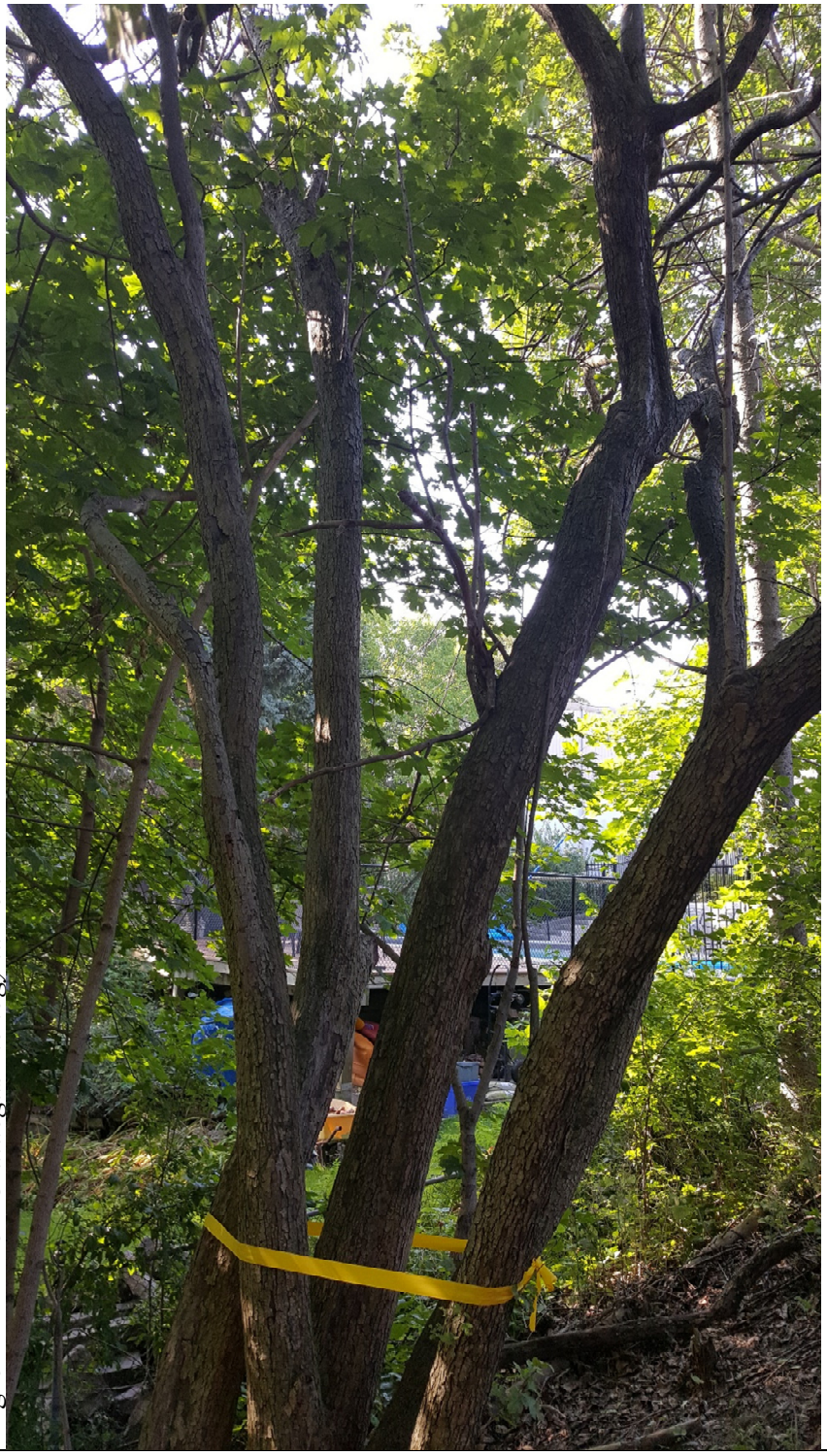


Fig. 5 – Tree # 5 - *Crataegus monogyna* – 90% Dead - Remove

Fig 6 – Tree # 6 – *Abies balsamea* – 90% Dead - Remove

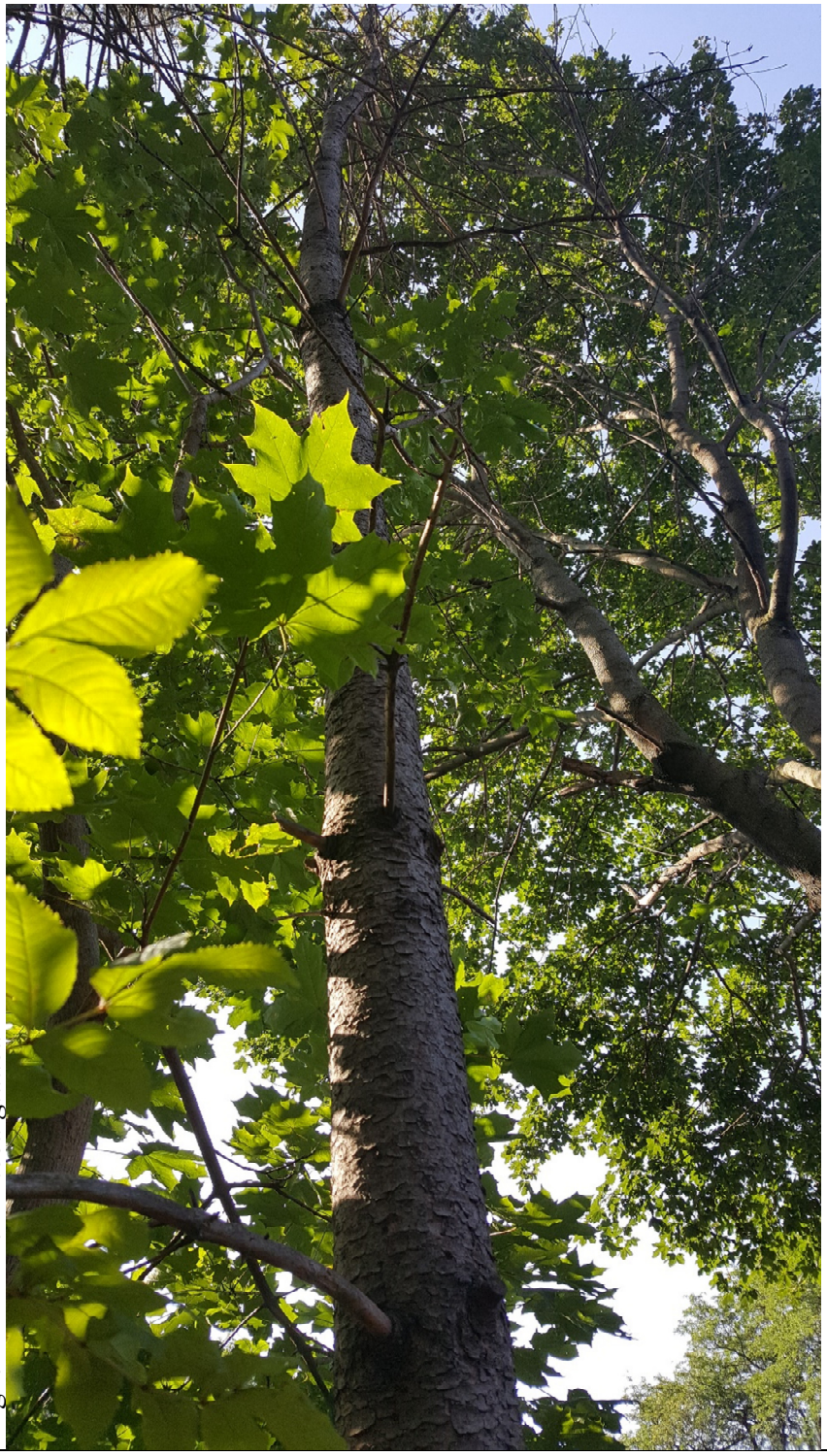


Fig. 7 – Tree # 7 – *Picea glauca* – Dead - Remove

Fig. 8 – Tree # 8 – *Fraxinus pennsylvanica* – Infested with Emerald Ash Borer – High Risk - Remove

Fig. 9 – Tree # 9 – *Crataegus spp.* – 90% Dead - Remove

Fig. 10 – Tree # 10 – *Crataegus spp.* – Dead - Remove

Fig. 11 – Tree # 11 – *Acer platanoides* - Retain

Fig. 12 – Tree # 12 – *Crataegus spp.* – 50% Dead - Remove

Fig. 13 – Tree # 13 – *Crataegus spp.* – 75% Dead - Remove

Fig. 14 – Tree # 14 – *Acer saccharinum* - Retain

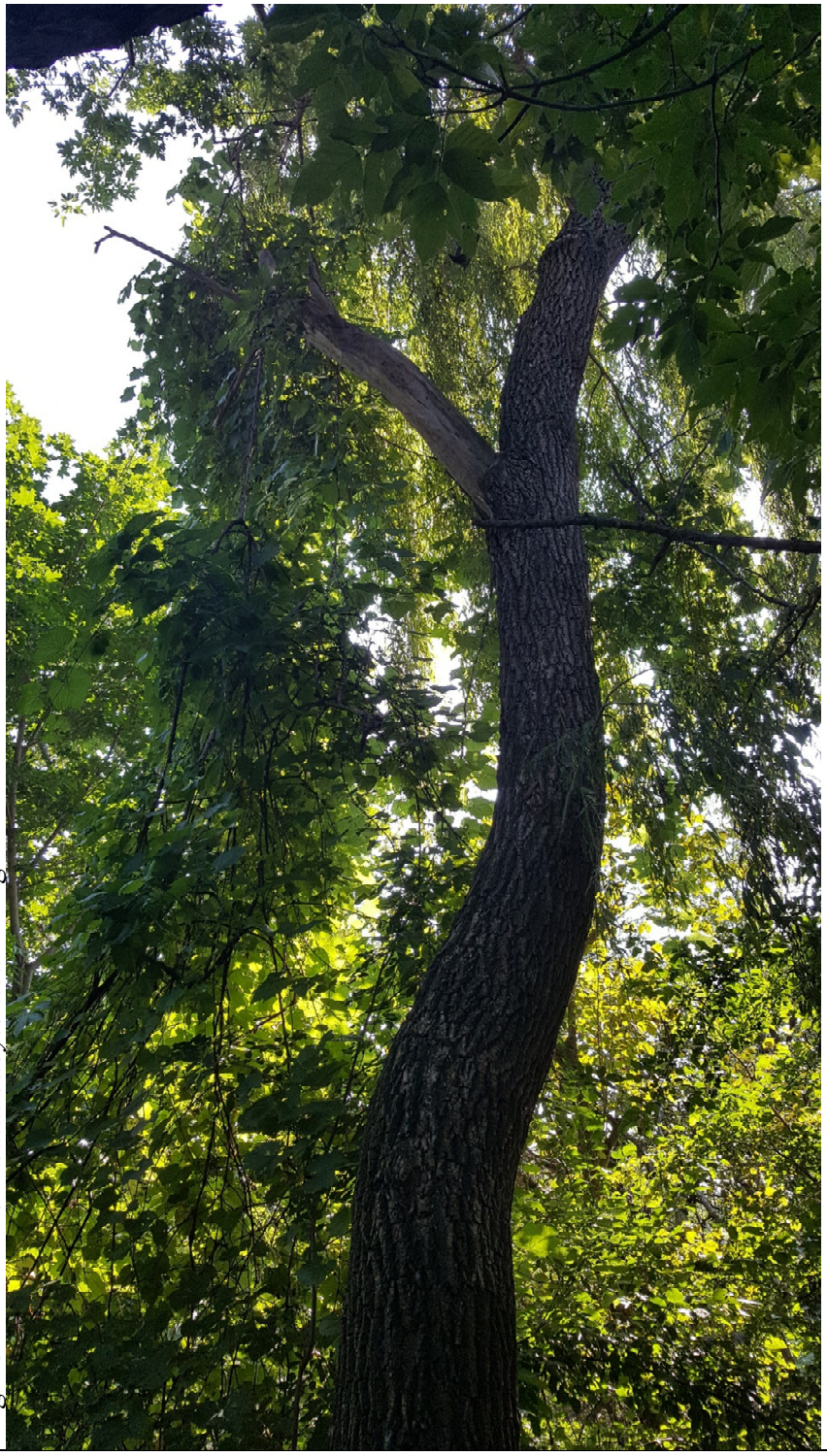


Fig. 15 – Tree # 15 – *Salix babylonica* – Large Dead Limb - Retain

Fig. 16 – Tree # 16 – *Crataegus spp.* – 75% Dead - Remove

Fig. 17 – Tree # 17 – *Acer saccharinum* - Retain

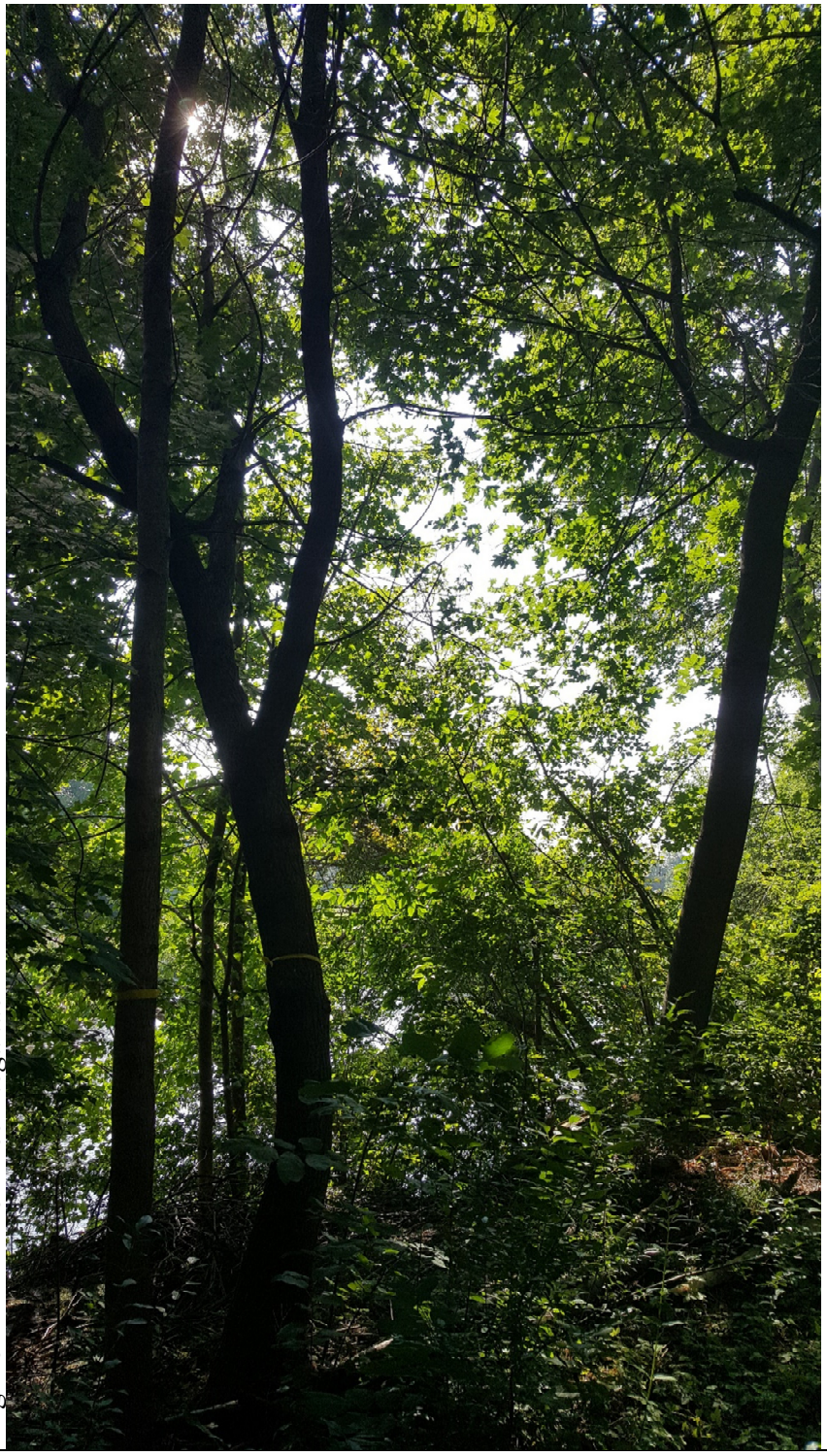


Fig. 18 – Tree # 18 – *Acer negundo* - Retain

Fig 19 – Tree # 19 – *Fraxinus pennsylvanica* – Infested With Emerald Ash Borer - Remove

Fig. 20 – Tree # 20 – *Acer platanoides* - Retain

Fig. 21 – Tree # 21 – *Fraxinus pennsylvanica* – Infested With Emerald Ash Borer - Remove

Fig. 22 – Tree # 22 – *Acer negundo* - Retain

Fig. 23 – Tree # 23 – *Tilia americana* - Retain

Fig. 24 – Tree # 24 – *Tilia americana* - Retain

Fig. 25 – Tree # 25 – *Tilia americana* - Retain

Fig. 26 – Tree # 26 – *Tilia americana* - Retain

Fig. 27 – Tree # 27 – *Tilia americana* - Retain

Fig. 28 – Tree # 28 – *Acer platanoides* - Retain

Fig. 29 – Tree # 29 – *Ulmus americana* – Dead - Remove

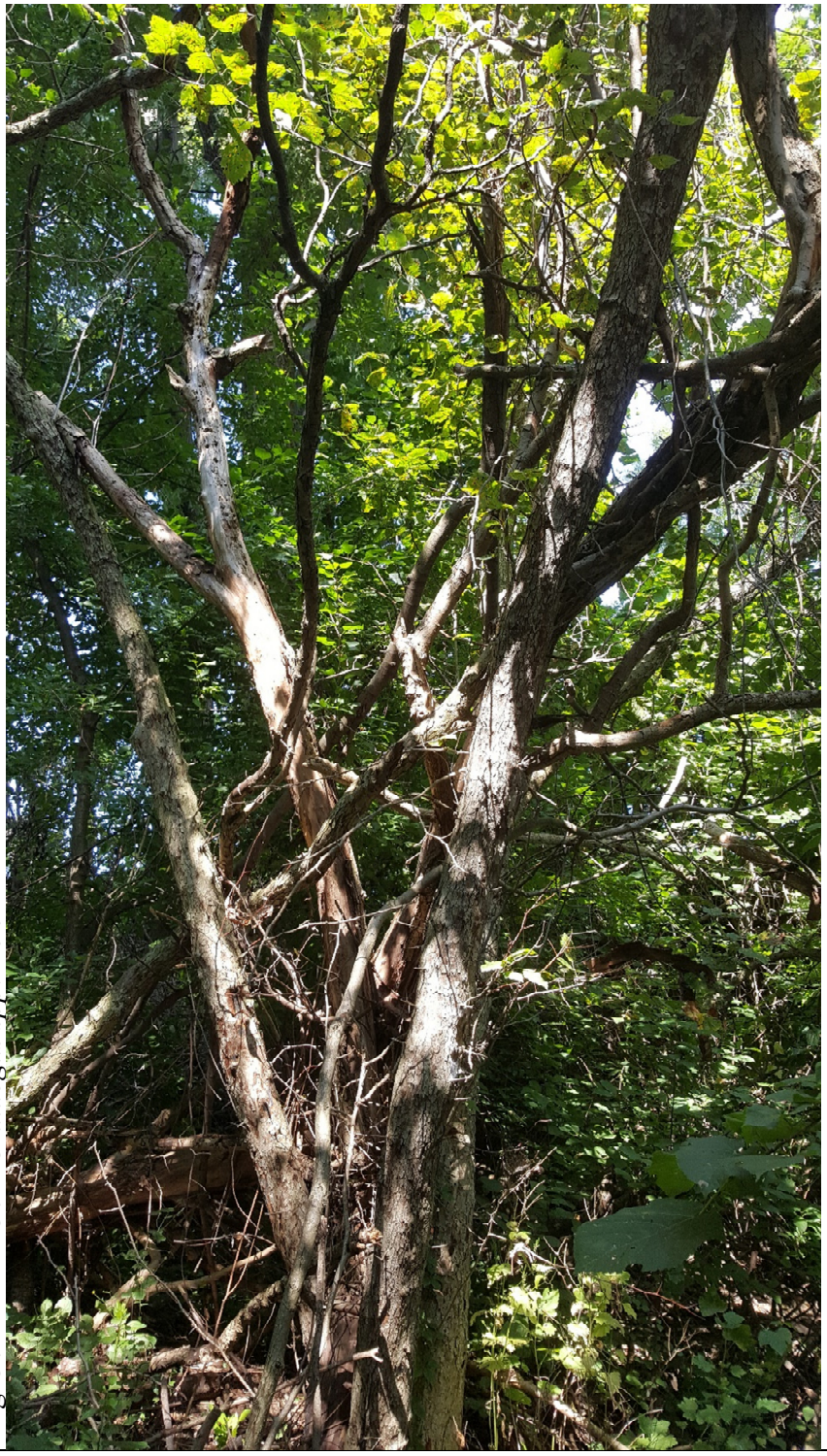


Fig. 30 – Tree # 30 – *Crataegus spp.* – 90% Dead - Remove

Fig. 31 – Tree # 31 – *Crataegus spp.* – 75% Dead - Remove

Fig 32 – Tree # 32 – *Crataegus spp.* - Retain

Fig. 33 – Tree # 33 – *Crataegus spp.* - Retain

Fig. 34 – Tree # 34 – *Crataegus spp.* - Retain

Fig. 35 – Tree # 35 – *Acer platanoides* - Retain

Fig. 36 – Tree # 37 – *Picea glauca* - Retain

Fig. 37 – Juniper-hawthorn Rust

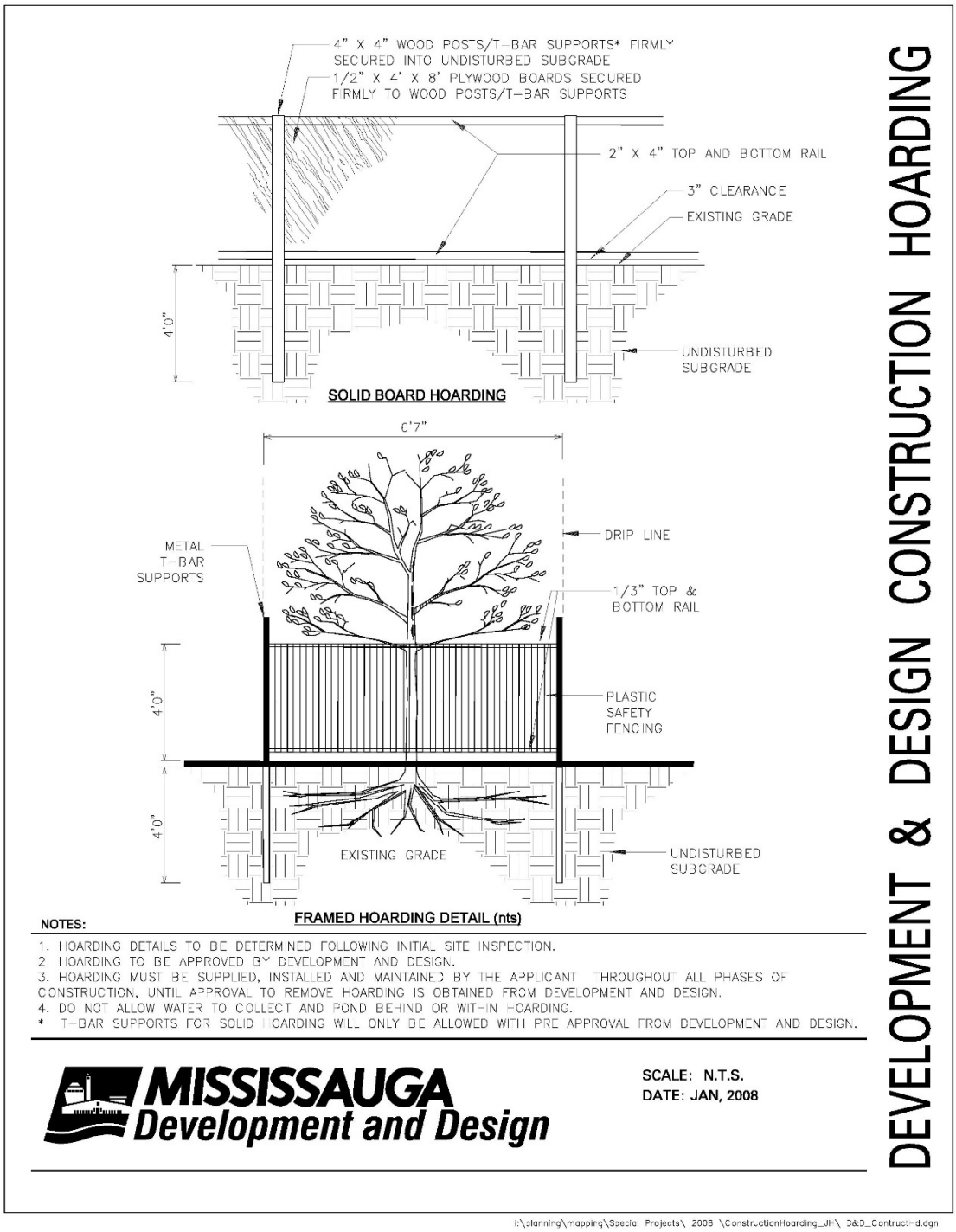
Fig. 38 – Large Amounts of Downed Woody Debris Preventing Regeneration

Fig. 39 – *Quercus macrocarpa* Regeneration

Fig. 40 – Credit River Waterfront of 29 Plainsman Rd.

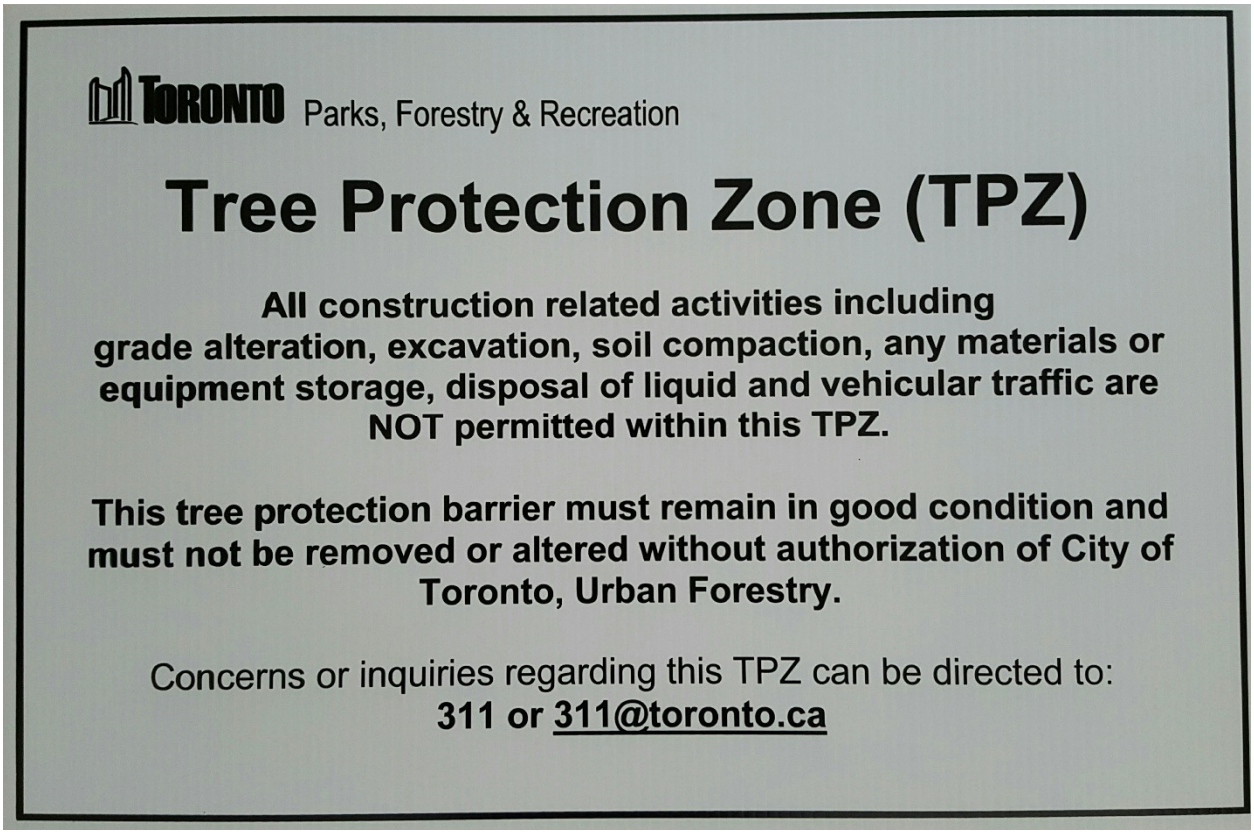
Appendix 5 – Hoarding Detail

Cinerea Urban Forestry Services may construct hoarding at the client's wish if it is required.



Appendix 6 - Tree Protection Sign

A sign resembling the sign below shall be mounted on in a conspicuous area on all sides of the Tree Protection Fencing. This sign, is for sample purposes only.



Appendix 7 - References

1. A silvicultural guide to managing southern Ontario forests. (2000). [Toronto]: [Ministry of Natural Resources].
2. Anderson, H. and Corlett, A. (2004). *Ontario tree marking guide*. [Toronto]: Ministry of Natural Resources.
3. Dunster, J., Smiley, E., Matheny, N. and Lilly, S. (n.d.). *Tree risk assessment manual*.
4. Fite, K. and Smiley, E. (2008). *Best management practices - Managing trees during construction*. Champaign, IL: International Society of Arboriculture.
5. Gilman, E. (2002). *Best management practices – Tree Pruning*. Champaign, IL: International Society of Arboriculture.
6. Matheny, N. and Clark, J. (2008). *Municipal specialist certification study guide*. Champaign, IL: International Society of Arboriculture.
7. City of Toronto. (2016). *Tree Protection Policy and Specifications for Construction Near Trees*. [online] Available at: https://www1.toronto.ca/city_of_toronto/parks_forestry__recreation/urban_forestry/files/pdf/TreeProtSpecs.pdf [Accessed 15 Jul. 2017].
8. Lily, Sharon. *Glossary Of Arboricultural Terms*. 1st ed. Champaign: International Society of Arboriculture, 2015. Print.

Appendix 8 - Arborist Qualifications

Mark Ellis is the owner/operator at Cinerea Urban Forestry Services. He has previously held positions as Senior Consulting Arborist with Davey Resource Group, Arborist Foreman with Regional Municipality of Wood Buffalo and Forest Health Care with the City of Toronto. He is one of only five persons in Canada that hold both the ISA Board Certified Master Arborist & ISA Certified Arborist Municipal Specialist certifications. Mark has over 10 years of experience working for not-for-profit corporations, private companies, and municipalities in arboriculture, forestry and urban forestry. His experience includes planning the urban forest, tree climbing and removal, integrated pest management, surveying for destructive forest pests, and GIS based mapping to name a few. More recently, he has been involved in developing an Urban Forest Master Plan for the Regional Municipality of Wood Buffalo, post-failure investigations, and providing expert witness testimony in court cases.

Education

- Sir Sandford Fleming – Forest Technician Diploma

Industry Related Certifications

- ISA Board Certified Master Arborist Municipal Specialist # ON-1686BM (2016-2019)
- ISA Tree Risk Assessment Qualification (TRAQ) (2013-2018)
- Butternut Health Assessor #532
- Ontario Certified Seed Collector #383
- Ontario MOE Pesticide License #046418 (Forestry, Industrial Vegetation, & Landscape Exterminator)
- Alberta Pesticide Applicator # LCA23671 (Forestry, Industrial, Landscape)
- OFSWA Chainsaw Operator Certification
- Arboriculture Canada – Technical Tree Falling & Cutting
- Certified Ontario Tree Marking Course
- SP-102 Forest Industry Wildland Firefighting

Member

- International Society of Arboriculture Member #221000
- International Society of Arboriculture Ontario Chapter Member #221000

Heritage Impact Statement

29 Plainsman Road
Mississauga, ON

Studio *uA*³

ARCHITECTS

212 Queen Street South, Mississauga, ON, L5M 1L5

647.891.6889 www.studioua3.com

16 AUGUST 2017

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1. Introduction:

1.1. This Heritage Impact Statement is prepared in response to the City of Mississauga policy 7.4.1.12 that seeks to conserve, record, and protect its heritage resources, and states:

> *"7.4.1.12: The proponent of any construction, development, or property alteration that might adversely affect a listed or designated cultural heritage resource or which is proposed adjacent to a cultural heritage resource will be required to submit a Heritage Impact Statement prepared to the satisfaction of the City and other appropriate authorities having jurisdiction."* [1]

1.2. The Property Heritage Detail available on the Property Information portal of the City of Mississauga website cites this property to be listed on the heritage register but not designated. The inventory item is #1, Credit River Corridor:

"*The Credit River Corridor is noted as a Cultural Landscape for a variety of reasons. The corridor is a scenic rare natural landmark in the city. The 58 mile river cuts through both the Peel and Iroquois Plains. In some of these areas underlying Paleozoic bedrock of shale and sandstone is exposed. There are also heavily treed and marshy areas. Benches and alluvial terraces provide for a variety of recreational opportunities. The Mississaugas settled on the banks of the river until they were displaced by European settlers. Pioneers established mills on the river in Meadowvale Village, Streetsville and Erindale. Some remain. Thus, the river is not only ecologically significant, it is also an invaluable archaeological site that yields information about our native, pioneer and industrial history, as well as a link to the historic community development along the river corridor."* [2]

[1] Mississauga Official Plan (14 October 2015), Part Two, Chapter 7 Complete Communities, Article 7.4.1.12.
[2] www.mississauga.ca, Property Information, Heritage Detail

2. General Requirements:

2.1. Location map [3]:

Figure 1: 29 Plainsman Road location map

2.2. Location map detail [4]:

Figure 2: 29 Plainsman Road location map detail

[3] Google Maps, 11 May 2016, annotated by Studio uA3.
[4] Google Maps, 11 May 2016, annotated by Studio uA3.

2.3. Location zoning map 10M50W [5]:

Figure 3: 29 Plainsman Road location zoning map

[5] www.mississauga.ca, Zoning By-law in Effect, Part 13, Map 10M50W.

2.4. Site plan of existing conditions:

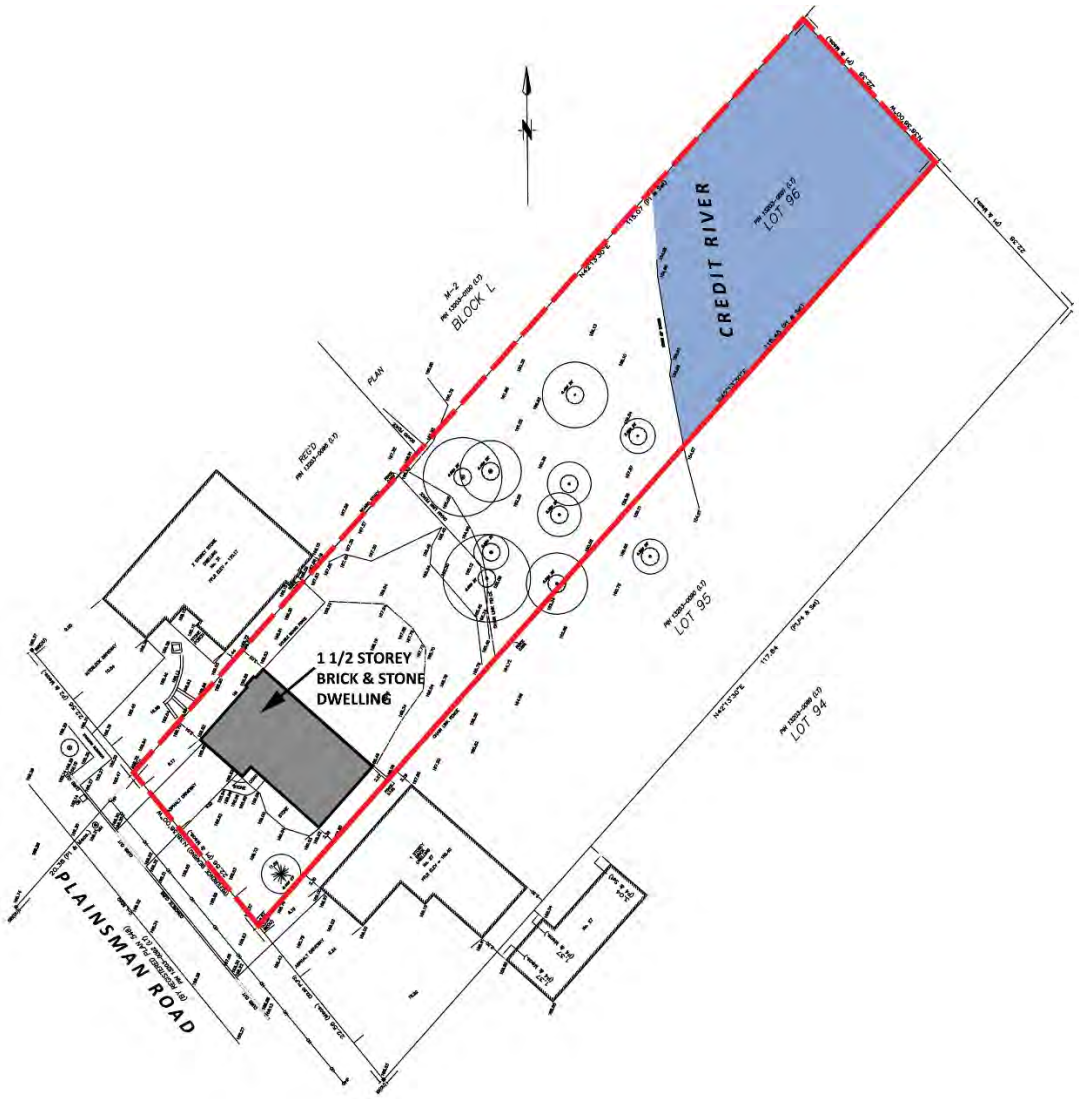


Figure 4: 29 Plainsman Road Site Plan - existing conditions

Figure 5: Plainsman Road streetscape map 2017, 29 Plainsman Road is delineated in red.[6]

2.6. Written Inventory - Site: the property lies on the west bank of the Credit River approximately 675 meters north of the Britannia Road West bridge. It is approximately 22½ meters wide and 116 meters long. The property is well treed, gently sloping from Plainsman Road toward the existing dwelling structure, then gently sloping to the rear yard that is relatively flat to the line of the top of the river bank, and then dropping down to the river's edge at an approximate 50% slope as is typical along this side of the river. The last third of the property lies across the river bed almost to the western boundary of Riverrun Park.

There is one mature white spruce in the front yard of the property line as well as several decorative cedars along the walkway to the front door of the existing dwelling. The south side yard is screened from the adjacent property by dense hedges and trees, many located on the neighboring property. The north side yard next to the dwelling void of trees and shrubs.

The rear yard is generally open. The area is well screened from the south property by dense hedges and mature trees mostly located on the neighboring property. On the north side, the open rear yard is screened from the adjacent property by medium size trees and hedges.

[6] Mississauga Maps – Interactive Online Mapping Service: Part of interactive online map, Plainsman Road

The east boundary of the open rear yard area is defined by a drop in grade elevation down to the Credit River. The entire sloped area is well treed by young as well as mature trees.

The overview of the site features are captured in the preceding site plan as well as the following Visual Inventory photos and the Arborist's Report.

2.7. Written Inventory - Structure: there is one structure on the property, a single family 1-1/2 storey brick and stone dwelling with an attached two-car garage. The roof gradually slopes up to the rear in a manner permitting the double height rear façade. There is one bedroom/study on the main floor and four bedrooms on the upper level.

The roof of the dwelling, the windows and the exterior masonry are in fair to good condition. In general, the dwelling is of the mid-1960's design inside and out with no noteworthy features.

The overview of the existing dwelling features are captured in the preceding floor plans as well as the following Visual Inventory photos.

2.8. Written Inventory - Streetscape: Plainsman Road and the surrounding neighborhood is characterised as a mid-1960's single family dwelling subdivision of mid-size lots with brick single storey bungalows. Today, 50 years later, the neighborhood is undergoing a gradual transformation characterised by dwelling upgrades to modestly contemporary form and finish, yet due to the imposed roof and eave height limits set out in the R2-50 zoning bylaw exception, the renovated homes remain well-scaled to their properties. The neighborhood's maturity is also evident in the full size and advanced age of its trees. The sub-urban character of the street and the neighborhood is also evident in the absence of sidewalks to the south of 31 Plainsman Road property. The street has been upgraded with sidewalks to the north of 29 Plainsman Road, thus changing the character of the streetscape in that area.

The overview of the streetscape features is captured in the preceding streetscape map (*Figure 8*) as well as the following Visual Inventory photos.

2.9. Visual Inventory – Site and Structure:

Figure 6: Plainsman Road streetscape – looking south, August 2017

Figure 7: Plainsman Road streetscape – looking north, August 2017

Figure 8: 29 Plainsman Road - existing front yard, August 2017

Figure 12: 29 Plainsman Road - existing rear yard, August 2017

Figure 13: 29 Plainsman Road - existing rear yard, August 2017

Figure 9: Credit River Valley - view from Riverrun Park baseball diamond, August 2017

Figure 10: Views along the nature trail on the east bank of Credit River, August 2017

2.10. Proposed development:

2.10.1. Property Constraints: The subject property is zoned R2-50, Residential with exception, and G1, Greenbelt. It is surrounded by properties of the same zoning and land use as shown in *Figure 3, Location Zoning Map*.

2.10.2. The R2 zoning regulations are:

4.2.1.3.1	*Minimum lot area, interior lot:*	*695 m^2*
4.2.1.4.1	*Minimum lot frontage, interior lot:*	*18.0 m*
4.2.1.5.0	*Maximum lot coverage:*	*30%*
4.2.1.6.1	*Minimum front yard, interior lot:*	*9.0 m*
4.2.1.6.3	*Front garage face, interior lot:*	*same as front yard*
4.2.1.8.1	*Minimum interior side yard, interior lot:*	*1.8 m plus 0.61 m for each additional storey or portion thereof above one storey*
4.2.1.9.1	*Minimum rear yard, interior lot:*	*7.5 m*
4.2.1.10.0	*Maximum height:*	*10.7 m*
4.2.1.12.1	*Attached garage:*	*permitted*
4.2.1.12.2	*Minimum parking spaces:*	*per Part 3 and Subsection 4.1.9, 2 per dwelling*
4.2.1.12.3	*Maximum driveway width:*	*width of garage door openings plus 2.0 m up to a maximum of 6.0 m*
4.2.1.12.4	*Minimum landscape soft area in the yard containing the driveway:*	*40% of the front yard*
4.2.1.13.0	*Accessory buildings and structures:*	*per Subsection 4.1.2*

2.10.3. The R2-50 Exception regulations are:

4.2.3.50.1	*Maximum lot coverage:*	*25%*
4.2.3.50.2	*Maximum gross floor area – infill residential:*	*150 m^2 plus 0.2 times the lot area of R2-50 zone*
4.2.3.50.3	*Minimum front yard:*	*7.5 m*
4.2.3.50.4	*Minimum interior side yard:*	*1.2 m plus 0.61 m for each additional storey of portion thereof above one storey*
4.2.3.50.5	*Minimum setback to front garage face – interior lot:*	*7.5 m*
4.2.3.50.6	*Maximum height – highest ridge:*	*9.0 m*
4.2.3.50.7	*Maximum height: flat roof:*	*7.5 m*
4.2.3.50.8	*Maximum height of eaves: from average grade to lower edge of the eaves:*	*6.4 m*

4.2.3.50.9	*Garage projection: maximum projection of the garage beyond the front wall or exterior side wall of the first storey:*	*2.0 m*
4.2.3.50.10	*Maximum dwelling unit depth:*	*20.0 m*

2.10.4. The intent is to remove the bulk of the existing dwelling and to construct a new two storey single family dwelling with a two-car garage. Portions of the front and right side walls will remain in place, although the window openings will be altered to suit the proposed design of the structure. The footprint of the dwelling will be enlarged on the left side the prescribed 1.8 meter side yard setback, and in the rear to a close proximity of the main structure setback as defined by the Credit Valley Conservation Authority (CVCA). A second storey will be added to complete the form and desired living area. The basement area will be finished. The roof and eave heights will not exceed the prescribed limits set out in the applicable zoning bylaw.

The mature tree in the front yard will be preserved and additional groundcover and shrub landscape will be added.

In the rear yard immediately behind the new dwelling, it is proposed to add a hot tub and a swimming pool surrounded by a paver-finished area. It is proposed to locate a pool equipment and garden shed to the rear of the new pool. These proposed structures will be located well within the accessory structure setback defined by the CVCA.

The remainder of the rear yard down to the water's edge will remain in the existing condition.

An overview of the proposed development is captured in the following site plan, floor plans, elevations and altered photos.

2.10.5. Proposed development statistics:

	Permitted/required	Provided
a. Lot area:	Min. 695 m^2	2,578 m^2
b. Lot frontage:	Min. 18.0 m	22.56 m
c. Lot coverage:	25.0 %	24 %
d. Front yard:	7.5 m	7.97 m
e. Garage face:	7.5 m	7.97 m
f. Side yard, first storey:	Min. 1.200 m	n/a
g. Side yard, second storey:	Min. 1.810 m	1.830 m
h. Rear yard:	Min. 7.5 m	17.7 m
i. Attached garage:	yes	yes
j. Garage face setback:	Min. 7.5 m	7.97 m
k. Parking spaces:	Min. 2	2+2 in garage
l. Driveway width:	up to 6.0 m	6.0 m
m. Front yard soft area:	Min. 40 %	80 %
n. Accessory structures:	yes	yes
o. Gross floor area:	Max. 662.854 m^2	548 m^2

p.	Highest ridge height:	Max. 9.0 m	9.0 m
q.	Flat roof height:	Max. 7.5 m	n/a m
r.	Roof eave height:	Max. 6.4 m	6.4 m
s.	Garage projection:	Max. 2.0 m	0.00 m
t.	Dwelling unit depth:	Max. 20.0 m	15.2 m

2.10.6. Proposed development drawings:

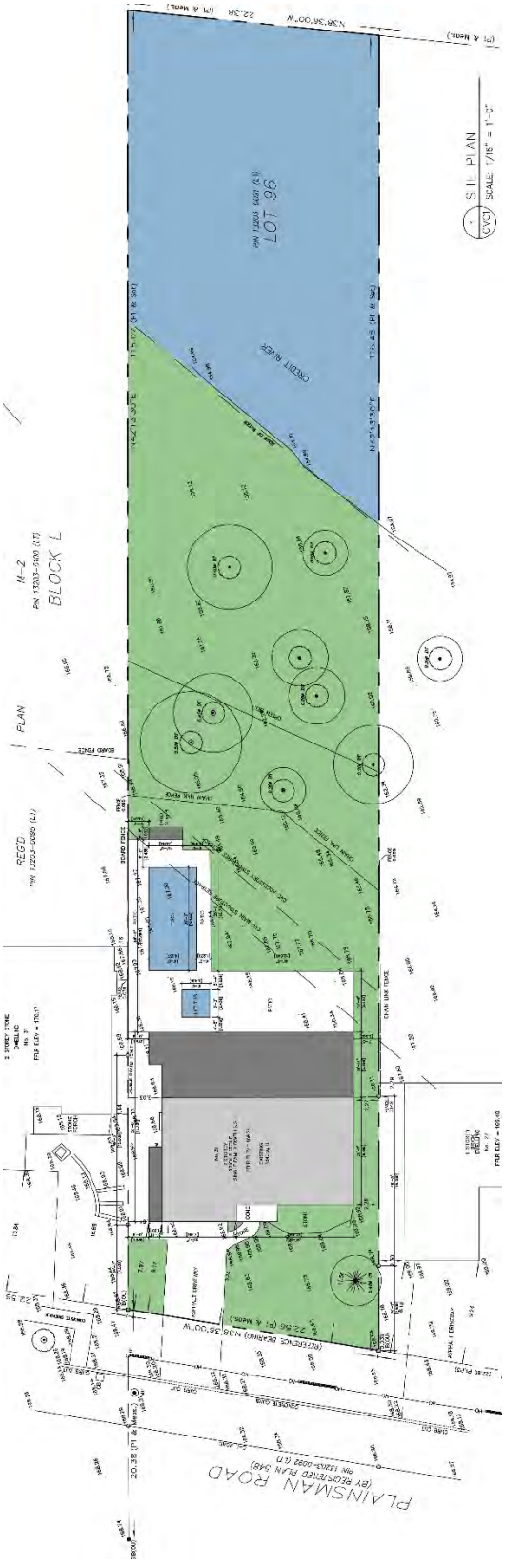


Figure 16: Proposed development - Site Plan

Figure 17: Proposed development - Site Plan Detail

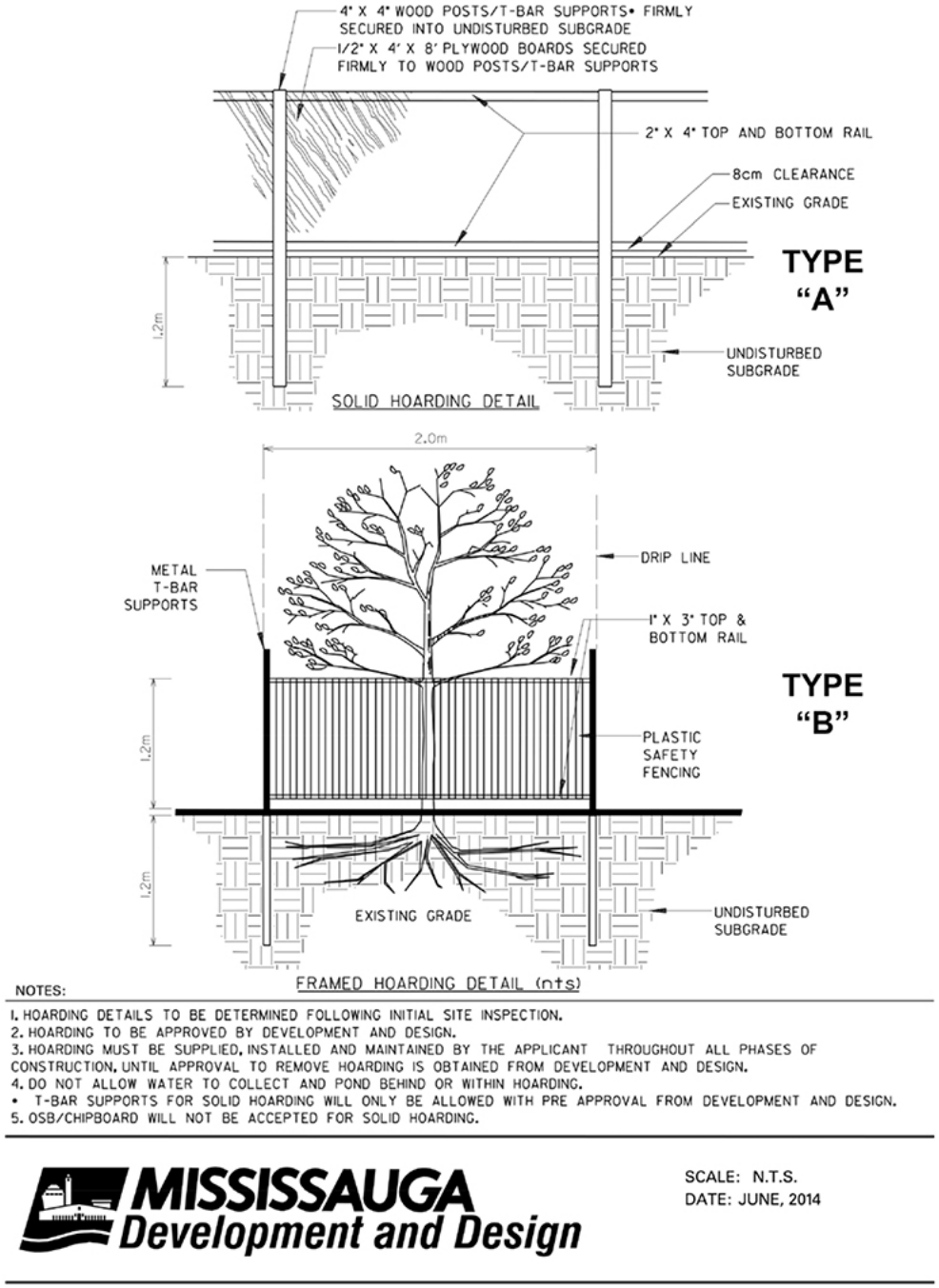


Figure 18: City of Mississauga Standard – tree protection hoarding Types A and B

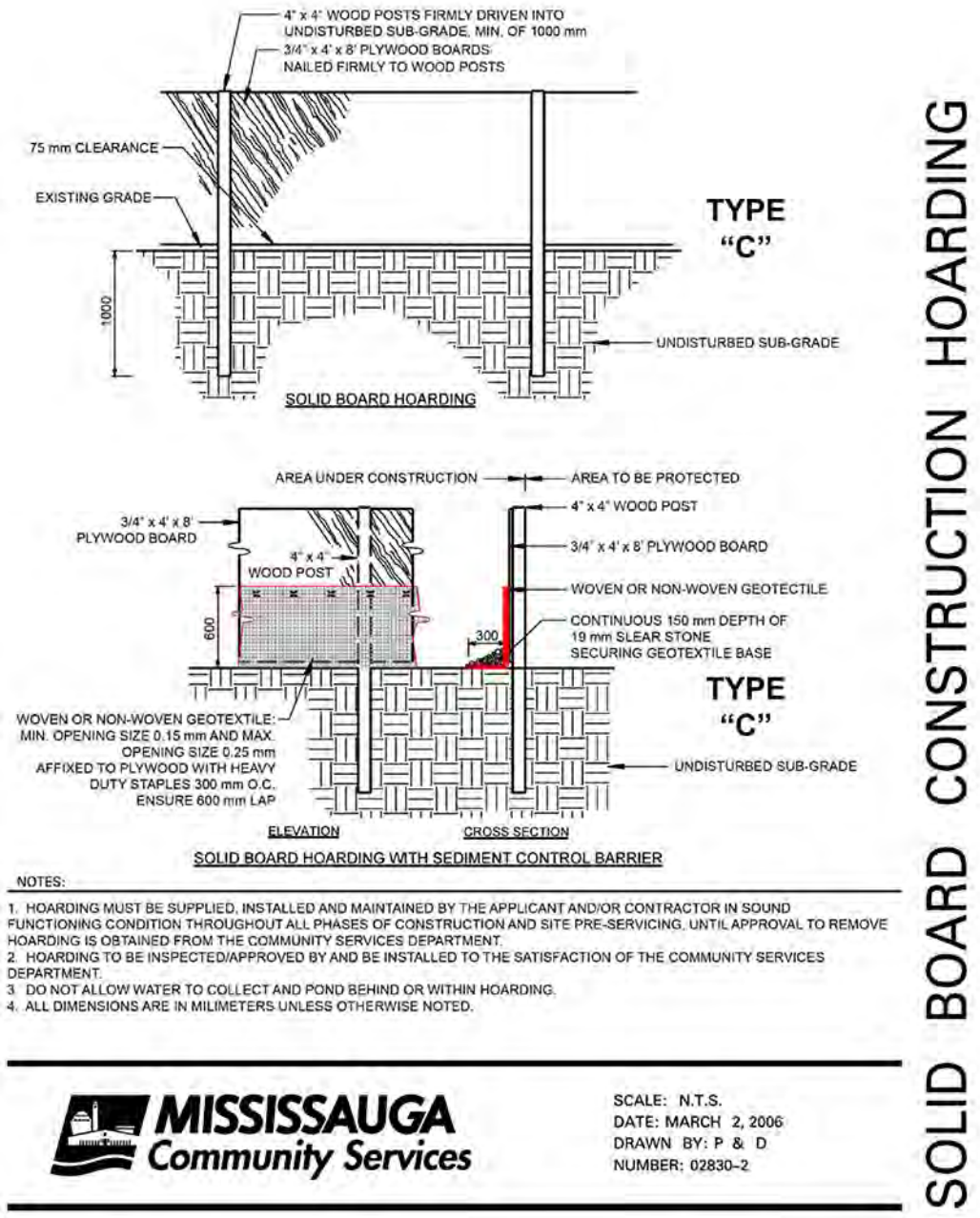


Figure 19: City of Mississauga Standard – tree protection hoarding Types C with sediment control

Figure 24: Proposed development - Front Elevation

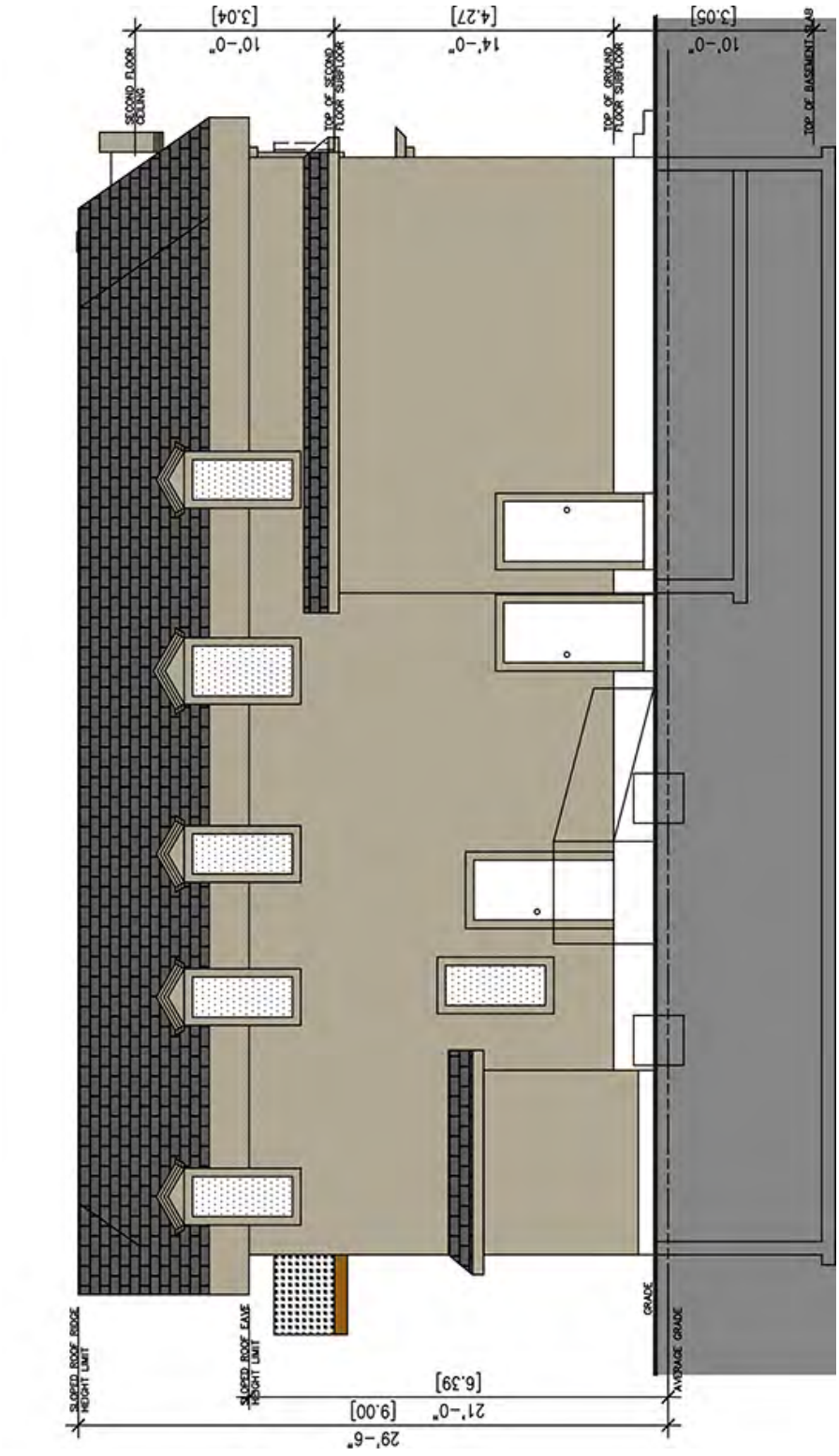


Figure 25: Proposed development - Left Side Elevation

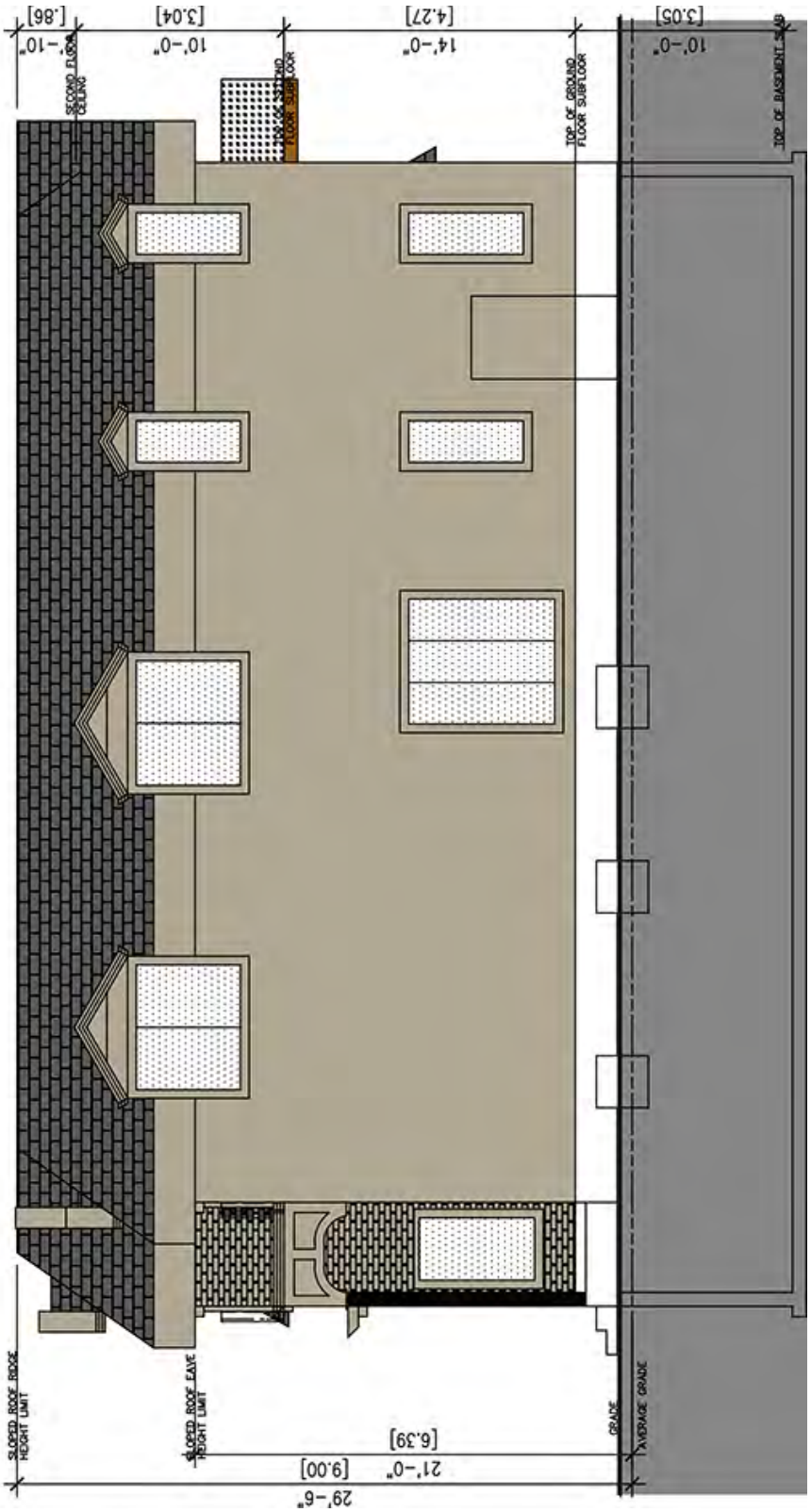


Figure 26: Proposed development – Right Side Elevation

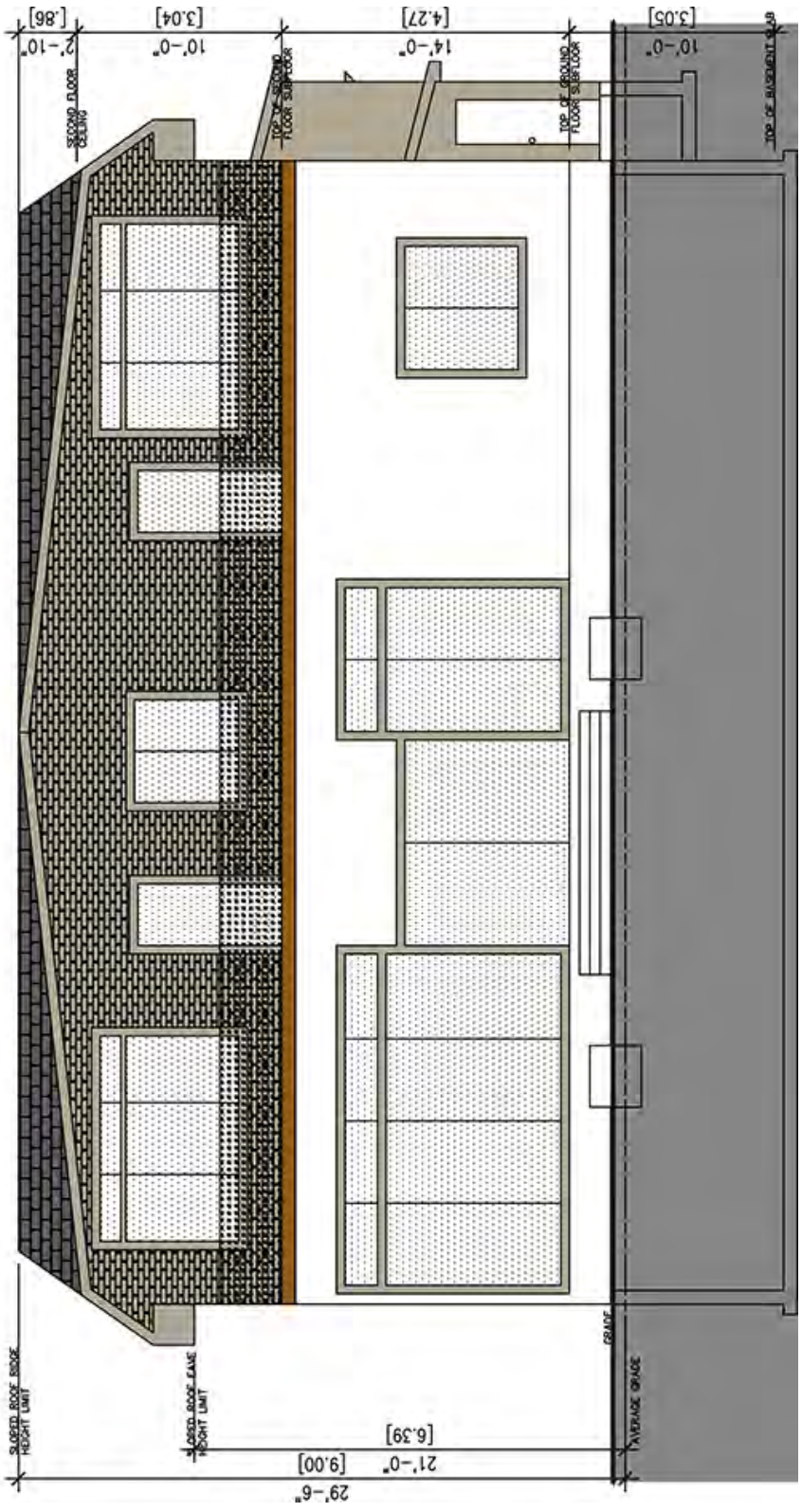


Figure 27: Proposed development - Rear Elevation

2.10.7. Proposed development visual narrative:

Figure 28: Plainsman Road streetscape - view with proposed dwelling

Figure 29: View of 29 Plainsman Road property from east bank of Credit River, with proposed dwelling

3. Addressing the Cultural Landscape or Feature Criteria: the Cultural Landscape Inventory document published by the City of Mississauga Community Services in 2005 identifies the area that the subject property lies within and adjacent to as code L-NA-2, Credit River Corridor, in the Cultural Landscapes section. The property is not within nor adjacent to any codes in the Cultural Landscapes and Landmarks section of the document. Reference maps from this publication are included herein. Copies of pages 70 and 71 of the document set out the applicable criteria for the heritage impact assessment. They are:

   3.1. *Landscape Environment:*

      3.1.1. *Scenic and visual quality:* as illustrated in *Figures 24, 25, 26* and *41,* the river corridor maintains its scenic and visual quality as it passes the Plainsman Road properties on its west bank. The sloping west bank of the subject property is well treed and consistent with the numerous properties to the north and to the south. The proposed development will have a negligible if any impact because the work on the river bank within the subject property will be limited to the refurbishment and replacement in kind of the existing features only, and none of the existing trees will be removed unless specifically recommended to do so by the retained arborist. The proposed dwelling will also have negligible if any impact on this criteria as it will be well screened from view by the existing trees on the river bank slope. On the street side, the proposed development will be in balance with the adjacent properties and the overall streetscape of Plainsman Road: the roof and eave heights of the proposed dwelling are set to the limits prescribed in the applicable zoning bylaw; the present vegetation on the street property line will be reduced to permit visual contact with the proposed structure; proposed planting in the front yard will be limited to native plant groundcover to further facilitate the visual contact with the proposed structure. The subject property spans across the river to the Riverrun Park boundary on its east end. The proposed development will not effect this area in any way.

      3.1.2. *Natural environment:* likewise, the natural environment is intact in its current form. The proposed development will have a negligible if any impact on this criteria because the work at the top and on the river bank slope within the subject property will be limited to the refurbishment and replacement in kind of the existing features. The proposed changes on the street site of the property will maintain the natural environment utilizing native species planting in a manner to be consistent with that on the adjacent properties and with the Plainsman Road streetscape in general.

      3.1.3. *Landscape design, type and technological interest:* the current landscape design and type on the street is consistent with the adjacent properties and the Plainsman Road streetscape, and typical for suburban Mississauga in character. The river bank landscape is of natural character and consistent with the landscape on the adjacent properties and the Credit River corridor in this portion of the river course. The proposed development will not alter the character and type of the landscape on the street and the river.

   3.2. *Built Environment:*

      3.2.1. No criteria is listed.

   3.3. *Historical Associations:*

      3.3.1. *Direct association with important person or event:* there is no evidence of any important person or event having direct association with the subject property. Of course, the Credit River is associated with native people's activities that may have been intensified during the early European settlement of the region, facilitating the main trading route from the upper sections of the watershed to the trading post

established on the shore of Lake Ontario, thus being named the Credit River.

H. Rutledge, one of the early settlers in the area at the time already known as Streetsville, was the owner of a track of land that included the subject property. The evidence of the Rutledge ownership is indicated on a copy of the Map of Streetsville dated July 16th 1856 and registered as Plan No. STR-4.

Subsequently the lands were zoned and subdivided whereby the subject property was transferred to Margaret Eluned Baker, and recently to the current owner, none of whom are considered to be persons of historically significant importance.

3.3.2. *Illustrates important phase in Mississauga's social or physical development:* the immediate portion of the Credit River Valley does not include any specific important phase in Mississauga's social or physical developments. The early and historically important settlements and physical developments have occurred to the north and further south of the subject property. Here, the river seems to have maintained its natural course from the time before and after the early European settlement to the present. The immediate neighborhood was established in the mid-1960's subdivision development phase typical of the suburban expansion of that time period in Mississauga's history.

3.4. *Other:*

3.4.1. *Historical and archeological interest:* the Credit River Valley is rich in history of the indigenous people and the period of settlement throughout the 19th century. Much has been documented and written about the history of this area, material that is concentrated in the Mississauga's historic archive currently housed in the Canadianna Room at the Central Library. The formalized historical accounts are compiled in publications such as Mary Manning's Street: the Man, the Family, the Village, Alan Skeoch's Mississauga, where the River Speaks, and Kathleen Hicks' Streetsville: From Timothy to Hazel. There, we will learn about the late 18 and early 19 century life of the local indigenous peoples, the initial purchase of the lands by the British Crown, Timothy Street's investment in the first land surveys, and the arrival of the first settlers in the area:

"In 1804 the government, to promote settlement in the district known as Peel County, opened a store on the spot where the river emptied into Lake Ontario. Colonel Ingersoll was put in charge, and … successfully managed the business for years … The river, along which … [the Six Nations Indians] *had numerous villages, served as a highway for their canoes in summer and in winter when frozen over it was an excellent road for the dog sleighs. …*

"In 1818 the district was thrown open for settlement, and during that summer James Glendenning located and felled the first tree on the spot where Streetsville now stands. The next year … Timothy Street … secured from the government 1,800 acres of land … saw the possibility of power on the river, and in 1821 built a brush dam, to furnish power for a grist-mill. A sawmill … [was] *added the next year. … John Barnhart opened a store* [Streetsville's first general store, now known as Montreal House] *in 1821. Around the grist mill, sawmill and store, business collected and the village was born."* [7]

The Village of Streetsville was incorporated in 1858 with a population of 1,500 people, and became a town in 1962 with a population of 5,000. The Town of Streetsville amalgamated with the Town of Mississauga, Port Credit and portions of

[7] The Tweedsmuir History of Streetsville, Volume 1, pg. 36

the townships of Toronto Gore and Trafalgar to form the City of Mississauga in 1974. In 2009, the population of Streetsville was recorded to be 47,327 people.

The subject property lies within the northern fringe of the Streetsville community and spans from the top of the western bank of the Credit River well across the stream to the east. When the indigenous people began to trade with the early settlers and Crown interests, the River was used by them in order to reach the Port Credit trading post, by canoe during the warm season and by dog-pulled-sled in the winter months.

There were numerous mills established on the Credit River, in Streetsville and on its south boundary. Just north of the subject property, on then the Deady property where Alpha Mills Road would have intersected and crossed the river, Alpha Mills were built. Today, that site is occupied by the spillway of the Mullet Creek Diversion system.

There are many archeological sites in Mississauga, none in the immediate vicinity of the subject property. The closest sites are located 1.2 km to the south and 0.75 km to the east, well beyond a range where the proposed development would have any impact on them. For reference see *Figure 34*, a compilation map of archeological sites in Mississauga.

3.4.2. *Outstanding features/interest:* the section of the Credit River that lies within and adjacent to the subject property can be characterized as pastoral with no significantly outstanding features. The east shore of the river is today a public park with a meandering nature trail nestled within the overgrown shrubbery and treed base of the river. The subject property is not visible from this nature trail due to the flora of this area.

3.4.3. *Significant ecological interest:* the section of the Credit River that lies within and adjacent to the subject property is a contributor to the local ecology and the ecology of the region. It provides a natural habitat for Mississauga's birds, animals and insects and harbors local native flora. Salmon migrate through this area to the upper reaches of the river every year. Therefore, the proposed development is limited to the west portion of the property and any proposed work within the river bank slope will include silt fences to prevent the contamination of the river bed with eroded soil.

3.5. *Arborist's Report:* the section of the Credit River that lies within and adjacent to the subject property is noted for its natural environment. Therefore, an arborist's report is submitted herewith.

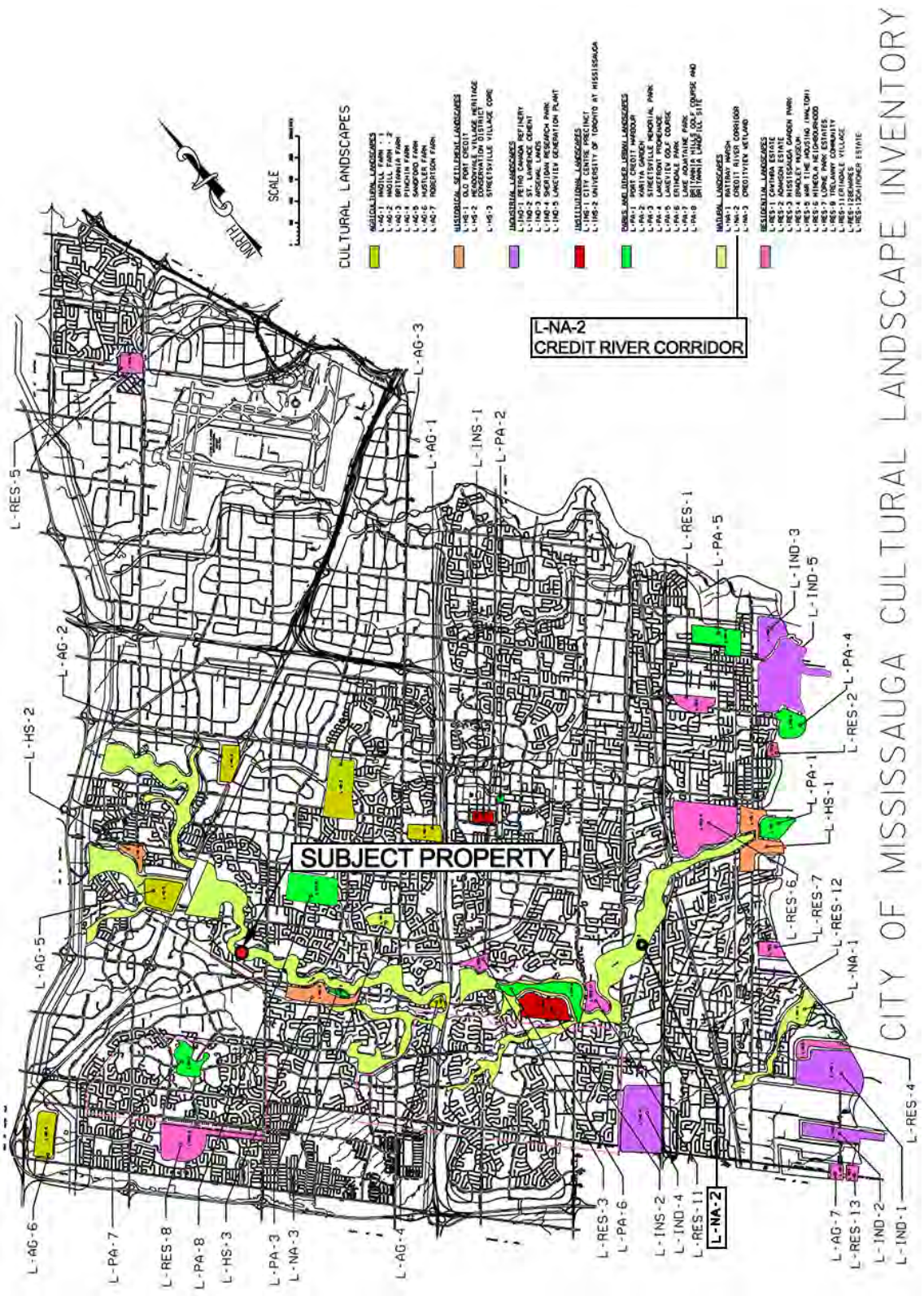


Figure 30: City of Mississauga Cultural Landscape Inventory map – Cultural Landscapes [8], annotated by Studio uA3.

[8] City of Mississauga Community Services: Cultural Landscape Inventory, January 2005, pg. 112

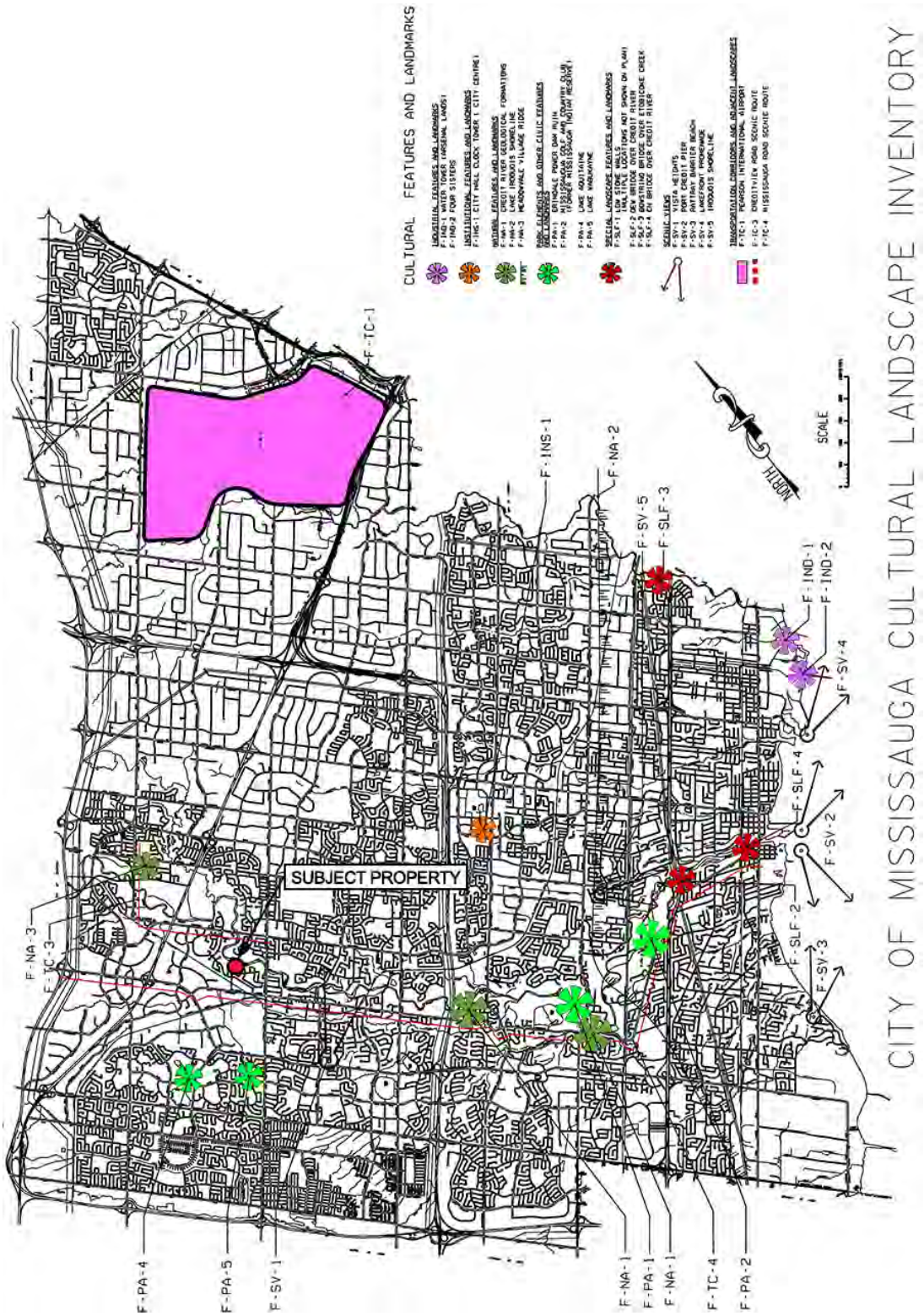


Figure 31: City of Mississauga Cultural Landscape Inventory map – Cultural Landscapes and Landmarks [9], annotated by Studio uA3.

[9] City of Mississauga Community Services: Cultural Landscape Inventory, January 2005, pg. 162

CITY OF MISSISSAUGA

Cultural Landscape Inventory

Credit River Corridor L-NA-2

Location The River runs north south and transects the City from the Brampton border to the Lake Ontario shoreline.

Heritage or Other Designation None

Landscape Type Natural Area

LANDSCAPE ENVIRONMENT

- [x] Scenic and Visual Quality
- [x] Natural Environment
- [ ] Horticultural Interest
- [x] Landscape Design, Type and Technological Interest

BUILT ENVIRONMENT

- [ ] Aesthetic/Visual Quality
- [ ] Consistent Early Environs (pre-World War II)
- [ ] Consistent Scale of Built Features
- [ ] Unique Architectural Features/Buildings
- [ ] Designated Structures

HISTORICAL ASSOCIATION

- [ ] Illustrates Style, Trend or Pattern
- [x] Direct Association with Important Person or Event
- [x] Illustrates Important Phase in Mississauga's Social or Physical Development
- [ ] Illustrates Work of Important Designer

OTHER

- [x] Historical or Archaeological Interest
- [x] Outstanding Features/Interest
- [x] Significant Ecological Interest
- [ ] Landmark Value

10

[10] City of Mississauga Community Services: Cultural Landscape Inventory, January 2005, pg. 70

CITY OF MISSISSAUGA

Cultural Landscape Inventory

Credit River Corridor

L-NA-2

SITE DESCRIPTION

The Credit River is 58 miles long in total and has a drainage area of 328 square miles. From south of Georgetown to Erindale, the river cuts through the boulder till of the Peel Plain and in some areas exposes the underlying Paleozoic bedrock of shales and sandstones. The River flows through a wide alluvial terrace at Meadowvale where its banks are gentle and tree covered. As it approaches the old Shoreline of glacial Lake Iroquois at Erindale it cuts deeper and deeper into the Peel Plain creating steep valley walls in excess of 75 feet deep. In several locations, such as on the former Bird property north of Burnhamthorpe, intermediate benches were formed as the water levels of the glacial lakes receded. These benches and alluvial terraces provide wonderful natural and recreational settings for trails and other recreational activities. South of the Iroquois shoreline the River cuts through the sands and boulder till of the Iroquois Plain. The last mile of the river is drowned and marshy. The wave action of Lake Ontario continues in its efforts to build a bar across the mouth of the river which is periodically removed by dredging. Despite its size, the River has had significant impact on the settlement of the area. At one time, Erindale had a mill and for a short while a small hydroelectric generating station. At Streetsville, four flour mills operated some of which remain today as modern mills. Two sawmills and a carding mill were built in Meadowvale. The banks of the river continue to be developed for attractive residential neighborhoods, parks and special uses such as the University of Toronto Erindale campus. The river provides the residents of Mississauga with a variety of recreational and educational opportunities. The Credit River Valley is the most significant natural feature remaining in the City of Mississauga. (excerpts from The Physiography of Southern Ontario)

11

[11] City of Mississauga Community Services: Cultural Landscape Inventory, January 2005, pg. 71

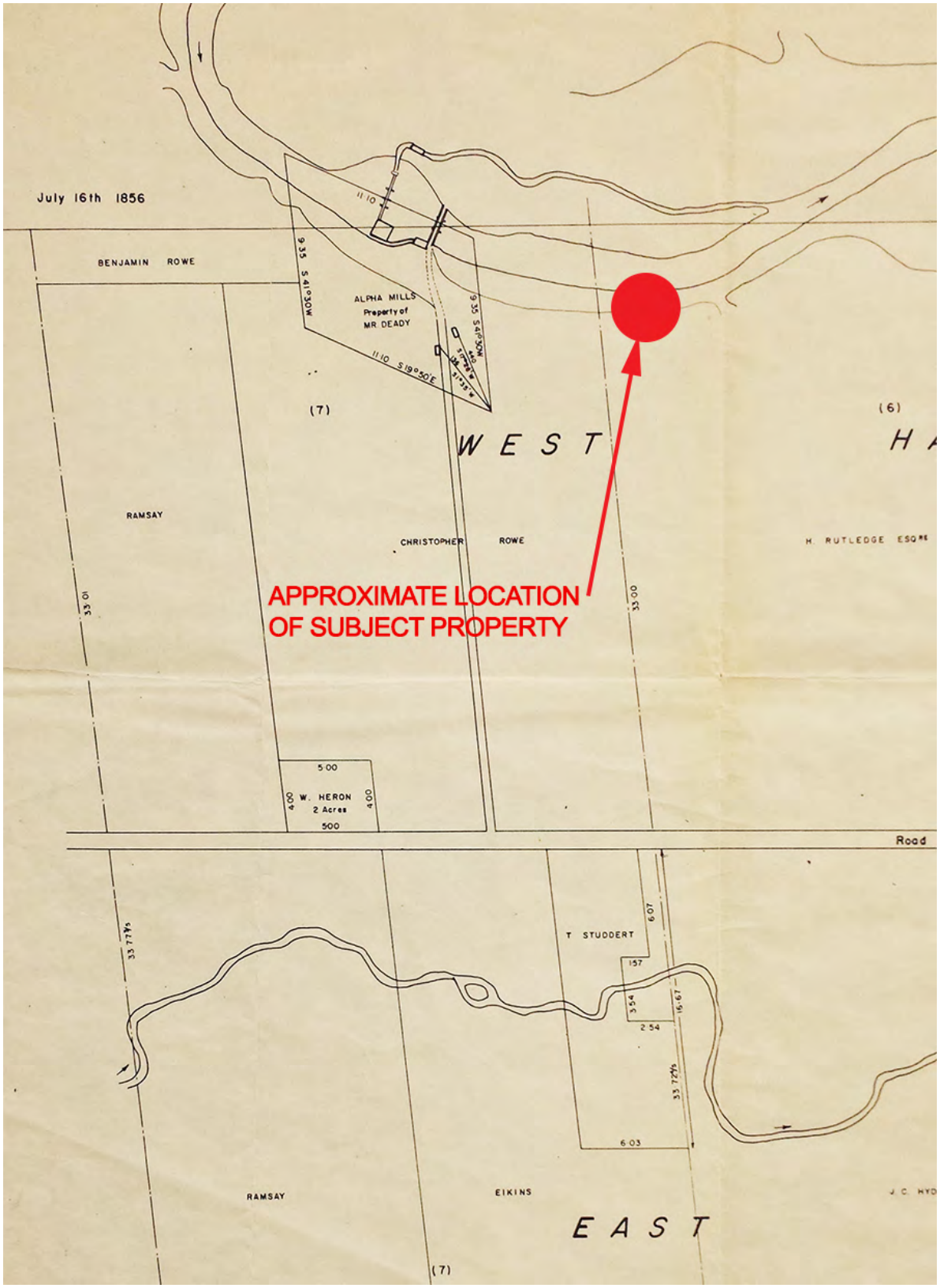


Figure 32: Part of "Map of the Village of Streetsville dated July 16th 1856 and Registered as Plan No. STR-4, annotated by Studio uA3.

Figure 33: Early Streetsville zoning map, annotated by Studio uA3.

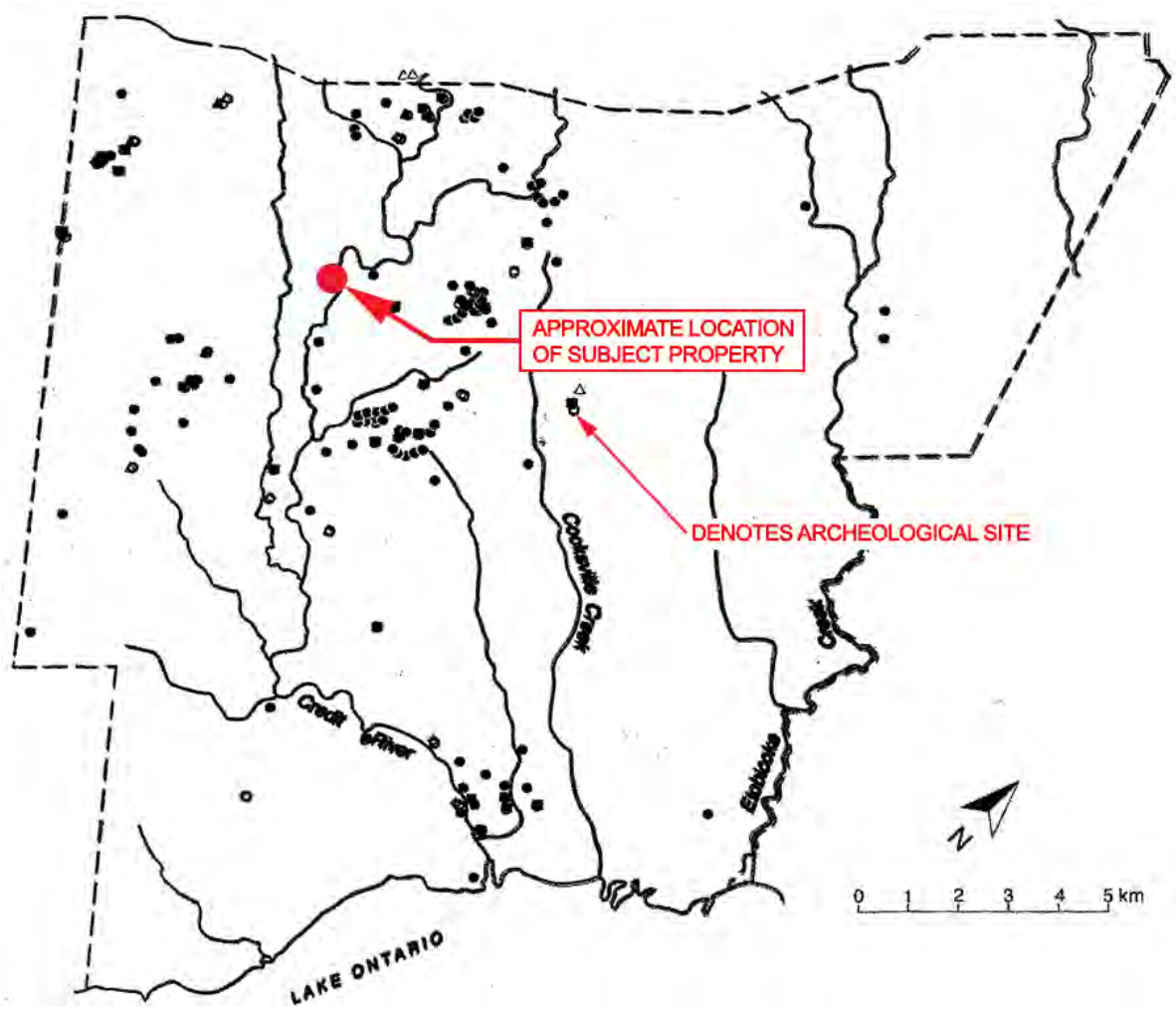
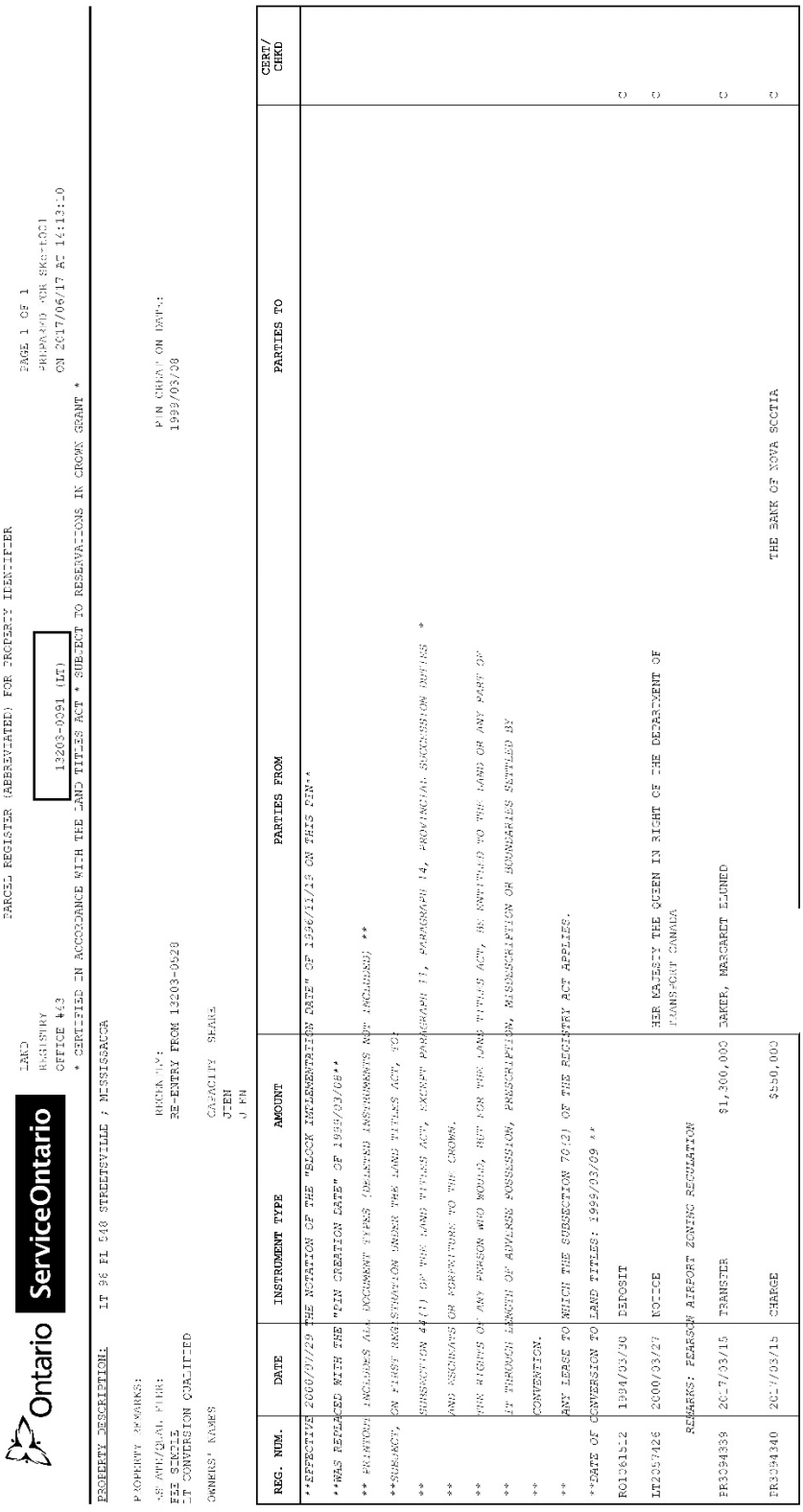


Figure 34: compilation map of pre-contact, archaic and Woodland archeological sites in Mississauga per D.G. Smith, annotated by Studio uA3. [12]

[12] David G. Smith: Ten Thousand Years, Aboriginal Heritage in Mississauga, pp. 56, 60, 61 and 66.

4. Property Information:



Ontario ServiceOntario

PARCEL REGISTER (ABBREVIATED) FOR PROPERTY IDENTIFIER

LAND
REGISTRY
OFFICE #43

13203-0091 (LT)

PAGE 1 OF 1
PREPARED FOR SK5-LOCI
ON 2017/06/17 AT 14:13:0

* CERTIFIED IN ACCORDANCE WITH THE LAND TITLES ACT * SUBJECT TO RESERVATIONS IN CROWN GRANT *

PROPERTY DESCRIPTION: LT 96 PL 540 STREETSVILLE ; MISSISSAUGA

PROPERTY REMARKS:
ESTATE/QUALIFIER:
FEE SIMPLE
LT CONVERSION QUALIFIED

RECENTLY:
RE-ENTRY FROM 13203-0528

PIN CREATION DATE:
1993/03/30

OWNERS' NAMES
CAPACITY SHARE
JOEN
J PN

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
**EFFECTIVE	2000/01/29	THE NOTATION OF THE "BLOCK IMPLEMENTATION DATE" OF 1996/11/18 ON THIS PIN**				
**WAS REPLACED WITH THE	"PIN CREATION DATE" OF 1993/03/08**					
** PRINTOUT INCLUDES ALL DOCUMENT TYPES (DELETED INSTRUMENTS NOT INCLUDED) **						
**SUBJECT,	ON FIRST REGISTRATION UNDER THE LAND TITLES ACT, TO:					
**	SUBSECTION 44(1) OF THE LAND TITLES ACT, EXCEPT PARAGRAPH 11, PARAGRAPH 14, PROVINCIAL SUCCESSION DUTIES *					
**	AND ESCHEATS OR FORFEITURE TO THE CROWN.					
**	THE RIGHTS OF ANY PERSON WHO WOULD, NOT FOR THE LAND TITLES ACT, BE ENTITLED TO THE LAND OR ANY PART OF					
**	IT THROUGH LENGTH OF ADVERSE POSSESSION, PRESCRIPTION, MISDESCRIPTION OR BOUNDARIES SETTLED BY					
**	CONVENTION.					
**	ANY LEASE TO WHICH THE SUBSECTION 70(2) OF THE REGISTRY ACT APPLIES.					
**DATE OF CONVERSION TO	LAND TITLES: 1999/03/09 **					
RO1961522	1994/03/30	DEPOSIT				C
LT2057426	2000/03/27	NOTICE		HER MAJESTY THE QUEEN IN RIGHT OF THE DEPARTMENT OF TRANSPORT CANADA		C
REMARKS: PEARSON AIRPORT ZONING REGULATION						
PR3094339	2017/03/15	TRANSFER	$1,300,000	BAKER, MARGARET ELINNED		C
PR3094340	2017/03/15	CHARGE	$650,000		THE BANK OF NOVA SCOTIA	C

NOTE: ADJOINING PROPERTIES SHOULD BE INVESTIGATED TO ASCERTAIN RESTRICTIVE INCONSISTENCIES, IF ANY, WITH DESCRIPTION REPRESENTED FOR THIS PROPERTY.
NOTE: INSURE THAT YOUR PRINTOUT STATES THE TOTAL NUMBER OF PAGES AND THAT YOU HAVE PICKED THEM ALL OF.

Figure 35: abbreviated Parcel Register

5. Impact of Development or Site Alteration: the description of the potential negative impacts and assessments of the proposed site alteration are:

5.1	Destruction of any, or part of any, significant heritage attributes or features:	No impact
5.2	Removal of natural heritage features, including trees:	Minimal to none, see Arborist Report recommendations
5.3	Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance:	No impact
5.4	Shadows created that alter the appearance of a heritage attribute or change the viability of an associated natural feature, or plantings, such as a garden:	No impact
5.5	Isolation of a heritage attribute from its surrounding environment, context or a significant relationship:	No impact
5.6	Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features:	No impact
5.7	A change in land use where the change in use negates the property's cultural heritage value:	No impact
5.8	Alterations must be consistent with the retention of the appearance of Streetsville to ensure that the character of this part of Mississauga remains intact:	No impact

6. Mitigation Measures:

6.1. Alternative development approaches:

6.1.1. Alternative approach A: the most environmentally sustainable approach is to do nothing in order to maintain the subject property in a condition that represents the least impact on the cultural heritage resource: the natural environment of the Credit River corridor. The "do nothing" line was crossed long time ago when the subject property was first altered as a part of the land subdivision in the early 1960's. To continue to "do nothing" will perpetuate the state of dereliction of the structures on the property and its economic value.

6.1.2. Alternative approach B: to refurbish the existing structures and infrastructure on the subject property will require a significant amount of economic resources spent on gutting the house and upgrading the envelope with insulation, upgrading the plumbing, electrical and HVAC systems, replacing exterior doors and all windows, rebuilding and finishing of the gutted interior, and replacing the roof. On completion, the result may be satisfactory to meet the lifestyle expectations of the 1960's rather than the requirements and expectations of a contemporary 2017 lifestyle. The shortfall in meeting the 2017 lifestyle expectations does not justify the commitment of the economic resources that would be required.

6.1.3. Alternative approach C: to add a second storey onto a refurbished one storey structure represents similar commitments and results outlined in Alternative B above, with the added expense of structural modifications to the existing structure and foundations. On completion, the result will fall short of the 2017 lifestyle expectations that cannot not justify the commitment of the economic resources that would be required.

6.1.4. Alternative approach D: the proposed development includes the strategies put forward in Alternative B above yet resolves the key issue: to meet the 2017 lifestyle expectations as a result of the commitment of the economic resources required to meet the goal. It is proposed to gut the existing structure, upgrade the systems, improve the exterior envelope, and add living areas and contemporary energy efficient exterior envelope where the structure is increased in size and height.

6.2. Isolating development and site alteration from the significant built and natural heritage features and vistas: it is not desirable to isolate the proposed development from the surrounding build environment, but rather to fit in and complement it. The proposed development is designed to be within the setback and height limits determined by the city bylaw, including the more stringent height limits of this R2-50 Exception zone. The front yard planting modifications proposed for the new development to participate in the Plainsman Road streetscape. In the rear, the new development is adequately isolated from the natural heritage vistas by the existing significant forestation of the river bank slope. The stringent height limits are met so that the new development is subordinate to the height of the natural environment.

6.3. Design guidelines that harmonize mass, setback, setting and materials: as set out in the zoning bylaw for this R2-50 Exception zone, the overall height of the proposed development is limited below the heights permitted in the R2 zone. The setbacks are also established by the applicable zoning bylaw. The exterior materials of the new development are limited to natural stone, existing face brick, stucco, and asphalt shingles on the roof, in colors that blend into the natural environment and those used on houses within the neighborhood.

6.4. Limiting height and density: the proposed development meets the height limits set out in the zoning bylaw. The R2-50 Exception zone is specifically identified as an infill exception in Article 4.2.3 of the applicable zoning bylaw. The proposed development remains to be a single family dwelling in compliance with the zoning bylaw.

6.5. Allowing only compatible infill and additions: the proposed development meets the infill and addition limits set out in the applicable zoning bylaw.

6.6. Reversible alterations: the proposed development does not include reversible strategies as they would be absolutely impractical.

7. Qualifications:

Architect John Kucera, OAA, MRAIC

Education:

Master of Architecture (with Honors and AIA Silver Medal for Academic Achievement), Rhode Island School of Design, 1996

Bachelor of Arts, Interior Design, Ryerson Polytechnical University, 1987

Diploma, Architectural Technician (with Honors), Humber College of Applied Arts and Technology, 1974

Accreditation and Memberships:

Present:
Licensed Architect, Ontario
NCARB Certified Architect
Member, Ontario Association of Architects (OAA)
Member, Royal Architectural Institute of Canada (RAIC)
Member, Mississauga Board of Trade
Member, Oakville Chamber of Commerce
Member and Immediate Past-president, Streetsville Club, Rotary International

Professional Experience:

2010 – Present	Principal, Studio uA3, Mississauga (Streetsville), ON
2009 – 2010	Architect, Ware Malcomb Architects, Vaughan, ON
2007 – 2009	Architect, DiLeonardo International, Warwick, RI, USA
1996 – 2006	Architect, Shepley Bulfinch Richardson and Abbott, Boston, MA, USA
1991 – 1993	Vinick Associates Incorporated, Hartford, CT, USA
1989 – 1991	Frank Nicholson Incorporated, Concord, MA, USA
1986 – 1989	DiLeonardo International, Warwick, RI, USA
1976 – 1986	Principal, John Kucera & Associates, Toronto, ON

Selected Projects with Heritage/Historic Content:

- Historic residence alterations and addition, consulting, Timothy Street House, 41 Mill Street, Streetsville, ON
- Group Home expansion, 361 Queen Street South, Streetsville, ON
- Building and site alterations, conversion of a residential dwelling to a commercial building to house retail and office space, 13 Thomas Street, Streetsville, ON
- Renovation and adaptive reuse, Steam Whistle Brewing Co., Toronto, ON
- Major expansion (7,500 sq. ft.) of residence incorporating an existing designated house in historic village, Bordin Residence, Kleinburg, ON
- Restoration and renovation of a historic building, The Roosevelt Hotel, New York, NY
- Renovation of a historic building, Beekman Towers Hotel, New York, NY
- Restoration and adaptive reuse, 18th century front façade, 12th century rear facade, Ritz-Carlton Hotel, Prague, Czech Republic
- New building in historic district, Ritz-Carlton Hotel, Aspen, CO, currently St. Regis Aspen
- Renovation and adaptive reuse in historic building, Campus Bookstore and Café, Rollins College, Winter Park, FL
- New building in historic context, Cornell Campus Center, Rollins College, Winter Park, FL

- New building in historic context, Science Teaching Laboratories, Agnes Scott College, Decatur (Atlanta), GA
- New Student Commons addition to a historic building, Sterling Library, Yale University, New Haven, CT
- Renovation and new entrance to a historic building, Sterling Undergraduate Library, Yale University, New Haven, CT
- Restoration and major expansion in historic precinct of the campus, Higgins Hall Science Laboratories, Boston College, Boston, MA
- Restoration and adaptive reuse in historic district, Kirshaw Penthouse at the Hampshire House, Beacon Hill, Boston, MA
- Addition to a historic residence, Roberts Residence, Redbank, NJ
- Addition to a historic residence, Schilling Residence, Redbank, NJ
- Renovation in historic building, DYLEX Headoffice, Tip Top Taylors Building, Toronto, ON
- Renovation in historic building, Intermart - MacLaren Communications, Headoffice, Toronto, ON
- Renovation of historic building in historic district, Wilson's of Wickford, Wickford, RI

8. Recommendation: does the property meet the criteria for heritage designation under the Ontario Regulation 9/06, Ontario Heritage Act?:

   Ontario Regulation 9/06 states: "*A property may be designated under Section 29 of the Act if it meets one or more of the following criteria for determining whether it is of cultural heritage value or interest:*

   "1. The property has <u>design value or physical value</u> because it is a rare, unique, representative or early example of a style, type, expression, material or construction method, displays a high degree of craftsmanship or artistic merit, or demonstrates a high degree of technical or scientific achievement.

   "The property has <u>historical value or associative value</u> because it, has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community, yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.

   "The property has <u>contextual value</u> because it, is important in defining, maintaining or supporting the character of an area, is physically, functionally, visually or historically linked to its surroundings, or is a landmark."[13]

   The subject property, in its current condition, has value in the context of the criteria as it is applicable to the Cultural Landscape Inventory code L-NA-2 of the Credit River valley addressed above.

   "2. If the subject property does not meet the criteria for heritage designation then it must be clearly stated as to why it does not."[14]

   The subject property, in its current condition, has value in the context of the criteria as it is applicable to the Cultural Landscape Inventory code L-NA-2 of the Credit River valley addressed above.

   "3. Regardless of the failure to meet criteria for heritage designation, does the property

[13] Ontario Regulation 9/06, Ontario Heritage Act, Section 29
[14] Ibid

warrant conservation as per the definition in the Provincial Policy Statement. Conserved: means the identification, protection, use and/or management of cultural heritage and archaeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a Conservation Plan or Heritage Impact Assessment."[15]

The subject property, in its current condition, has value in the context of the criteria as it is applicable to the Cultural Landscape Inventory code L-NA-2 of the Credit River valley addressed above, and presented here in this Heritage Impact Statement.

The redevelopment of the subject property will have no negative impacts on the historic character, the scenic qualities, and any other criteria applicable to the Credit River Corridor.

The Credit River Corridor had developed into a diverse community attractive to people looking for larger lots centrally located within Mississauga that can accommodate new custom built homes. The older homes of this area are nearing the end of their life cycle and the market has recognized the need for renewal. The evident trend in this area is the demolition of older homes and their replacement with larger homes of contemporary design that meet the needs of a changing society.

The existing house at 29 Plainsman Road was built as a single family dwelling one storey high in the front and two storeys high in the rear. It has undergone various interior renovations since then to see it significantly modified from the original design. It is our position that the existing house does not have any heritage features or qualities that should be considered for preservation. The replacement of the existing house with a new structure and partially supported on the existing structure will be in keeping with the evolution of the community and while it will not impact on the heritage character of the area with its Significant Cultural Landscape designation.

9. Approval Process: three copies of this Heritage Impact Statement are here submitted to the Heritage staff along with a PDF soft copy, all in 8.5" x 11" format, and includes the Arborist's Report. It is understood that the Heritage staff will ensure that copies are distributed to the Planning and Building Department and relevant staff and stakeholders within the City Corporation. It is further understood that this Heritage Impact Statement will be reviewed by the City staff to determine whether all requirements have been met and will evaluate the presented option. The applicant will be notified of staff's comments and acceptance or rejection of this report.

   It is understood that this Heritage Impact Statement, when accepted, will become a part of further processing of a development application under the direction of the Planning and Building Department, and that the recommendations within the final approved version of the Heritage Impact Statement will be incorporated into development related legal agreements between the City and the proponent at the discretion of the municipality. It is assumed that the same terms will apply to the review by the Credit Valley Conservation Authority.

10. References:

10.1. Culture Division, Community Services Department, City of Mississauga: City of Mississauga Heritage Impact Assessment Terms of Reference, City of Mississauga, 2014.

[15] Ontario Regulation 9/06, Ontario Heritage Act, Section 29

10.2. Culture Division, Community Services Department, City of Mississauga: Cultural Landscape Heritage Impact Assessment (HIA) Terms of Reference, City of Mississauga, 2014.

10.3. Mary E. Manning: Street: the Man, the Family, the Village, Streetsville Historical Society, 1983

10.4. Pan-Canadian Collaboration: Standards and Guidelines for the Conservation of Historic Places in Canada, Second Edition, www.historicplaces.ca, 2010

10.5. HPI Nomination Team at University of Waterloo: Ontario Architecture Style Guide, Heritage Resource Centre, 2009

10.6. Ontario Heritage Trust: Eight Guiding Principles in the Conservation of Historic Properties, Ontario Heritage Trust, www.heritagetrust.on.ca, 2012

10.7. Ontario Heritage Trust: Conservation Plans for Heritage Properties, Ontario Heritage Trust, www.heritagetrust.on.ca, 2012

10.8. Smith, David G., Ten Thousand Years: Aboriginal Heritage in Mississauga. IN Mississauga: The First 10,000 Years, edited by Frank A. Dieterman, pp.55-71. Toronto: Eastend Books. © The Mississauga Heritage Foundation Inc., 2002.

10.9. The Tweedsmuirs: The Tweedsmuir History of Streetsville, Volume 1.

10.10. _: Through a century with Streetsville, 1859-1959, A Souvenir of the Centennial Celebration, 1959

10.11. Alan Skeoch: Mississauga, where the River Speaks, _

10.12. Kathleen A. Hicks: Streetsville: From Timothy to Hazel, _

10.13. _: Village of Streetsvile, Souvenir Program, Coronation celebration, 1953

10.14. _: Historical Atlas of Peel County, Ontario, Walker & Miles, 1877

10.15. _: A Guide to Woodland Plants in the Credit River Watershed, Credit Valley Conservation, _

This Heritage Impact Statement is respectfully submitted by:

Studio *uA*³.

Architect John Kucera, OAA, MRAIC

jkucera@studioua3.com

647/891-6889

City of Mississauga
Memorandum

MISSISSAUGA

Date: 2017/09/13

To: Chair and Members of Heritage Advisory Committee

From: Paul Damaso, Director, Culture Division

Meeting Date: 2017/10/17

Subject: New Construction on Listed Property: 1216 and 1222 Mississauga Road

This memorandum and its attachments are presented for HAC's information only.

The subject properties are registered under Section 27 of the Ontario Heritage Act as part of the Mississauga Road Scenic Route Cultural Landscape. In October 2016 Council adopted a Heritage Advisory Committee resolution to allow for the demolition of the dwelling at 1216 Mississauga Road. The property was since divided in two.

At that time a Heritage Impact Assessment was considered as part of the report to the Heritage Advisory Committee; however no proposal for new construction was brought forward by the applicant in 2016. Presently, Site Plan applications have been submitted to the City. As part of the requirements for the Site Plan applications, an addendum to the Heritage Impact Assessment describing the proposal for new construction was submitted. See Appendix 1. Two arborist reports are also attached as Appendices 2 and 3.

Attachments

Appendix 1: Heritage Impact Assessment Addendum
Appendix 2: Arborist Report for 1216 Mississauga Road
Appendix 3: Arborist Report for 1222 Mississauga Road

Prepared by: Paul Damaso, Director, Culture Division

Welwyn Consulting

May 24, 2017

David W. Small Designs Inc.
c/o Alexander Davies
1440 Hurontario Street
Mississauga, Ontario
L5G 3H4

SUBJECT: Arborist Report and Tree Preservation Plan
1216 Mississauga Road (Lot #1), Mississauga

Dear Alexander:

Attached please find the Arborist Report and Tree Preservation Plan which has been prepared for the above listed property. It is the client's responsibility to review the entire report to ensure all required tree permit application forms are filed with the City of Mississauga.

This report includes an evaluation of all trees on or within 6 metres of the subject site's property lines with a diameter at breast height (DBH) of **15cm or greater**. This evaluation includes the DBH, height, canopy spread, health, and structural condition of all trees that may be affected by the currently proposed site plan. This report also provides a Tree Preservation Plan for the property, including the appropriate Tree Protection Zones (TPZ).

This information complies with The City of Mississauga's *Private Tree Protection By-Law 254-12* and *Site Plan Control By-Law 0293-2006.* Included in the report (if required) are Valuation Appraisals of any City-owned trees as required by the City of Mississauga to obtain the necessary tree permits.

This letter is part of the Arborist Report and Tree Preservation Plan and may not be used separately. Please feel free to contact me to discuss this report further.

Best regards,

Tom Bradley B.Sc. (Agr)
ASCA Registered Consulting Arborist #492
ISA Certified Arborist #ON-1182A
ISA Certified Tree Risk Assessor
Butternut Health Assessor #257 (OMNR)
Welwyn Consulting
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Welwyn Consulting

Arborist Report and Tree Preservation Plan

1216 Mississauga Rd (Lot #1), Mississauga

Prepared For
David W. Small Designs Inc.
c/o Alexander Davies
1440 Hurontario Street
Mississauga, Ontario
L5G 3H4

Prepared By
Tom Bradley
ASCA Registered Consulting Arborist #492
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Prepared On
May 24, 2017

Welwyn Consulting

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Welwyn Consulting

Summary

This Arborist Report and Tree Preservation Plan addresses all trees with a diameter at breast height (D.B.H.) of 15cm or greater and within 6 metres of the subject site that may be affected by the proposed property development and provides recommendations for their preservation and/or removal. This report also includes hoarding distances for the Tree Protection Zones (TPZ) and provides recommendations for current and future tree health care.

Based upon the Tree Inventory for this property, there are **13 trees** that may be affected by the proposed site development plan:

- 7 trees on the subject site
- 3 neighbouring trees within 6 metres of the subject site property line
- 2 shared ownership trees (subject site and neighbour east of the subject site)
- 1 City-owned tree within proximity to the subject site

Table 1: Tree Preservation and Removal

TREES TO PRESERVE	TREE NUMBER	TOTAL
i) Subject Site Trees	7, 9, 10, 12, 13	5
ii) Neighbouring Trees	1, 2, 3	3
iii) Shared Ownership Trees	4, 5	2
iv) City-owned Trees	8	1
	#of Trees To Be Preserved:	**11**
TREES TO BE REMOVED	**TREE NUMBER**	**TOTAL**
i) Subject Site Trees	6, 11 (site plan conflict)	2
ii) Neighbouring Trees	0	0
iii) Shared Ownership Trees	0	0
iv) City-owned Trees	0	0
	#of Trees To Be Removed:	**2**
	Total trees on or adjacent to subject site:	**13**

Specific tree-related issues on this site:

1.) Prior to building foundation excavation, an Air Spade/Hydro-Vac investigation of the areas 2m west of Tree #5 and 2m east of Tree #10 shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process.

Please refer to Pages 8 and 9 of this report for further information.

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Introduction

This Arborist Report and Tree Preservation Plan provides the current condition of all trees with a D.B.H of 15cm or greater on or adjacent to the subject site that may be affected by the proposed site development plan, including any City and/or neighbouring trees within 6 metres of the subject site's property lines as indicated by the attached site plan in Appendix A. The intent of the Tree Preservation Plan is to retain as many trees on the site as is reasonable through the use of Tree Protection Zones (TPZ) and other generally recognized arboricultural practices and to minimize the potential impact of construction injury to the trees.

Assignment

I was contacted by **David Small Designs Inc.** to provide an Arborist Report and Tree Preservation Plan, as required by the City of Mississauga's *Private Tree Protection By-Law 254-12* and *Site Plan Control By-Law 0293-2006* to minimize the impact that the proposed construction may have on the trees on or adjacent to this property. My report shall list specific trees to be preserved or removed, recommend any immediate maintenance required to create a safer environment for contractors and the property owner and provide a long-term tree preservation and management plan for the site.

Limits of Assignment

This report is limited to assessing and documenting the health and structural condition of the trees with a D.B.H of 15cm or greater on or 6 metres from the subject site during my site survey on **May 8, 2017.** My evaluation is based upon a visual inspection of the trees from the ground, and the analysis of photos and any samples taken during that inspection.

Unless specifically stated in the report;

1.) Neither aerial inspections nor root excavations were performed on any trees on site or within 6 metres of the subject site.
2.) A Level 2 "Basic" assessment using the 2011 International Society of Arboriculture (I.S.A.) *Best Management Practices* was used for tree evaluations within this report.

Purpose and Use

The purpose of this report is to document the current health and structural condition of the trees with a D.B.H of 15cm or greater on and within 6 metres of the subject site property, and to provide an Arborist Report and Tree Preservation Plan that complies with the City of Mississauga's *Private Tree Protection By-Law 254-12* and *Site Plan Control By-Law 0293-2006.*

This report is intended for the exclusive use of **David Small Designs Inc**. Upon submission by and payment to Welwyn Consulting, this report will become licensed for use by **David Small Designs Inc.** at their discretion.

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Observations

The proposed development is located in an established residential area near the intersections of Lorne Park Road and Mississauga Road within the City of Mississauga. This site presently contains a residential dwelling that will be demolished and replaced with a new home. I visited the site on **May 8, 2017** to conduct my tree inventory and take photographs of the trees on site, as well as any neighbouring or City-owned trees that may be affected by the proposed site plan.

Photo #1

Photo #2

Figure #1: These 2 photos show the front and back yard of the property at 1216 Mississauga Road (Lot #1) as they appeared during the tree inventory conducted on May 8, 2017.

Appendices

Appendix A contains the most current site plan supplied by **David Small Designs Inc.** and provides the following information:

- The location of the trees on or adjacent to the subject site
- Property lines for the subject site and neighbouring properties
- Property lines for City-owned lands adjacent to the subject site
- All existing buildings and hard surfaces
- An outline of the proposed building

Appendix B contains the Tree Inventory for this site. All trees were assigned numbers, and measured for diameter at breast height (DBH=1.4m), height, and canopy spread. The trees' health, structural condition and physical location/ownership provide the basis for their recommended preservation or removal.

Appendix C contains the Tree Appraisal values for any City-owned trees on municipal property adjacent to the subject site that may be impacted by the proposed site plan.

Appendix D contains selected photos of trees on this site.

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Trees to Preserve (11)

NOTES:

1.) It is the responsibility of the client to ensure that all architects, engineers, and contractors involved with the project be provided with a copy of the entire Arborist Report and Tree Preservation Plan for review prior to the commencement of construction activities on this site.

2.) All trees 15cm DBH or greater require a permit to injure. Removal of three (3) trees or more over 15cm DBH will require the completion of an "Application to Permit the Injury or Destruction of Trees on Private Property" form available from the following link: www.mississauga.ca/portal/services/formsonline

- **Trees #1, 2 and 3 Norway Maples (neighbour)**

  These three (3) trees are located on the neighbour's property east of the subject site at 1216 Mississauga Rd (Lot #1). These 3 trees must be protected for the duration of the proposed construction activities on this site.

  These three (3) neighbouring trees must be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 13 of this report should result in the trees' continued survival.

  NOTES:

  1.) The existing gravel driveway base shall be re-used (no excavation – re-grading only) within the drip-lines of Trees #1 and 3 to minimize the potential for root injury.

  2.) Permeable paving materials shall be incorporated within Tree #1 and 3's drip-lines to increase the potential for moisture penetration into the trees' root zone.

  3.) The proposed pre-cast unit retaining wall along the east edge of the driveway at 1216 Mississauga Road (Lot #1) shall be installed outside the minimum 3.0m Tree Protection Zone (TPZ) for Tree #3.

- **Trees #4 and 5 Norway Maples (shared ownership)**

  These two (2) trees are located along the east property line of the subject site at 1216 Mississauga Rd (Lot #1) and have shared ownership with the neighbour to the east. These 3 trees must be protected for the duration of the proposed construction activities on this site.

  All shared trees must be preserved unless their removal is agreed upon in a "Letter of Agreement" signed by all owners. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 13 of this report should result in the trees' continued survival.

(Next page)

NOTES:

1.) The existing gravel driveway base shall be re-used (no excavation – re-grading only) within the drip-lines of Trees #4 and 5 to minimize the potential for root injury.
2.) Permeable paving materials shall be incorporated within Tree #4 and 5's drip-lines to increase the potential for moisture penetration into the trees' root zone.
3.) The proposed pre-cast unit retaining wall along the east edge of the existing gravel driveway at 1216 Mississauga Road (Lot #1) shall be installed on the existing driveway base east of Tree #4. Excavation must be dug by hand under the supervision of a Certified Consulting Arborist and to a maximum depth of the height of one (1) retaining wall stone within the drip-line of Tree #4.
4.) Excavation for the proposed garage will encroach 4m into the minimum 6m Tree Protection Zone (TPZ) for Tree #5.
5.) *Prior to building foundation excavation, an Air Spade/Hydro-Vac investigation of the area 2m west of Tree #5 shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process. Any roots in the immediate area of the excavation shall be assessed, and if reasonable and feasible, properly pruned by the attending Certified Consulting Arborist. This action is anticipated to minimize the extent of root injury due to excavation and provide any pruned roots with the best opportunity to regenerate.*
6.) A Tree Protection Audit report documenting the above work shall be submitted to Urban Forestry for review and approval. A "Permit to Injure" will be required for Tree #5.
7.) If Urban Forestry does not approve the potential level of root injury to Tree #5, engineered solutions such as grade-beam installation for the proposed garage will have to be considered.

- **Tree #7** **Linden (subject site)**

This tree is located in the front yard of the subject site at 1216 Mississauga Road (Lot #1). This tree shall be protected for the duration of the proposed construction activities on this site.

This tree shall be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 13 of this report should result in the tree's continued survival.

NOTES:

1.) The existing gravel driveway base shall be re-used (no excavation – re-grading only) within Tree #7's drip-line to minimize the potential for root injury.
2.) Permeable paving materials shall be incorporated within Tree #7's drip-line to increase the potential for moisture penetration into the tree's root zone.

- **Tree #8** **Crimson King Norway Maple (City tree)**

  This tree is located in the boulevard area of the front yard at 1216 Mississauga Road (Lot #1) on lands owned by the City of Mississauga. This tree must be protected for the duration of the proposed construction activities on this site and no injury is anticipated.

  This City-owned tree must be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 13 of this report should result in the tree's continued survival.

- **Trees #9 and 10** **Lindens (subject site)**

  These two (2) trees are located in the front yard of the subject site at 1216 Mississauga Road (Lot #1). These 2 trees shall be protected for the duration of the proposed construction activities on this site.

  These two (2) trees shall be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 13 of this report should result in the trees' continued survival.

  NOTES:

  1.) Excavation for the proposed building foundation (with an anticipated 0.9m over-dig) will encroach 1.6m into the minimum 3.6m TPZ for Tree #10.
  2.) *Prior to building foundation excavation, an Air Spade/Hydro-Vac investigation of the area 2m east of Tree #10 shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process. Any roots in the immediate area of the excavation shall be assessed, and if reasonable and feasible, properly pruned by the attending Certified Consulting Arborist. This action is anticipated to minimize the extent of root injury due to excavation and provide any pruned roots with the best opportunity to regenerate.*
  3.) A Tree Protection Audit report documenting the above work shall be submitted to the City of Mississauga's Urban Forestry Department for review and approval.
  4.) A "Permit to Injure" will be required from Urban Forestry for Tree #10.

- **Trees #12 and 13** **Flowering Crabapples (subject site)**

  These two (2) trees are located in the rear yard of the subject site at 1216 Mississauga Road (Lot #1). These 2 trees shall be protected for the duration of the proposed construction activities on this site and no injury is anticipated.

  These two (2) trees shall be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 13 of this report should result in the trees' continued survival.

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Trees to Remove (2)

Prior to construction, all trees scheduled for removal should be removed to grade level to increase the safety for both the property owner and any contractors.

NOTES:

1.) All trees 15cm DBH or greater require a permit to injure. Removal of three (3) trees or more over 15cm DBH will require the completion of an "Application to Permit the Injury or Destruction of Trees on Private Property" form available from the following link: www.mississauga.ca/portal/services/formsonline

2.) Guidelines for Tree Removal can be found at the following City of Mississauga link: www.mississauga.ca/portal/business/communityservicesstandards?paf_gear_id=9700018&itemId=300012

- **Trees #6 and 11** **Red Maple and Linden (subject site)**

  These two (2) trees are in conflict with the proposed site plan and are proposed to be safely removed to grade level prior to the commencement of on-site construction activities.

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Replacement Tree Planting (3 trees)

Below are the City of Mississauga's Tree Replacement Plan Policy from The City of Mississauga's *Private Tree Protection By-Law 254-12* and the 2017 Forestry Fee Schedule:

(2) Where the planting of a Replacement Tree(s) has been imposed as a condition, the Commissioner may require any one or more of the following:

(a) the Replacement Tree(s) be located on the same Lot in a location, number, size; and/or species to the satisfaction of the Commissioner;

(b) a replanting plan be filed to the satisfaction of the Commissioner;

(e) a written undertaking by the Owner to carry out the replacement planting;

(f) monies or a letter of credit in a form satisfactory to the Commissioner be delivered to the Commissioner to cover the costs of the Replacement Trees, and the maintenance of the Tree(s) for a period of up to two (2) years; or

(g) payment of each Replacement Tree not replanted on the Owner's Lot be made into the City's Replacement Tree Planting Fund. The payment for each such Tree shall be the cost of each street Tree planting as provided in the Fees and Charges By-law.

Forestry Fees and Charges Effective January 1, 2017-December 31, 2017

Street Tree Planting: Up to 60mm (2.5in) Caliper Tree	$522.75
Street Tree Planting: Up to 200cm (6.5 ft height) Coniferous Tree	$549.40
Forestry Section Administration Fee (applicable on Forestry Services provided within road allowance and to all related City By-law contraventions)	Greater of $403 or 8% of total service cost
Requested Maintenance Work on City Owned Trees (Hourly)	
Caliper up to 40cm (15.75in)	$397.70
Caliper of 41cm to 80cm (16in to 31.5in)	$700.08
Caliper greater than 80cm (31.5in)	$747.23
Replacement of Damaged or Destroyed Street Trees	$704.18
Tree Removal Permit or Permission	
Dead, Dying or Hazardous Tree (as deemed by the Forestry Section)	$0
Removal of Three (3) Trees, each with a diameter greater than 15cm (6in)	$393
Removal of Additional Trees, each with a diameter greater than 15cm (6in)	$89
Commemorative Tree Donation	$1097.78
Site Plan Control Application Surcharge: Forestry Inspection	$102.50
Site Visit Non-Compliance Charge	$76.18

Based upon a 1:1 ratio (a 2:1 ratio for trees over 50cm DBH), the City of Mississauga requires three (3) replacement trees to be planted as compensation for trees over 15cm being removed as a result of site re-development. In accordance with the Tree By-Law, replacement trees are to be native in species, a minimum 60mm caliper for deciduous trees and a minimum 1.80m high for coniferous trees. The "cash in lieu of tree replacement planting" fee for 2017 is set at $522.75

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Tree Replacement Planting Plan: 1216 Mississauga Rd, Mississauga (Lot 1)

I.D.#	Tree Species	Suggested Location
R1 – R3 **(3 trees)**	White Spruce *Picea glauca*	Rear yard (full sun) - privacy screen

NOTES:

1.) Replacement tree numbers were derived as follows:

a. Tree #6 – 48cm DBH — 1 replacement tree
b. Tree #11 – 62cm DBH — 2 replacement trees
3 replacement trees

2.) Three (3) replacement trees and their proposed locations are marked with the symbol Rx on the site plan in Appendix A on Page 21 of this report.

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Tree Care Recommendations

Cabling

Cabling is a practice which provides physical support for trees with structurally weak limbs, co-dominant stems, any branch or trunk unions with included bark, and tree species generally known to be weak-wooded. An aerial inspection of the tree's structural condition should be performed prior to cable installation, and any dead, diseased, or hazardous wood should be removed. Cabled trees should be inspected annually to assess both the cabling hardware and the tree's structural condition. Cabling reduces but does not eliminate a tree's hazard or failure potential.

Tree #5: Norway Maple (shared ownership tree)

- **This tree should have an approved Dynamic Cabling System installed to help support its co-dominant stems.**

Fertilization

Current research conducted through the International Society of Arboriculture (I.S.A.) indicates that preserved trees within close proximity of proposed construction activities should not be fertilized during the 1st year following construction injury. Uptake of nutrients and water in compacted soils can be reduced and fertilizer salts may actually remove water from a tree's root zone. If and when supplemental fertilization is deemed necessary, products which stimulate root growth should be employed over those that stimulate shoot and foliage growth and be applied at low application rates.

Supplemental fertilization needs should be assessed by a Certified Consulting Arborist upon completion of all on-site construction activities, and any recommendations should be based on site-specific soil nutrient deficiencies determined primarily through soil testing and secondarily by visual analysis of nutrient deficiencies in foliage, twigs, buds, and roots.

Pruning

Pruning is a practice which removes dead, diseased, broken, rubbing, crossing, and hazardous limbs 2.5 cm and larger from trees to create a safer working environment and improve tree health and vigor. Pruning also provides an excellent opportunity for an aerial inspection of the structural integrity of the tree(s). All pruning should be completed prior to any site demolition or construction.

- **There is no pruning required on this site at this time.**

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Root Pruning/Air Spade/Hydro-Vac

Root pruning is performed to minimize a tree's potential loss of structural stability through root removal and/or injury due to excavation within close proximity of its root zone. While not always feasible for all projects, root pruning should occur in late autumn during tree dormancy and ideally one full growing season prior to any on-site construction or demolition to allow for root regeneration. Root pruning should be performed by a Certified Arborist in accordance with generally recognized standards and principles within the field of Arboriculture. *Air-Spade and Hydro-Vac technologies provide two of the least invasive methods for root zone excavation, and should be performed under the supervision of a Certified Arborist.*

General Methodology (other than air spade/hydro-vac)

Under the direction of a Certified Consulting Arborist and using hand and/or mechanical excavation techniques, the soil shall be carefully removed starting approximately 4-6m (where feasible) from the tree's base perpendicular to the edge of the proposed building foundation area. Digging in a line parallel to the roots rather than across them should minimize cracking of any large roots near the tree's base. The soil shall be removed in shallow layers to minimize the potential for striking any large roots that may have been close to the soil surface.

- **Trees #5 (shared ownership) and #10 (subject site):**
  Prior to building foundation excavation, an Air Spade/Hydro-Vac investigation of the areas 2m west of Tree #5 and 2m east of Tree #10 shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process. Please refer to Pages 8 and 9 of this report for further information.

Irrigation

An irrigation plan for preserved trees should be designed and implemented with the assistance of a Certified Consulting Arborist. The amount and frequency of irrigation will depend on factors such as soil type, local and seasonal precipitation patterns, duration of droughts, and the amount of construction activity near specific trees. The top 30 cm of soil in a tree's root zone should be kept moist without being saturated. Infrequent deep watering produces trees with deeper roots, while frequent shallow watering produces shallow-rooted trees. *When combined with soil aeration improvement techniques such as vertical mulching, drill holes, and radial trenching, an adequate but not excessive supply of moisture to a tree's root zone can be an effective and efficient way to help alleviate construction injury.*

Preserved trees should be monitored at regular intervals by a Certified Consulting Arborist for signs of drought stress or excess irrigation.

- **An irrigation plan will be developed upon determination of tree injury levels after completion of any required root pruning.**

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Horizontal Mulching

It may be determined by the Certified Consulting Arborist that trees within close proximity of construction activities will require a layer of composted wood chip mulch applied to the root zones inside the TPZ hoarding. Decomposed wood mulch 5–10 cm (2-4 inches) deep applied to a tree's root zone should help to retain soil moisture, regulate soil temperature, and provide a natural organic source of nutrients in their elemental form over time. Piling of mulch against the tree stem must be avoided. Fresh wood chip mulch shall be applied to a depth of 30 cm beneath steel plates or plywood on vehicle and equipment traffic areas within close proximity to the TPZ to distribute weight on the soil and help reduce potential root zone soil compaction.

- **There are no specific mulching requirements at this time.**

Root Zone Aeration Improvements

Aeration improvement techniques such as drill holes, vertical mulching, soil fracturing, and radial trenching have the ability to reduce various degrees of soil compaction by increasing the amount of soil macro and micropores. Any form of root zone aeration improvement should be performed post-construction and under the supervision of a Certified Consulting Arborist to help remediate soil compaction caused by construction activity near preserved trees.

- **There are no root zone aeration improvements required on this site at this time.**

Transplanting

Transplanting of larger caliper trees, through either hand digging or tree spade, allows for relocation and retention of desirable trees that might have otherwise been removed due to conflict with the proposed property construction design. Trees should be tree-spaded out by a reputable operator, and are best transplanted during dormancy in late autumn. No construction activity should take place near re-located trees either before or after transplantation.

Any transplanted trees should be fertilized using a complete fertilizer with a preferred nitrogen/phosphorus/potassium ratio of 1-2-2, with the Nitrogen component in slow release form. A 10 cm layer of composted wood mulch should be applied to the root zone, and the tree should receive regular irrigation for a period of at least one year. The tree may also require staking for a period of 1 year to provide stability while it re-establishes its root system.

- **There are no trees recommended for transplanting on this site at this time.**

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Tree Preservation Plan

The following Tree Preservation Plan should be implemented prior to any on-site construction activity.

Hoarding

Hoarding is used to define the **Tree Protection Zone** (TPZ), which protects a tree's root zone, trunk, and branches from injury during both construction and landscaping phases of the project. Hoarding should be installed prior to any construction activity, and remain intact until construction and landscaping is completed. **No** TPZ should be used for the temporary storage of building materials, storage or washing of equipment, or the dumping of construction debris, excess fill, or topsoil.

As required by the City of Mississauga, hoarding shall be constructed of 4x8 plywood sheets using 2x4 top and bottom rail construction supported by 4x4 wooden posts. A TPZ may be constructed of orange safety fencing using 2x4 top and bottom rail construction and supported by t-bar supports when protecting street trees where site line obstruction is a concern. TPZ signage should be posted in visible locations on the TPZ hoarding. T-bar supports for solid hoarding will only be allowed through pre-approval from the City of Mississauga's Development and Design Department.

The architect of record for the project should update the most current site plan/grading plan to include all existing trees properly plotted and numbered and all TPZ hoarding locations clearly indicated.

Hoarding Installation

A diagram of the proposed hoarding plan for this site can be found in Appendix A on Page 21 of this report. The recommended radial distances from the trunk for installation of TPZ hoarding are listed in Appendix B starting on Page 22 of this report, and the hoarding should be installed using the following guidelines:

1) All TPZ hoarding shall be placed at the recommended radial distance from the base of all trees to be protected or up to all existing and/or proposed hard surfaces to allow for construction.

2) Any large numbers of trees that can be grouped together in a closed box or continuous line system for protection shall have their TPZ hoarding placed at the recommended radial distance from the base of all of the largest peripheral trees of the system, or up to all existing and/or proposed hard surfaces to allow for construction.

3) Encroachment within a tree's TPZ will require a special permit from the City of Mississauga and/or on-site supervision by a Certified Consulting Arborist during any proposed excavation activities for root pruning and assessment.

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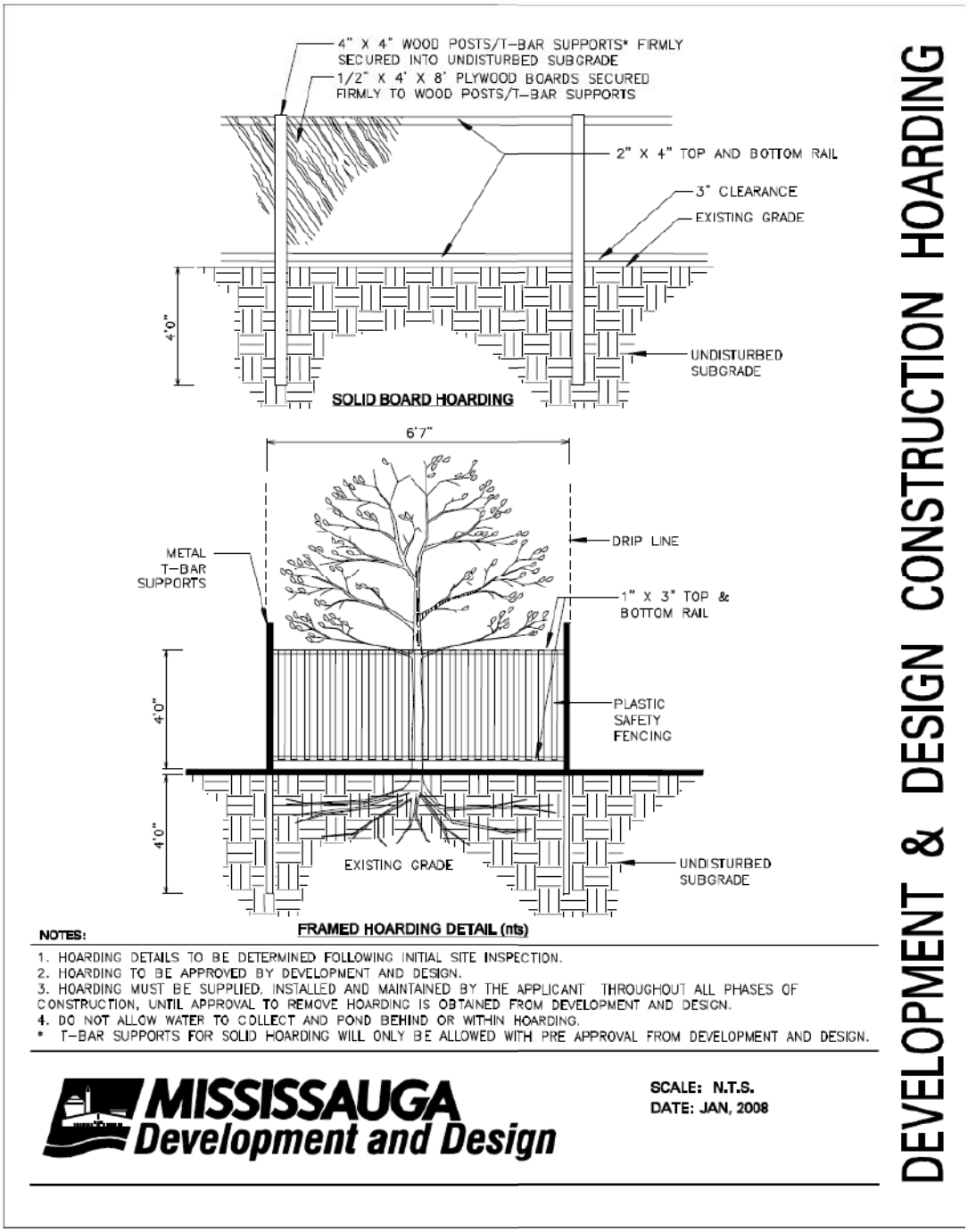
City of Mississauga TPZ Hoarding Specifications

The diagram below provides the City of Mississauga's standards for Tree Protection Zone (T.P.Z) hoarding.



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Tree Preservation Plan Summary

I.) Pre-Construction Phase

- If necessary, have the Certified Consulting Arborist schedule an on-site meeting with a representative from the City of Mississauga's Urban Forestry Department, the property owner(s), and any Architects, Engineers, and contractors involved with the project to discuss the Tree Preservation Plan.
- Complete all Tree Care Recommendations, including pruning and any required tree removals.
- Install Tree Protection Zone (TPZ) hoarding as required.
- Where required, apply composted wood mulch to tree root zones within the TPZ hoarding, and apply fresh wood mulch over steel plates and/or plywood to any high-traffic areas immediately adjacent to the TPZ hoarding to help reduce soil compaction.
- If feasible, root-prune any preserved trees adjacent to excavation areas prior to construction under the supervision of a Certified Consulting Arborist.
- Establish an irrigation plan with the assistance of a Certified Consulting Arborist.

II.) Construction Phase

- Maintain and respect TPZ hoarding throughout the construction phase. Do not store or dump materials in this area.
- Continue irrigation plan as directed by a Certified Consulting Arborist.
- Prune any roots exposed during excavation under the supervision of a Certified Consulting Arborist.
- On-going monitoring by a Certified Consulting Arborist to evaluate construction injury/stress and make recommendations.

III.) Post-Construction Phase

- Remove hoarding only after permission from the City of Mississauga.
- Continue irrigation program as directed by a Certified Consulting Arborist.
- Supplemental fertilizer needs assessment by a Certified Consulting Arborist.
- Post-construction monitoring of all trees by a Certified Consulting Arborist.

NOTE:

Post-Construction Monitoring

Construction injury may take several years to become apparent. All preserved trees should be inspected by a Certified Consulting Arborist on a semi-annual basis for a period of up to 2 years to pro-actively address any tree health related issues as they occur.

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ASSUMPTIONS AND LIMITING CONDITIONS

Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, by-laws, or other governmental regulations.

Care has been taken to obtain all information from reliable sources, and all data has been verified insofar as possible. The consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.

The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

Loss or alteration of any part of this report invalidates the entire report.

Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone other than the person to whom it is addressed without the prior expressed written or verbal consent of the consultant/appraiser.

Neither all nor any part of the contents of this report, nor any copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media without the prior expressed written or verbal consent of the consultant/appraiser particularly as to value conclusions, identity of the consultant/appraiser, or any reference to any professional society, institute, or any initialed designation conferred upon the consultant/appraiser as stated in his/her qualification.

This report and the values expressed herein represent the opinion of the consultant/appraiser, and the consultant/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as either engineering or architectural reports or surveys.

Unless expressed otherwise: 1) Information contained in this report covers only those items that were examined and reflections the condition of those items at the time of inspection, and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

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CERTIFICATE OF PERFORMANCE

I, Tom Bradley, certify that:

- I have personally inspected the tree(s) and/or the property referred to in this report, and have stated my findings accurately. The extent of any evaluation or appraisal is stated in the attached report and the Limits of Assignment.

- I have no current or prospective interest in the vegetation of the property that is the subject of this report, and have no personal interest or bias with respect to the parties involved.

- The analysis, opinions and conclusions stated herein are my own, and are based on current scientific procedures and facts.

- My compensation is not contingent upon the reporting of a pre-determined conclusion that favours the cause of the client or any other party, or upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

- My analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices.

- No one provided significant professional assistance to the consultant, except as indicated within the report.

I further certify that I am a Registered Consulting Arborist through the *American Society of Consulting Arborists (A.S.C.A),* and both a Certified Arborist and Certified Tree Risk Assessor with the *International Society of Arboriculture (I.S.A)*. I have been involved in the fields of Arboriculture and Horticulture in a full-time capacity for a period of more than 20 years.

Signed: _____

Date: May 24, 2017

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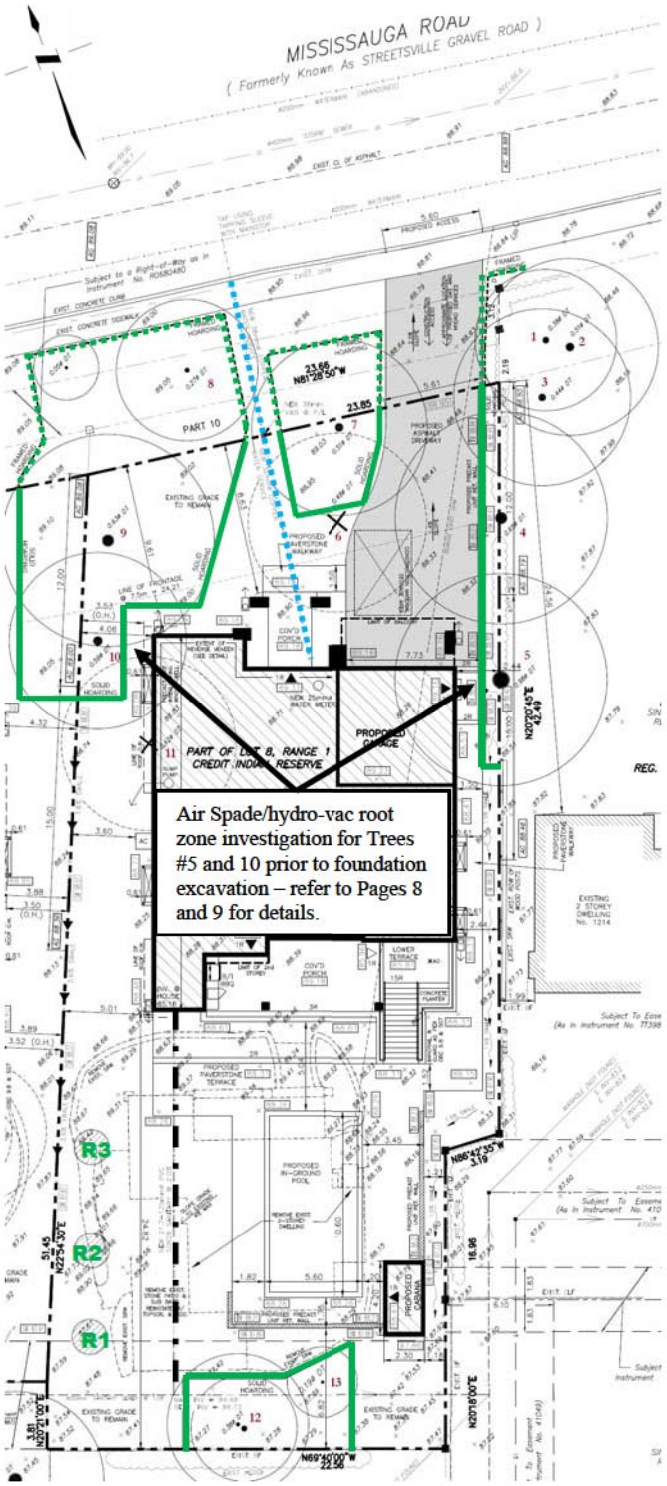
Appendix A: Proposed Site Plan – 1216 Mississauga Rd. Mississauga (Lot #1)

Note: The location of Tree #5 is an approximation. The proposed Tree Protection Zone (TPZ) hoarding is shown as green lines and is not to scale on this drawing. Rx denotes three (3) replacement trees and their proposed locations.



Legend:

Solid Hoarding ——— Framed Hoarding ·····

Water service (proposed) ····· Sanitary service (proposed) · — · — · —

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Appendix B: Tree Survey – 1216 Mississauga Rd. Mississauga (Lot #1)

I.D #	Owner	Tree Species Common Name	Tree Species Botanical Name	DBH (cm)	Height (m)	Canopy (m)	Tree Health	Structural Condition	Comments	Minimum TPZ unless otherwise indicated
1	Neighbour	Norway Maple	*Acer platanoides*	38	22	11	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 7m from tree base; branch canopy above union and shaded on east side	Preserve: TPZ = 2.4m
2	Neighbour	Norway Maple	*Acer platanoides*	51	23	11	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 9m from tree base; branch canopy above 8m and shaded on west side	Preserve: TPZ = 3.6m
3	Neighbour	Norway Maple	*Acer platanoides*	44	18	10	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 1.5m from tree base; branch canopy above 4m and shaded on north and west sides	Preserve: TPZ = 3.0m
4	**Shared Ownership**	Norway Maple	*Acer platanoides*	25, 61 **(65)**	20	16	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with narrow included bark union 1.5m from tree base with smaller stem at tree base; branch canopy foliage thin and shaded on north and south sides	Preserve: TPZ = 4.2m
5	**Shared Ownership**	Norway Maple	*Acer platanoides*	98	20	14	Good	Fair	Small-caliper deadwood in canopy; 3 adpressed stems at tree base with branch canopy above 5m	Preserve: TPZ = 6.0m
6	Subject Site	Red Maple	*Acer rubrum*	48	24	10	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with narrow included bark union 3m from tree base; branch canopy above union and shaded on east side	**Remove: Proposed site plan in conflict with the tree**
7	Subject Site	Linden	*Tilia cordata*	51	18	14	Good	Good	Small-caliper deadwood in canopy; branch canopy above 2m with shading on east and south sides	Preserve: TPZ = 3.6m
8	**City of Mississauga**	Crimson King Norway Maple	*Acer platanoides 'Crimson King'*	27	10		Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 2.5m from tree base; branch canopy above union	Preserve: TPZ = 2.4m

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I.D #	Owner	Tree Species Common Name	Tree Species Botanical Name	DBH (cm)	Height (m)	Canopy (m)	Tree Health	Structural Condition	Comments	Minimum TPZ unless otherwise indicated
9	Subject Site	Linden	*Tilia cordata*	63	16	16	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 2m from tree base; branch canopy above union	Preserve: TPZ = 4.2m
10	Subject Site	Linden	*Tilia cordata*	59	17	16	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 2m from tree base; branch canopy above union	Preserve: TPZ = 3.6m
11	Subject Site	Linden	*Tilia cordata*	62	18	14	Good	Fair	Small-caliper deadwood in canopy; 3 small aspect ratio co-dominant stems with narrow included bark union 7m from tree base; branch canopy above 4m and shaded on north side	**Remove: Proposed site plan in conflict with the tree**
12	Subject Site	Crabapple	*Malus spp.*	25, 29 **(38)**	6	6	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union at tree base; branch canopy above 5m	Preserve: TPZ = 2.4m
13	Subject Site	Crabapple	*Malus spp.*	9, 11, 12 **(19)**	4	5	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 1.2m from tree base; branch canopy above 2m	Preserve: TPZ = 2.4m

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Appendix C: Tree Valuation Appraisals (Trunk Formula Method)

TREE APPRAISAL Trunk Formula Method

Tree Number:	Eight (8)
Address:	1216 Mississauga Rd. (Lot #1) Mississauga
Owner:	City of Mississauga
Date of Appraisal:	May 8, 2017
Appraiser:	Tom Bradley
Certification Number:	R.C.A. #492 (A.S.C.A.)

Field Observations (based on *Guide for Plant Appraisal, 9th Edition*)

1	Species:	Crimson King Norway Maple		*Acer platanoides 'Crimson King'*
2	Condition:	75	%	
3	DBH:	27	cm	
4	Location:	73	%	

Regional Plant Appraisal Committee Information - *Guide for Plant Appraisal, 9th Edition*

5	Species Rating:	74	%
6	Replacement Plant Size:	9	cm
6b	Trunk Area:	63.585	cm^2
7	Replacement Plant Cost:	$270.00	
8	Installation Cost: (1.5x Plant Cost)	$405.00	
9	Installed Tree Cost:	$675.00	
10	Unit Tree Cost:	$10.62	

Calculations by Appraiser Using Field and /or Regional Information

11	Appraised Trunk Area (using Table 4.6) :	572	cm^2
12	Appraised Tree Trunk Increase (#11 - #6b):	508	cm^2
13	Basic Tree Cost (#12 x #10 + #9) :	$6,072.19	
14	Appraised Value (#13 x #5 x #2 x #4) :	$2,471.38	
15	Appraised Value > $5000.00 is rounded to the nearest $100.		
16	Appraised Value < $5000.00 is rounded to the nearest $10.		

APPRAISED VALUE: $2,470

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Appendix D: Site Photos – 1216 Mississauga Rd., Mississauga (Lot 1)

Photo #3 (Tree #6 – subject site)

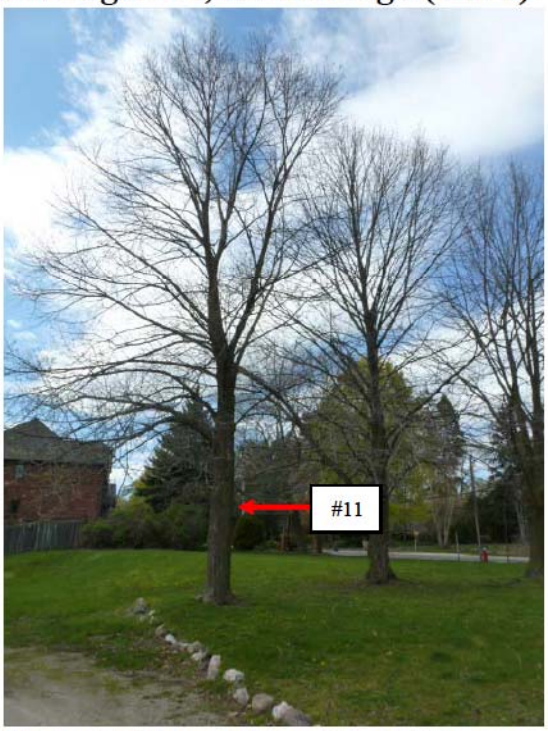

Photo #4 (Tree #11 – subject site)

Figure #2:
The above photos show the two (2) trees proposed for removal to accommodate the proposed site plan at 1216 Mississauga Road (Lot #1).

Please refer to Pages 9 and 10 of this report for further information.

Welwyn Consulting

May 24, 2017

David W. Small Designs Inc.
c/o Alexander Davies
1440 Hurontario Street
Mississauga, Ontario
L5G 3H4

SUBJECT: Arborist Report and Tree Preservation Plan
1222 Mississauga Road (Lot #2), Mississauga

Dear Alexander:

Attached please find the Arborist Report and Tree Preservation Plan which has been prepared for the above listed property. It is the client's responsibility to review the entire report to ensure all required tree permit application forms are filed with the City of Mississauga.

This report includes an evaluation of all trees on or within 6 metres of the subject site's property lines with a diameter at breast height (DBH) of **15cm or greater**. This evaluation includes the DBH, height, canopy spread, health, and structural condition of all trees that may be affected by the currently proposed site plan. This report also provides a Tree Preservation Plan for the property, including the appropriate Tree Protection Zones (TPZ).

This information complies with The City of Mississauga's *Private Tree Protection By-Law 254-12* and *Site Plan Control By-Law 0293-2006.* Included in the report (if required) are Valuation Appraisals of any City-owned trees as required by the City of Mississauga to obtain the necessary tree permits.

This letter is part of the Arborist Report and Tree Preservation Plan and may not be used separately. Please feel free to contact me to discuss this report further.

Best regards,

Tom Bradley B.Sc. (Agr)
ASCA Registered Consulting Arborist #492
ISA Certified Arborist #ON-1182A
ISA Certified Tree Risk Assessor
Butternut Health Assessor #257 (OMNR)
Welwyn Consulting
welwyntrees@gmail.com
(905) 301-2925

Welwyn Consulting

Arborist Report and Tree Preservation Plan

1222 Mississauga Rd (Lot #2), Mississauga

Prepared For
David W. Small Designs Inc.
c/o Alexander Davies
1440 Hurontario Street
Mississauga, Ontario
L5G 3H4

Prepared By
Tom Bradley
ASCA Registered Consulting Arborist #492
ISA Certified Arborist #ON-1182A
ISA Certified Tree Risk Assessor
Butternut Health Assessor #257 (OMNR)
Welwyn Consulting
1222 Welwyn Drive
Mississauga, Ontario
L5J 3J3

Prepared On
May 24, 2017

Amended On
July 17, 2017 – updated site plan

Welwyn Consulting

Table of Contents

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Summary

This Arborist Report and Tree Preservation Plan addresses all trees with a diameter at breast height (D.B.H.) of 15cm or greater and within 6 metres of the subject site that may be affected by the proposed property development and provides recommendations for their preservation and/or removal. This report also includes hoarding distances for the Tree Protection Zones (TPZ) and provides recommendations for current and future tree health care.

Based upon the Tree Inventory for this property, there are **17 trees** that may be affected by the proposed site development plan:

- 8 trees on the subject site
- 6 neighbouring trees within 6 metres of the subject site property line
- No shared ownership trees along any subject site property lines
- 3 City-owned trees within proximity to the subject site

Table 1: Tree Preservation and Removal

TREES TO PRESERVE	TREE NUMBER	TOTAL
i) Subject Site Trees	2	1
ii) Neighbouring Trees	3, 11, 12, 13, 14, 15	6
iii) Shared Ownership Trees	0	0
iv) City-owned Trees	1, 16, 17	3
	#of Trees To Be Preserved:	**10**
TREES TO BE REMOVED	**TREE NUMBER**	**TOTAL**
i) Subject Site Trees	4, 5, 6, 7, 8, 9, 10 (site plan conflict)	7
ii) Neighbouring Trees	0	0
iii) Shared Ownership Trees	0	0
iv) City-owned Trees	0	0
	#of Trees To Be Removed:	**7**
	Total trees on or adjacent to subject site:	**17**

Specific tree-related issues on this site:

1.) **Tree #1 (City) and #2 (subject site):**
Prior to driveway construction, an Air Spade/Hydro-Vac investigation of the areas 1.5m east of Tree #1 and 1.5m east of Tree #2's base shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process.

Please refer to Pages 7 and 8 of this report for further information.

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Introduction

This Arborist Report and Tree Preservation Plan provides the current condition of all trees with a D.B.H of 15cm or greater on or adjacent to the subject site that may be affected by the proposed site development plan, including any City and/or neighbouring trees within 6 metres of the subject site's property lines as indicated by the attached site plan in Appendix A. The intent of the Tree Preservation Plan is to retain as many trees on the site as is reasonable through the use of Tree Protection Zones (TPZ) and other generally recognized arboricultural practices and to minimize the potential impact of construction injury to the trees.

Assignment

I was contacted by **David Small Designs Inc.** to provide an Arborist Report and Tree Preservation Plan, as required by the City of Mississauga's *Private Tree Protection By-Law 254-12* and *Site Plan Control By-Law 0293-2006* to minimize the impact that the proposed construction may have on the trees on or adjacent to this property. My report shall list specific trees to be preserved or removed, recommend any immediate maintenance required to create a safer environment for contractors and the property owner and provide a long-term tree preservation and management plan for the site.

Limits of Assignment

This report is limited to assessing and documenting the health and structural condition of the trees with a D.B.H of 15cm or greater on or 6 metres from the subject site during my site survey on May 8, 2017. My evaluation is based upon a visual inspection of the trees from the ground, and the analysis of photos and any samples taken during that inspection.

Unless specifically stated in the report;

1.) Neither aerial inspections nor root excavations were performed on any trees on site or within 6 metres of the subject site.
2.) A Level 2 "Basic" assessment using the 2011 International Society of Arboriculture (I.S.A.) *Best Management Practices* was used for tree evaluations within this report.

Purpose and Use

The purpose of this report is to document the current health and structural condition of the trees with a D.B.H of 15cm or greater on and within 6 metres of the subject site property, and to provide an Arborist Report and Tree Preservation Plan that complies with the City of Mississauga's *Private Tree Protection By-Law 254-12* and *Site Plan Control By-Law 0293-2006.*

This report is intended for the exclusive use of **David Small Designs Inc.** Upon submission by and payment to Welwyn Consulting, this report will become licensed for use by **David Small Designs Inc.** at their discretion.

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Observations

The proposed development is located in an established residential area near the intersections of Lorne Park Road and Mississauga Road within the City of Mississauga. This site is presently an empty lot that was severed from the original property at 1216 Mississauga Road. A new home is proposed for construction on this site. I visited the site on May 8, 2017 to conduct my tree inventory and take photographs of the trees on site, as well as any neighbouring or City-owned trees that may be affected by the proposed site plan.

Photo #1

Photo #2

Figure #1: These 2 photos show the front and back yard of the property at 1216 Mississauga Road (Lot #2) as they appeared during the tree inventory conducted on May 8, 2017.

Appendices

Appendix A contains the most current site plan supplied by **David Small Designs Inc.** and provides the following information:

- The location of the trees on or adjacent to the subject site
- Property lines for the subject site and neighbouring properties
- Property lines for City-owned lands adjacent to the subject site
- All existing buildings and hard surfaces
- An outline of the proposed building

Appendix B contains the Tree Inventory for this site. All trees were assigned numbers, and measured for diameter at breast height (DBH=1.4m), height, and canopy spread. The trees' health, structural condition and physical location/ownership provide the basis for their recommended preservation or removal.

Appendix C contains the Tree Appraisal values for any City-owned trees on municipal property adjacent to the subject site that may be impacted by the proposed site plan.

Appendix D contains selected photos of trees on this site.

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Trees to Preserve (10)

NOTES:

1.) It is the responsibility of the client to ensure that all architects, engineers, and contractors involved with the project be provided with a copy of the entire Arborist Report and Tree Preservation Plan for review prior to the commencement of construction activities on this site.

2.) All trees 15cm DBH or greater require a permit to injure. Removal of three (3) trees or more over 15cm DBH will require the completion of an "Application to Permit the Injury or Destruction of Trees on Private Property" form available from the link below:
www.mississauga.ca/portal/services/formsonline

- **Tree #1** **Norway Maple (City tree)**

  This tree is located in the boulevard area of the front yard at 1222 Mississauga Road (Lot #2) on lands owned by the City of Mississauga. This tree must be protected for the duration of the proposed construction activities on this site.

  This City-owned tree must be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 12 of this report should result in the tree's continued survival.

  NOTES:

  1.) The proposed driveway will encroach approx. 1.5m into the minimum 3.0m Tree Protection Zone (TPZ) for Tree #1.

  2.) *Prior to driveway construction, an Air Spade/Hydro-Vac investigation of the area 1.5m east of Tree #1's base shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process. Any roots in the immediate area of the excavation shall be assessed, and if reasonable and feasible, properly pruned by the attending Certified Consulting Arborist. This action is anticipated to minimize the extent of root injury due to excavation and provide any pruned roots with the best opportunity to regenerate.*

  3.) A Tree Protection Audit Report documenting the above work shall be submitted to the City of Mississauga's Urban Forestry Department for review.

  4.) Should Urban Forestry approve the potential root pruning of Tree #1, permeable paving materials shall be incorporated within the tree's drip-line to increase the potential for moisture penetration into the tree's root zone.

  5.) Issuance of a "Permit to Injure" will be required for this tree from Urban Forestry.

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- **Tree #2 Black Oak (subject site)**

  This tree is located in the front yard at 1222 Mississauga Road (Lot #2). This tree shall be protected for the duration of the proposed construction activities on this site.

  This tree shall be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 12 of this report should result in the tree's continued survival.

  NOTES:

  1.) The proposed driveway will encroach approx. 2.7m into the minimum 4.2m Tree Protection Zone (TPZ) for Tree #2.
  2.) *Prior to driveway construction, an Air Spade/Hydro-Vac investigation of the area 1.5m east of Tree #2's base shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process. Any roots in the immediate area of the excavation shall be assessed, and if reasonable and feasible, properly pruned by the attending Certified Consulting Arborist. This action is anticipated to minimize the extent of root injury due to excavation and provide any pruned roots with the best opportunity to regenerate.*
  3.) A Tree Protection Audit Report documenting the above work shall be submitted to the City of Mississauga's Urban Forestry Department for review.
  4.) Should Urban Forestry approve the potential root pruning of Tree #2, permeable paving materials shall be incorporated within the tree's drip-line to increase the potential for moisture penetration into the tree's root zone.
  5.) Issuance of a "Permit to Injure" will be required for this tree from Urban Forestry.

- **Trees #3, 11 and 12 Neighbouring trees**

  These three (3) trees are located on the neighbouring properties to the west (Tree #3) and to the south (Trees #11 and 12) of the subject site at 1222 Mississauga Road (Lot#2). These 3 trees must be protected for the duration of the proposed construction activities on this site and no injury is anticipated.

  These three (3) neighbouring trees must be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 12 of this report should result in the trees' continued survival.

  NOTE:

  Both the proposed sanitary sewer line and the proposed swimming pool/retaining wall will be installed outside the minimum 2.4m Tree Protection Zones (TPZ) for Trees #11 and 12.

- **Trees #13, 14 and 15 Neighbouring trees**

  These three (3) trees are located on the neighbouring properties to the south (Tree #13) and to the east (Trees #14 and 15) of the subject site at 1222 Mississauga Road (Lot#2). These 3 trees must be protected for the duration of the proposed construction activities on this site and no injury is anticipated.

  These three (3) neighbouring trees must be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 12 of this report should result in the trees' continued survival.

- **Trees #16 and 17 Red Oaks (City trees)**

  These two (2) trees are located in the boulevard area of the front yard at 1222 Mississauga Road (Lot #2) on lands owned by the City of Mississauga. This tree must be protected for the duration of the proposed construction activities on this site and no injury is anticipated.

  These two (2) City-owned trees must be preserved. Full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines starting on Page 12 of this report should result in the trees' continued survival.

Trees to Remove (7)

Prior to construction, all trees scheduled for removal should be removed to grade level to increase the safety for both the property owner and any contractors.

NOTES:

1.) All trees 15cm DBH or greater require a permit to injure. Removal of three (3) trees or more over 15cm DBH will require the completion of an "Application to Permit the Injury or Destruction of Trees on Private Property" form available from the following link: www.mississauga.ca/portal/services/formsonline

2.) Guidelines for Tree Removal can be found at the following City of Mississauga link: www.mississauga.ca/portal/business/communityservicesstandards?paf_gear_id=9700018&itemId=300012

- **Trees #4, 5, 6, 7, 8, 9, and 10 Subject site trees**

  These seven (7) trees are in conflict with the proposed site plan and are proposed to be safely removed to grade level prior to the commencement of on-site construction activities.

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Replacement Tree Planting (11)

Below are the City of Mississauga's Tree Replacement Plan Policy from The City of Mississauga's *Private Tree Protection By-Law 254-12* and the 2017 Forestry Fee Schedule:

(2) Where the planting of a Replacement Tree(s) has been imposed as a condition, the Commissioner may require any one or more of the following:

(a) the Replacement Tree(s) be located on the same Lot in a location, number, size; and/or species to the satisfaction of the Commissioner;

(b) a replanting plan be filed to the satisfaction of the Commissioner;

(e) a written undertaking by the Owner to carry out the replacement planting;

(f) monies or a letter of credit in a form satisfactory to the Commissioner be delivered to the Commissioner to cover the costs of the Replacement Trees, and the maintenance of the Tree(s) for a period of up to two (2) years; or

(g) payment of each Replacement Tree not replanted on the Owner's Lot be made into the City's Replacement Tree Planting Fund. The payment for each such Tree shall be the cost of each street Tree planting as provided in the Fees and Charges By-law.

Forestry Fees and Charges Effective January 1, 2017-December 31, 2017

Street Tree Planting: Up to 60mm (2.5in) Caliper Tree	$522.75
Street Tree Planting: Up to 200cm (6.5 ft height) Coniferous Tree	$549.40
Forestry Section Administration Fee (applicable on Forestry Services provided within road allowance and to all related City By-law contraventions)	Greater of $403 or 8% of total service cost
Requested Maintenance Work on City Owned Trees (Hourly)	
Caliper up to 40cm (15.75in)	$397.70
Caliper of 41cm to 80cm (16in to 31.5in)	$700.08
Caliper greater than 80cm (31.5in)	$747.23
Replacement of Damaged or Destroyed Street Trees	$704.18
Tree Removal Permit or Permission	
Dead, Dying or Hazardous Tree (as deemed by the Forestry Section)	$0
Removal of Three (3) Trees, each with a diameter greater than 15cm (6in)	$393
Removal of Additional Trees, each with a diameter greater than 15cm (6in)	$89
Commemorative Tree Donation	$1097.78
Site Plan Control Application Surcharge: Forestry Inspection	$102.50
Site Visit Non-Compliance Charge	$76.18

Based upon a 1:1 ratio (a 2:1 ratio for trees over 50cm DBH), the City of Mississauga requires (11) replacement trees to be planted as compensation for trees over 15cm being removed as a result of site re-development. In accordance with the Tree By-Law, replacement trees are to be native in species, a minimum 60mm caliper for deciduous trees and a minimum 1.80m high for coniferous trees. The "cash in lieu of tree replacement planting" fee for 2017 is set at $522.75

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Tree Replacement Planting Plan: 1222 Mississauga Road (Lot#2)

I.D.#	Tree Species	Suggested Location
R1 and R4 **(2 trees)**	Sugar Maple *Acer saccharum*	Front yard (full sun) and Rear yard (full sun)
R2 **(1 tree)**	Red Maple *Acer rubrum*	Front yard (full sun)
R3 **(1 trees)**	Red Maple *Cercis canadensis*	Front yard (full sun)
R5 **(1 tree)**	Tulip Tree *Liriodendron tulipifera*	Rear yard (full sun)
R6 and R7 **(2 trees)**	White Spruce *Picea glauca*	Rear yard (full sun)

NOTES:

1.) Replacement tree numbers were derived as follows:

a.	Tree #4 – 81cm DBH	2 replacement trees
b.	Tree #5 – 84cm DBH	2 replacement trees
c.	Tree #6 – 65cm DBH	2 replacement tree
d.	Tree #7 – 33cm DBH	1 replacement tree
e.	Tree #8 – 60cm DBH	2 replacement tree
f.	Tree #9 – 21cm DBH	1 replacement tree
g.	Tree #10 – 21cm DBH	1 replacement tree
		11 replacement trees

2.) Seven (7) replacement trees and their proposed locations are marked with the symbol Rx on the site plan in Appendix A on Page 20 of this report.

3.) Four (4) replacement trees shall be 'cash in lieu of planting" at $522.75/tree x four (4) trees = **$2,091.00**

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Tree Care Recommendations

Cabling

Cabling is a practice which provides physical support for trees with structurally weak limbs, co-dominant stems, any branch or trunk unions with included bark, and tree species generally known to be weak-wooded. An aerial inspection of the tree's structural condition should be performed prior to cable installation, and any dead, diseased, or hazardous wood should be removed. Cabled trees should be inspected annually to assess both the cabling hardware and the tree's structural condition. Cabling reduces but does not eliminate a tree's hazard or failure potential.

- **There are no trees recommended for cabling on this site at this time.**

Fertilization

Current research conducted through the International Society of Arboriculture (I.S.A.) indicates that preserved trees within close proximity of proposed construction activities should not be fertilized during the 1st year following construction injury. Uptake of nutrients and water in compacted soils can be reduced and fertilizer salts may actually remove water from a tree's root zone. If and when supplemental fertilization is deemed necessary, products which stimulate root growth should be employed over those that stimulate shoot and foliage growth and be applied at low application rates.

Supplemental fertilization needs should be assessed by a Certified Consulting Arborist upon completion of all on-site construction activities, and any recommendations should be based on site-specific soil nutrient deficiencies determined primarily through soil testing and secondarily by visual analysis of nutrient deficiencies in foliage, twigs, buds, and roots.

Pruning

Pruning is a practice which removes dead, diseased, broken, rubbing, crossing, and hazardous limbs 2.5 cm and larger from trees to create a safer working environment and improve tree health and vigor. Pruning also provides an excellent opportunity for an aerial inspection of the structural integrity of the tree(s). All pruning should be completed prior to any site demolition or construction.

- **There are no trees recommended for pruning on this site at this time.**

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Root Pruning/Air Spade/Hydro-Vac

Root pruning is performed to minimize a tree's potential loss of structural stability through root removal and/or injury due to excavation within close proximity of its root zone. While not always feasible for all projects, root pruning should occur in late autumn during tree dormancy and ideally one full growing season prior to any on-site construction or demolition to allow for root regeneration. Root pruning should be performed by a Certified Arborist in accordance with generally recognized standards and principles within the field of Arboriculture. *Air-Spade and Hydro-Vac technologies provide two of the least invasive methods for root zone excavation, and should be performed under the supervision of a Certified Arborist.*

General Methodology (other than air spade/hydro-vac)

Under the direction of a Certified Consulting Arborist and using hand and/or mechanical excavation techniques, the soil shall be carefully removed starting approximately 4-6m (where feasible) from the tree's base perpendicular to the edge of the proposed building foundation area. Digging in a line parallel to the roots rather than across them should minimize cracking of any large roots near the tree's base. The soil shall be removed in shallow layers to minimize the potential for striking any large roots that may have been close to the soil surface.

- **Trees #1 (City) and #2 (subject site):**
  Prior to driveway construction, an Air Spade/Hydro-Vac investigation of the areas 1.5m east of Tree #1 and 1.5m east of Tree #2's base shall be performed, under the supervision of a Certified Consulting Arborist, to determine the size and quantity of tree roots that could be affected by the excavation process. Please refer to Pages 7 and 8 of this report for further information.

Irrigation

An irrigation plan for preserved trees should be designed and implemented with the assistance of a Certified Consulting Arborist. The amount and frequency of irrigation will depend on factors such as soil type, local and seasonal precipitation patterns, duration of droughts, and the amount of construction activity near specific trees. The top 30 cm of soil in a tree's root zone should be kept moist without being saturated. Infrequent deep watering produces trees with deeper roots, while frequent shallow watering produces shallow-rooted trees. *When combined with soil aeration improvement techniques such as vertical mulching, drill holes, and radial trenching, an adequate but not excessive supply of moisture to a tree's root zone can be an effective and efficient way to help alleviate construction injury.*

Preserved trees should be monitored at regular intervals by a Certified Consulting Arborist for signs of drought stress or excess irrigation.

- **An irrigation plan will be developed upon determination of tree injury levels after completion of any required root pruning.**

Welwyn Consulting

Horizontal Mulching

It may be determined by the Certified Consulting Arborist that trees within close proximity of construction activities will require a layer of composted wood chip mulch applied to the root zones inside the TPZ hoarding. Decomposed wood mulch 5–10 cm (2-4 inches) deep applied to a tree's root zone should help to retain soil moisture, regulate soil temperature, and provide a natural organic source of nutrients in their elemental form over time. Piling of mulch against the tree stem must be avoided. Fresh wood chip mulch shall be applied to a depth of 30 cm beneath steel plates or plywood on vehicle and equipment traffic areas within close proximity to the TPZ to distribute weight on the soil and help reduce potential root zone soil compaction.

- **There are no specific mulching requirements at this time.**

Root Zone Aeration Improvements

Aeration improvement techniques such as drill holes, vertical mulching, soil fracturing, and radial trenching have the ability to reduce various degrees of soil compaction by increasing the amount of soil macro and micropores. Any form of root zone aeration improvement should be performed post-construction and under the supervision of a Certified Consulting Arborist to help remediate soil compaction caused by construction activity near preserved trees.

- **There are no root zone aeration improvements required on this site at this time.**

Transplanting

Transplanting of larger caliper trees, through either hand digging or tree spade, allows for relocation and retention of desirable trees that might have otherwise been removed due to conflict with the proposed property construction design. Trees should be tree-spaded out by a reputable operator, and are best transplanted during dormancy in late autumn. No construction activity should take place near re-located trees either before or after transplantation.

Any transplanted trees should be fertilized using a complete fertilizer with a preferred nitrogen/phosphorus/potassium ratio of 1-2-2, with the Nitrogen component in slow release form. A 10 cm layer of composted wood mulch should be applied to the root zone, and the tree should receive regular irrigation for a period of at least one year. The tree may also require staking for a period of 1 year to provide stability while it re-establishes its root system.

- **There are no trees recommended for transplanting on this site at this time.**

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Tree Preservation Plan

The following Tree Preservation Plan should be implemented prior to any on-site construction activity.

Hoarding

Hoarding is used to define the **Tree Protection Zone** (TPZ), which protects a tree's root zone, trunk, and branches from injury during both construction and landscaping phases of the project. Hoarding should be installed prior to any construction activity, and remain intact until construction and landscaping is completed. **No** TPZ should be used for the temporary storage of building materials, storage or washing of equipment, or the dumping of construction debris, excess fill, or topsoil.

As required by the City of Mississauga, hoarding shall be constructed of 4x8 plywood sheets using 2x4 top and bottom rail construction supported by 4x4 wooden posts. A TPZ may be constructed of orange safety fencing using 2x4 top and bottom rail construction and supported by t-bar supports when protecting street trees where site line obstruction is a concern. TPZ signage should be posted in visible locations on the TPZ hoarding. T-bar supports for solid hoarding will only be allowed through pre-approval from the City of Mississauga's Development and Design Department.

The architect of record for the project should update the most current site plan/grading plan to include all existing trees properly plotted and numbered and all TPZ hoarding locations clearly indicated.

Hoarding Installation

A diagram of the proposed hoarding plan for this site can be found in Appendix A on Page 20 of this report. The recommended radial distances from the trunk for installation of TPZ hoarding are listed in Appendix B starting on Page 21 of this report, and the hoarding should be installed using the following guidelines:

1) All TPZ hoarding shall be placed at the recommended radial distance from the base of all trees to be protected or up to all existing and/or proposed hard surfaces to allow for construction.

2) Any large numbers of trees that can be grouped together in a closed box or continuous line system for protection shall have their TPZ hoarding placed at the recommended radial distance from the base of all of the largest peripheral trees of the system, or up to all existing and/or proposed hard surfaces to allow for construction.

3) Encroachment within a tree's TPZ will require a special permit from the City of Mississauga and/or on-site supervision by a Certified Consulting Arborist during any proposed excavation activities for root pruning and assessment.

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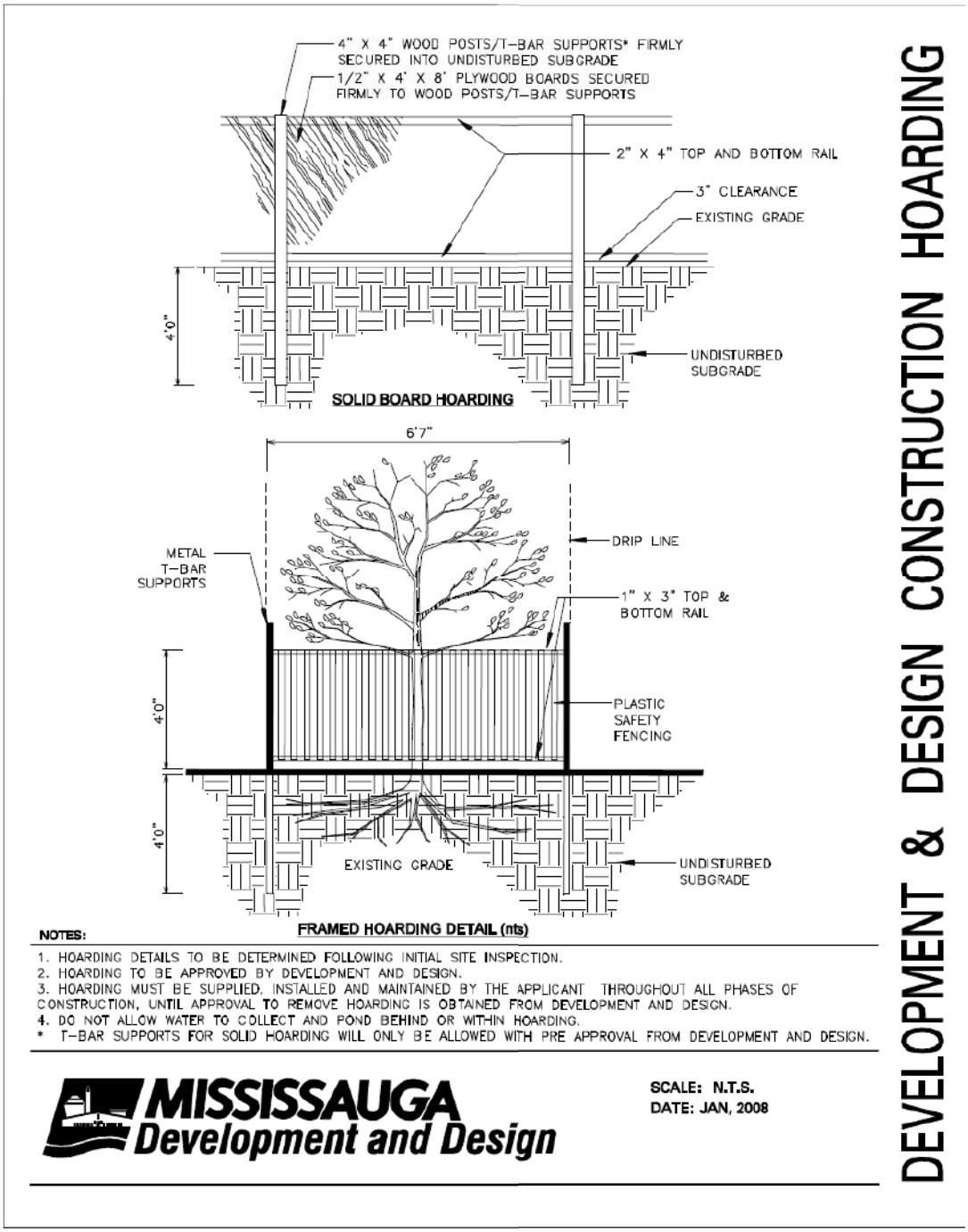
City of Mississauga TPZ Hoarding Specifications

The diagram below provides the City of Mississauga's standards for Tree Protection Zone (T.P.Z) hoarding.



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Tree Preservation Plan Summary

I.) Pre-Construction Phase

- If necessary, have the Certified Consulting Arborist schedule an on-site meeting with a representative from the City of Mississauga's Urban Forestry Department, the property owner(s), and any Architects, Engineers, and contractors involved with the project to discuss the Tree Preservation Plan.
- Complete all Tree Care Recommendations, including pruning and any required tree removals.
- Install Tree Protection Zone (TPZ) hoarding as required.
- Where required, apply composted wood mulch to tree root zones within the TPZ hoarding, and apply fresh wood mulch over steel plates and/or plywood to any high-traffic areas immediately adjacent to the TPZ hoarding to help reduce soil compaction.
- If feasible, root-prune any preserved trees adjacent to excavation areas prior to construction under the supervision of a Certified Consulting Arborist.
- Establish an irrigation plan with the assistance of a Certified Consulting Arborist.

II.) Construction Phase

- Maintain and respect TPZ hoarding throughout the construction phase. Do not store or dump materials in this area.
- Continue irrigation plan as directed by a Certified Consulting Arborist.
- Prune any roots exposed during excavation under the supervision of a Certified Consulting Arborist.
- On-going monitoring by a Certified Consulting Arborist to evaluate construction injury/stress and make recommendations.

III.) Post-Construction Phase

- Remove hoarding only after permission from the City of Mississauga.
- Continue irrigation program as directed by a Certified Consulting Arborist.
- Supplemental fertilizer needs assessment by a Certified Consulting Arborist.
- Post-construction monitoring of all trees by a Certified Consulting Arborist.

NOTE:

Post-Construction Monitoring

Construction injury may take several years to become apparent. All preserved trees should be inspected by a Certified Consulting Arborist on a semi-annual basis for a period of up to 2 years to pro-actively address any tree health related issues as they occur.

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ASSUMPTIONS AND LIMITING CONDITIONS

Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, by-laws, or other governmental regulations.

Care has been taken to obtain all information from reliable sources, and all data has been verified insofar as possible. The consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.

The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

Loss or alteration of any part of this report invalidates the entire report.

Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone other than the person to whom it is addressed without the prior expressed written or verbal consent of the consultant/appraiser.

Neither all nor any part of the contents of this report, nor any copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media without the prior expressed written or verbal consent of the consultant/appraiser particularly as to value conclusions, identity of the consultant/appraiser, or any reference to any professional society, institute, or any initialed designation conferred upon the consultant/appraiser as stated in his/her qualification.

This report and the values expressed herein represent the opinion of the consultant/appraiser, and the consultant/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as either engineering or architectural reports or surveys.

Unless expressed otherwise: 1) Information contained in this report covers only those items that were examined and reflections the condition of those items at the time of inspection, and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

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CERTIFICATE OF PERFORMANCE

I, Tom Bradley, certify that:

- I have personally inspected the tree(s) and/or the property referred to in this report, and have stated my findings accurately. The extent of any evaluation or appraisal is stated in the attached report and the Limits of Assignment.

- I have no current or prospective interest in the vegetation of the property that is the subject of this report, and have no personal interest or bias with respect to the parties involved.

- The analysis, opinions and conclusions stated herein are my own, and are based on current scientific procedures and facts.

- My compensation is not contingent upon the reporting of a pre-determined conclusion that favours the cause of the client or any other party, or upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

- My analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices.

- No one provided significant professional assistance to the consultant, except as indicated within the report.

I further certify that I am a Registered Consulting Arborist through the *American Society of Consulting Arborists (A.S.C.A),* and both a Certified Arborist and Certified Tree Risk Assessor with the *International Society of Arboriculture (I.S.A)*. I have been involved in the fields of Arboriculture and Horticulture in a full-time capacity for a period of more than 20 years.

Signed: _____

Date: May 24, 2017

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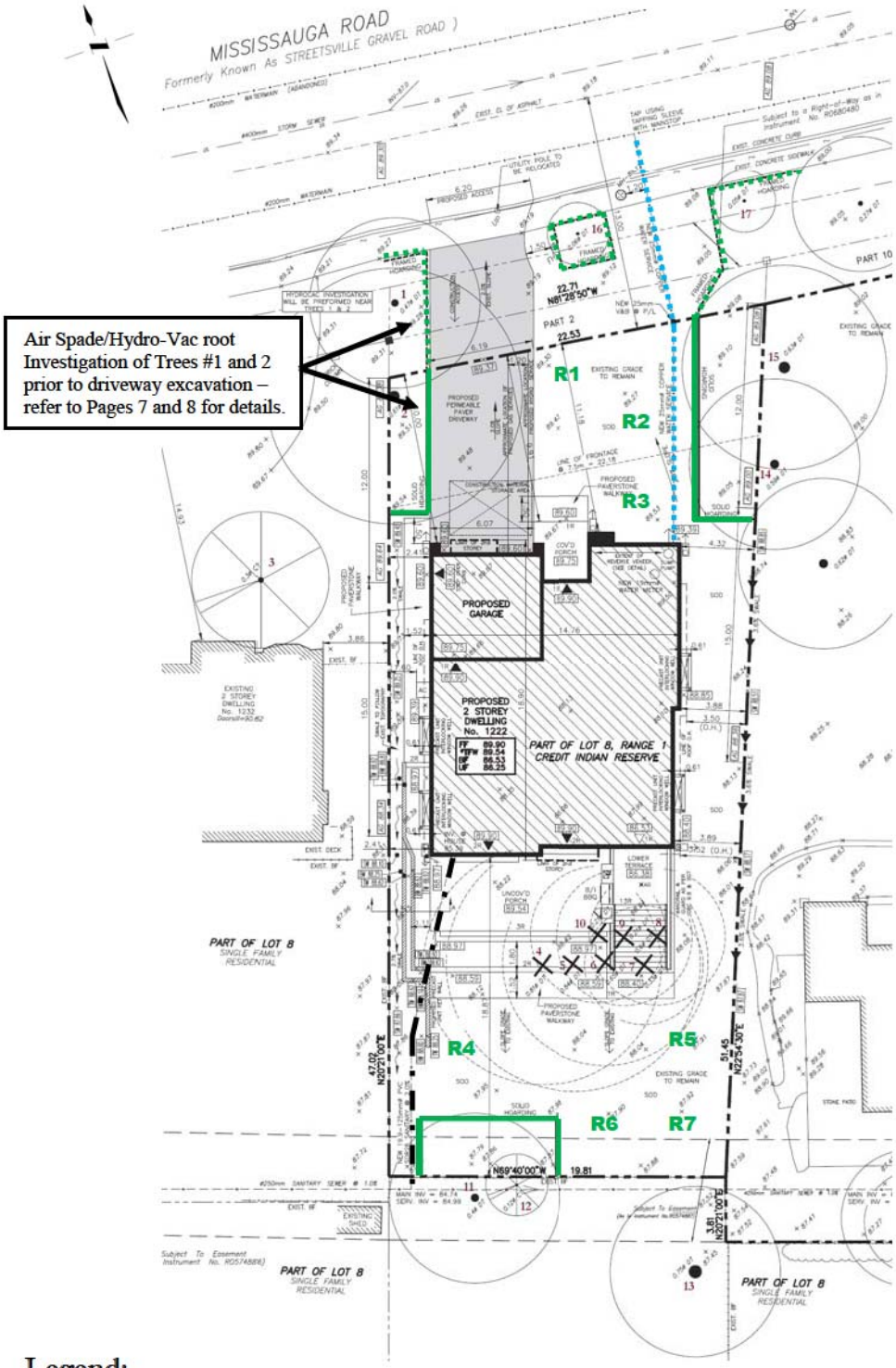
Appendix A: Proposed Site Plan – 1222 Mississauga Rd. (Lot #2) Mississauga

Note: The locations of Trees #3, 7, 12, 13, 16, and 17 are approximations. The proposed Tree Protection Zone (TPZ) hoarding is shown as green lines and is not to scale on this drawing. Rx denotes seven (7) replacement trees and their proposed locations.



Legend:

Solid Hoarding — Framed Hoarding

Water Service (proposed) — Sanitary Service (proposed)

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Appendix B: Tree Survey – 1222 Mississauga R. (Lot #2), Mississauga

I.D #	Owner	Tree Species Common Name	Tree Species Botanical Name	DBH (cm)	Height (m)	Canopy (m)	Tree Health	Structural Condition	Comments	Minimum TPZ unless otherwise indicated
1	City of Mississauga	Norway Maple	*Acer platanoides*	47	18	14	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 6m from tree base; canopy above 3m	Preserve: TPZ = 3.0m
2	Subject Site	Black Oak	*Quercus velutina*	61	18	16	Good	Good	Small-caliper deadwood in canopy; approx. 10 degree stem bend southeast from base to 4m; branch canopy shaded and reduced on north side	Preserve: TPZ = 4.2m
3	Neighbour	Colorado Blue Spruce	*Picea pungens 'Glauca'*	30	18	8	Good	Good	Small-caliper deadwood in canopy; lower branch canopy clearance pruned 2m from tree base and shaded on east side	Preserve: TPZ = 2.4m
4	Subject Site	Red Oak	*Quercus rubra*	81	28	11	Good	Fair	Small-caliper deadwood in canopy; 3 small aspect ratio co-dominant stems with included bark union 10m from tree base; branch canopy above union and shaded on east side	**Remove: Proposed site plan in conflict with the tree**
5	Subject Site	Red Oak	*Quercus rubra*	84	28	16	Good	Fair	Large-caliper deadwood in canopy; small aspect ratio co-dominant stems with narrow included bark union 2m from tree base with response growth on west and east sides of union	**Remove: Proposed site plan in conflict with the tree**
6	Subject Site	Red Oak	*Quercus rubra*	65	28	10	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 10m from tree base; branch canopy above union and shaded on north and west sides	**Remove: Proposed site plan in conflict with the tree**
7	Subject Site	Red Maple	*Acer rubrum*	33	17	10	Good	Good	Small-caliper deadwood in canopy; branch canopy shaded and reduced on west and east side	**Remove: Proposed site plan in conflict with the tree**
8	Subject Site	Sugar Maple	*Acer saccharum*	60	23	10	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 3m from tree base; branch canopy above union and shaded on west side	**Remove: Proposed site plan in conflict with the tree**

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I.D #	Owner	Tree Species Common Name	Tree Species Botanical Name	DBH (cm)	Height (m)	Canopy (m)	Tree Health	Structural Condition	Comments	Minimum TPZ unless otherwise indicated
9	Subject Site	Red Maple	*Acer rubrum*	21	16	8	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 2.5m from tree base; branch canopy above union and shaded on south, west and east sides	**Remove: Proposed site plan in conflict with the tree**
10	Subject Site	Sugar Maple	*Acer saccharum*	21	14	8	Good	Good	Small-caliper deadwood in canopy; branch canopy shaded and reduced on south and east sides	**Remove: Proposed site plan in conflict with the tree**
11	Neighbour	Freeman Red Maple	*Acer x freemanii*	40	18	11	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with narrow included bark union 2.5m from tree base	Preserve: TPZ = 2.4m
12	Neighbour	Jack Pine	*Pinus banksiana*	12	8	6	Good	Good	Small-caliper deadwood in canopy; branch canopy clearance pruned 2m from tree base and shaded on north side; fence on north side	Preserve: TPZ = 2.4m
13	Neighbour	Freeman Red Maple	*Acer x freemanii*	75	18	16	Good	Fair	Small-caliper deadwood in canopy; 2 small aspect ratio co-dominant stems with narrow included bark union 3m from tree base; branch canopy above union	Preserve: TPZ = 4.8m
14	Neighbour	Linden	*Tilia cordata*	59	17	16	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with narrow included bark union 4m from tree base; branch canopy above union	Preserve: TPZ = 3.6m
15	Neighbour	Linden	*Tilia cordata*	63	16	16	Good	Fair	Small-caliper deadwood in canopy; small aspect ratio co-dominant stems with included bark union 2m from tree base; branch canopy above union	Preserve: TPZ = 4.2m
16	**City of Mississauga**	Red Oak	*Quercus rubra*	6	3.5	1.5	Good	Good	Small-caliper deadwood in canopy	Preserve: TPZ = 1.8m
17	**City of Mississauga**	Red Oak	*Quercus rubra*	5	4	1	Good	Good	Small-caliper deadwood in canopy	Preserve: TPZ = 1.8m

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Appendix C: Tree Valuation Appraisals (Trunk Formula Method)

TREE APPRAISAL
Trunk Formula
Method

Tree Number:	One (1)
Address:	1222 Mississauga Rd. (Lot 2), Mississauga
Owner:	City of Mississauga
Date of Appraisal:	May 8, 2017
Appraiser:	Tom Bradley
Certification Number:	R.C.A. #492 (A.S.C.A.)

Field Observations (based on *Guide for Plant Appraisal, 9th Edition*)

1	Species:	Norway Maple		*Acer platanoides*
2	Condition:	75	%	
3	DBH:	47	cm	
4	Location:	73	%	

Regional Plant Appraisal Committee Information - *Guide for Plant Appraisal, 9th Edition*

5	Species Rating:	68	%
6	Replacement Plant Size:	9	cm
6b	Trunk Area:	63.585	cm^2
7	Replacement Plant Cost:	$245.00	
8	Installation Cost: (1.5x Plant Cost)	$367.50	
9	Installed Tree Cost:	$612.50	
10	Unit Tree Cost:	$9.63	

Calculations by Appraiser Using Field and /or Regional Information

11	Appraised Trunk Area (using Table 4.6) :	1734	cm^2
12	Appraised Tree Trunk Increase (#11 - #6b):	1670	cm^2
13	Basic Tree Cost (#12 x #10 + #9) :	$16,703.23	
14	Appraised Value (#13 x #5 x #2 x #4) :	$6,247.01	
15	Appraised Value > $5000.00 is rounded to the nearest $100.		
16	Appraised Value < $5000.00 is rounded to the nearest $10.		

APPRAISED VALUE: $6,200

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TREE APPRAISAL
Trunk Formula
Method

Tree Number:	Sixteen (16)
Address:	1222 Mississauga Rd. (Lot 2), Mississauga
Owner:	City of Mississauga
Date of Appraisal:	May 8, 2017
Appraiser:	Tom Bradley
Certification Number:	R.C.A. #492 (A.S.C.A.)

Field Observations (based on *Guide for Plant Appraisal, 9th Edition*)

1	Species:	Red Oak		*Quercus rubra*
2	Condition:	81	%	
3	DBH:	6	cm	
4	Location:	67	%	

Regional Plant Appraisal Committee Information - *Guide for Plant Appraisal, 9th Edition*

5	Species Rating:	81	%
6	Replacement Plant Size:	9	cm
6b	Trunk Area:	63.585	cm^2
7	Replacement Plant Cost:	$340.00	
8	Installation Cost: (1.5x Plant Cost)	$510.00	
9	Installed Tree Cost:	$850.00	
10	Unit Tree Cost:	$13.37	

Calculations by Appraiser Using Field and /or Regional Information

11	Appraised Trunk Area (using Table 4.6) :	28	cm^2
12	Appraised Tree Trunk Increase (#11 - #6b):	-36	cm^2
13	Basic Tree Cost (#12 x #10 + #9) :	$374.30	
14	Appraised Value (#13 x #5 x #2 x #4) :	$164.23	
15	Appraised Value > $5000.00 is rounded to the nearest $100.		
16	Appraised Value < $5000.00 is rounded to the nearest $10.		

APPRAISED VALUE: $160

Welwyn Consulting

TREE APPRAISAL
Trunk Formula
Method

Tree Number:	Seventeen (17)
Address:	1222 Mississauga Rd. (Lot 2), Mississauga
Owner:	City of Mississauga
Date of Appraisal:	May 8, 2017
Appraiser:	Tom Bradley
Certification Number:	R.C.A. #492 (A.S.C.A.)

Field Observations (based on *Guide for Plant Appraisal, 9th Edition*)

1	Species:	Red Oak		*Quercus rubra*
2	Condition:	81	%	
3	DBH:	5	cm	
4	Location:	67	%	

Regional Plant Appraisal Committee Information - *Guide for Plant Appraisal, 9th Edition*

5	Species Rating:	81	%
6	Replacement Plant Size:	9	cm
6b	Trunk Area:	63.585	cm^2
7	Replacement Plant Cost:	$340.00	
8	Installation Cost: (1.5x Plant Cost)	$510.00	
9	Installed Tree Cost:	$850.00	
10	Unit Tree Cost:	$13.37	

Calculations by Appraiser Using Field and /or Regional Information

11	Appraised Trunk Area (using Table 4.6) :	20	cm^2
12	Appraised Tree Trunk Increase (#11 - #6b):	-44	cm^2
13	Basic Tree Cost (#12 x #10 + #9) :	$267.36	
14	Appraised Value (#13 x #5 x #2 x #4) :	$117.30	
15	Appraised Value > $5000.00 is rounded to the nearest $100.		
16	Appraised Value < $5000.00 is rounded to the nearest $10.		

APPRAISED VALUE: $120

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Appendix D: Site Photos - 1222 Mississauga Road (Lot #2)

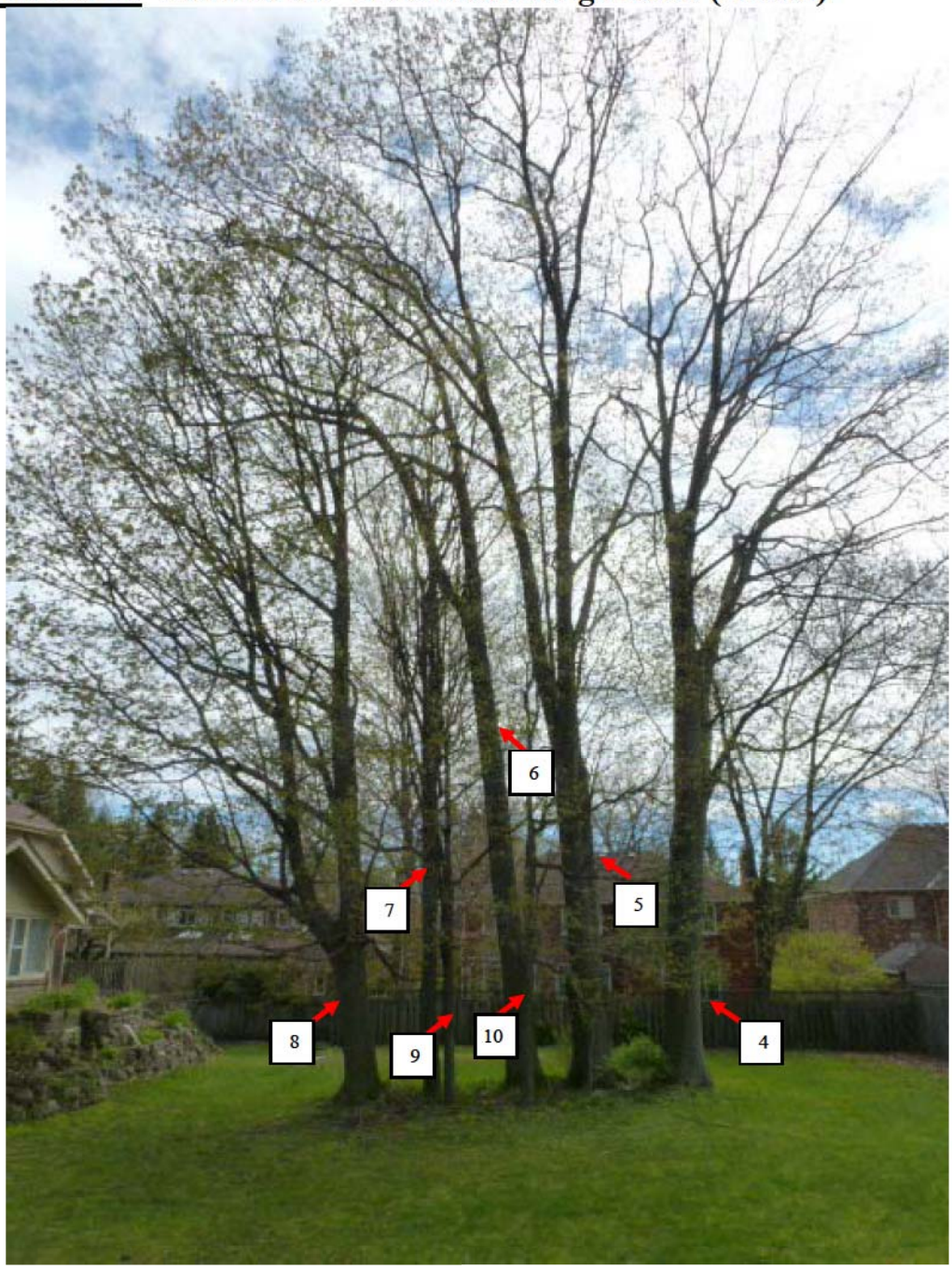


Photo #3 (Trees #4 through 10 – subject site tree)

Figure #2:
The above photo shows the seven (7) trees proposed for removal to accommodate the proposed site plan at 1222 Mississauga Road (Lot #2).

Please refer to Pages 9, 10 and 11 of this report for further information.

Mississauga Scenic Route Report

1216 & 1222 Mississauga Road

Mississauga ON L5H 2J2

29 August 2017

Report prepared by

David W. Small

Table of Contents

Section 1 | Introduction

David W. Small Designs Inc. has been engaged by the owners of the residential property located at 1216 & 1222 Mississauga Rd in the City of Mississauga to design two new residential dwellings. The subject properties are located north of Port Credit in the City of Mississauga.

The subject properties are listed on the City's Heritage Register as being part of the Mississauga Road Scenic Route Cultural Landscape. While the properties are listed on the City's Heritage Register, they are not designated properties.

The City of Mississauga Official Plan Policy 7.4.1.12 states;

'The proponent of any construction, development, or property alteration that might adversely affect a listed or designated cultural heritage resource or which is proposed adjacent to a cultural heritage resource will be required to submit a Heritage Impact Statement , prepared to the satisfaction of the City and other appropriate authorities having jurisdiction.'

Accordingly, this Heritage Impact Statement is being submitted to the City of Mississauga as an addendum to the Heritage Impact Statement as approved under Heritage Permit 16-31 and in support of the proposed development.

Section 2 | About the Authors

David Small is the owner of David W. Small Designs Inc., a custom home design firm based in Mississauga. The firm specializes in infill housing, specifically the redevelopment of existing properties in established mature neighbourhoods.

David Small was born to design houses having grown up watching and learning from his Father and Grandfather, both of whom were homebuilders and land developers. Growing up with such a 'heritage of housing' ignited David's passion for architecture, and specifically, the design of custom family homes.

Over the past two decades, David W. Small Designs Inc. has developed a great appreciation for the value of heritage communities. They have been involved in the design of over 400 new homes and renovations in South Mississauga. When designing a custom home, David values the heritage of the community, as well as the cultural landscape. The success of the firm is largely based on developing "neighbourhood sensitive" designs that respect the integrity of the existing natural landscape and the development that has occurred within the surrounding community.

As a natural evolution of the designs created by David W. Small Designs Inc., the firm has prepared over thirty Heritage Impact Assessments for the City of Mississauga in connection with the proposals located within South Mississauga Cultural Landscapes over the past eight years. The expertise they have acquired through their breadth of work and longevity in the industry uniquely positions the firm to prepare this Heritage Impact Assessment.

A list of the Heritage Impact Assessments prepared by David W. Small Designs Inc. is provided below:

1. 1276 Woodland Avenue – August 2016
2. 1251 Stavebank Road – July 2016
3. 906 Whittier Crescent – November 2015
4. 866 Tennyson Avenue – February 2015
5. 1312 Stavebank Road – January 2015
6. 156 Indian Valley Trail – June 2014
7. 1392 Stavebank Road – March 2014
8. 40 Veronica Drive – November 2013
9. 930 Whittier Crescent – November 2013
10. 57 Inglewood Drive – April 2013
11. 1162 Vesta Drive – March 2013
12. 250 Pinetree Way – March 2013
13. 1296 Woodland Avenue – March 2013

14. 29 Cotton Drive – March 2013
15. 1373 Glenwood Drive – August 2012
16. 1394 Victor Avenue – May 2012
17. 1570 Stavebank Road – May 2012
18. 2494 Mississauga Road - April 2012
19. 162 Indian Valley Trail – March 2012
20. 500 Comanche Road – March 2012
21. 277 Pinetree Way – January 2012
22. 1000 Sangster Avenue – September 2011
23. 1362 Stavebank Road – August 2011
24. 1448 Stavebank Road – July 2011
25. 1359 Milton Avenue – July 2011
26. 1380 Milton Avenue – April 2010
27. 1248 Vista Drive – March 2010
28. 64 Veronica Drive – February 2010
29. 125 Veronica Drive – January 2010
30. 224 Donnelly Drive – October 2009
31. 1570 Stavebank Road – October 2009
32. 1379 Wendigo Trail – September 2008
33. 142 Inglewood Drive – September 2008
34. 1524 Douglas Drive – September 2008
35. 1443 Aldo Drive – July 2008
36. 1397 Birchwood Height Drive – July 2008
37. 1285 Stavebank Road – May 2008

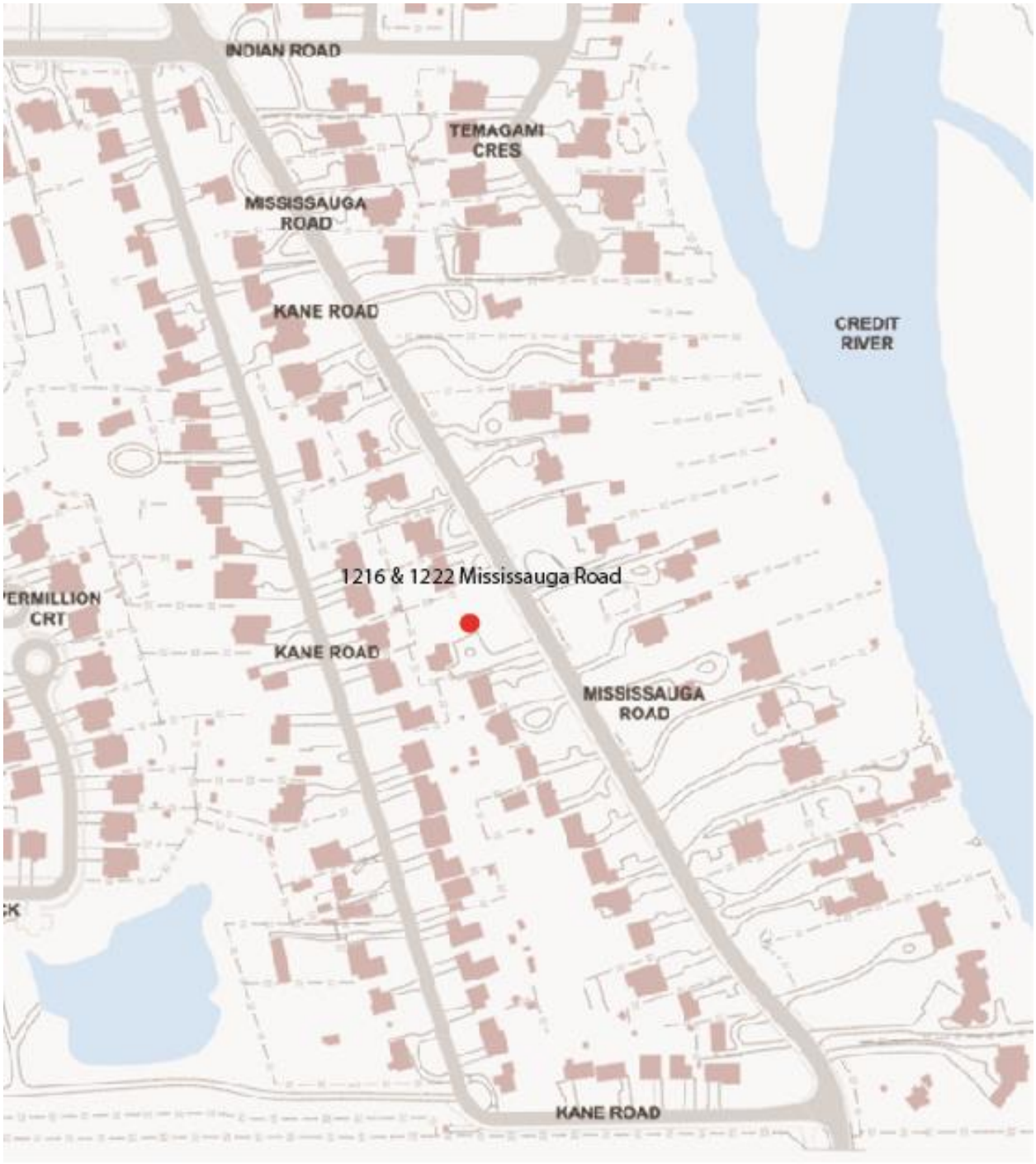
The Mississauga Road Scenic Route

The Mississauga Road Scenic Route stretches from the St. Lawrence and Hudson (Canadian Pacific) Railway in Streetsville to Lakeshore Road in Port Credit. This portion of the road has been designated as a scenic route due to its distinctive features when compared to other roads within the City of Mississauga. The original reference to the term "Scenic Route" was in 1976 when City Council chose to restrict any widening to the roadway between North Sheridan Way and Springbank Road in order to maintain the area's character. The Mississauga Road Scenic Route Study lists four key features:

1. Existing Street Trees and Greenbelt Vegetation
2. Road Type
3. Residential Character
4. Heritage Quality

Current City of Mississauga Map:

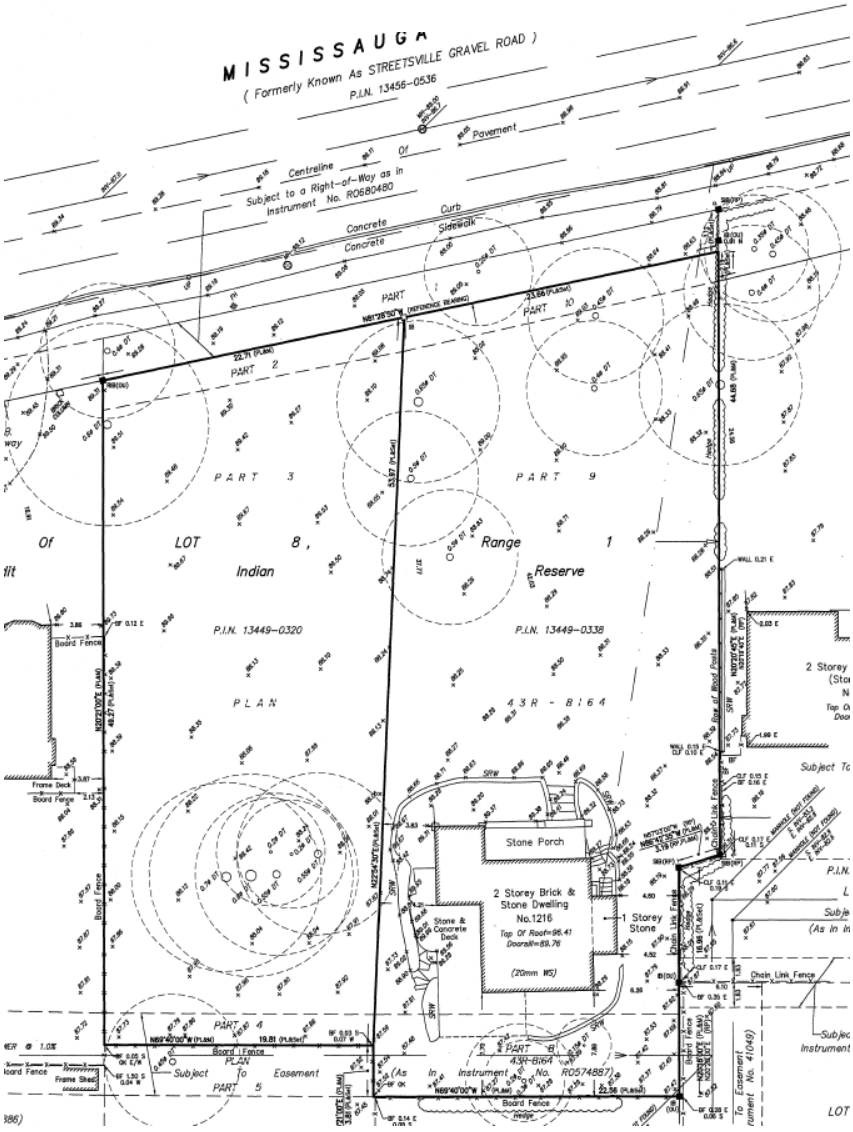
Mississauga Road Mapping (Indian Rd to Kane Road):



Aerial Photography / Mapping:

Aerial photography from www.mississauga.ca

Topographic Survey:



Excerpt of the Plan of Topography for Part of Lot 8, Range 1, Credit Indian Reserve, prepared by Young & Young Surveying, Ontario Land Surveyors dated December 19, 2016.

Section 4 | Property Details

Currently only one house sits on the lot, on the 1216 Mississauga Road side of the property line. 1222 Mississauga Road is a lot of record and currently sits empty.

Property Description

Municipal Address	|	1216/1222 Mississauga Road
Legal description	|	Part of Lots 8, RANGE 1 Credit Indian Reserve
Municipal Ward	|	2
Zoning	|	R1-1, Zoning By-law 0225-2007, as amended
Lot Frontage	|	24.21 m (1216) & 22.18 m (1222)
Lot Depth	|	57.80 m (1216) & 49.20 m (1222)
Lot Area	|	1360.55 m² (1216) & 1029.27 m² (1216)
Lot Orientation	|	Front facing East North East
Vegetation	|	Several mature trees scattered throughout property.
Access	|	Asphalt driveway accessing the municipal street.

House Description:

Building Type	|	2 Storey Dwelling
Floor Area	|	Approximately 2,036 square feet (excluding garage)
Wall Construction	|	Concrete block and wood frame
Exterior Cladding	|	Brick and Stone
Roofing Material	|	Asphalt Shingles
Setbacks	|	Front Yard: 37.77 m
	|	Right Side: 3.83 m (to 1222 Mississauga Road property line)
	|	Left Side: 4.52 m
	|	Rear Yard: 7.70 m
Construction Date	|	Approximately 1923

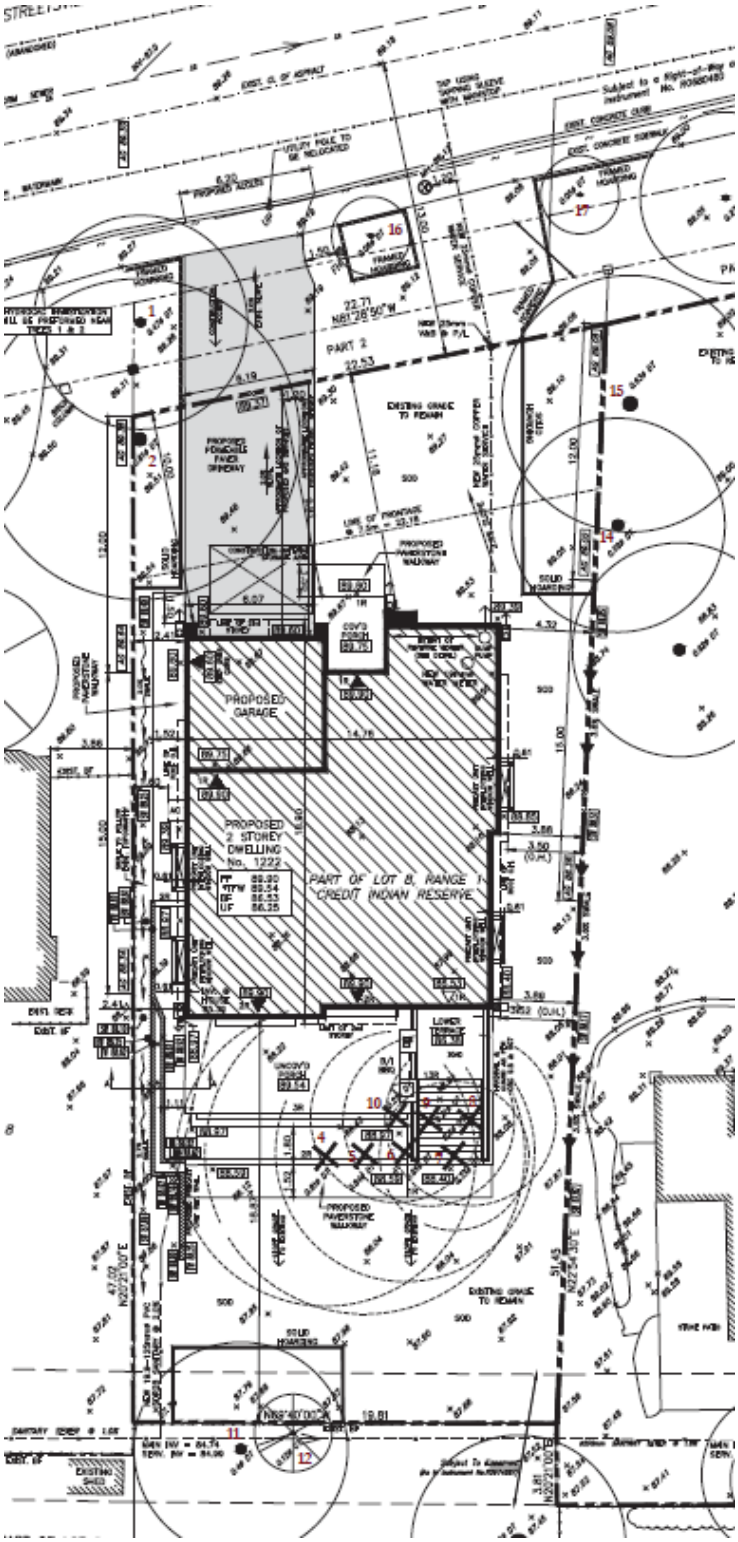
Section 5 | Development Proposal

The proposal is to demolish the existing house at 1216 Mississauga Road (as approved under a previously issued Heritage Permit) and replace it with two new two storey residential dwellings. The dwellings have been designed in a way that contributes to the unique landscape of Mississauga Road. Mississauga Road is lined with houses of distinct architecture in a variety of sizes and architectural styles. The proposed dwellings will integrate well with the unique character of the area and will contribute to the distinctiveness of the Mississauga Road corridor. The houses contrast and complement those around them as well as each other in a way that respects sizing, setbacks, and nature, but does not lead to repetition as found in many subdivisions within the City.

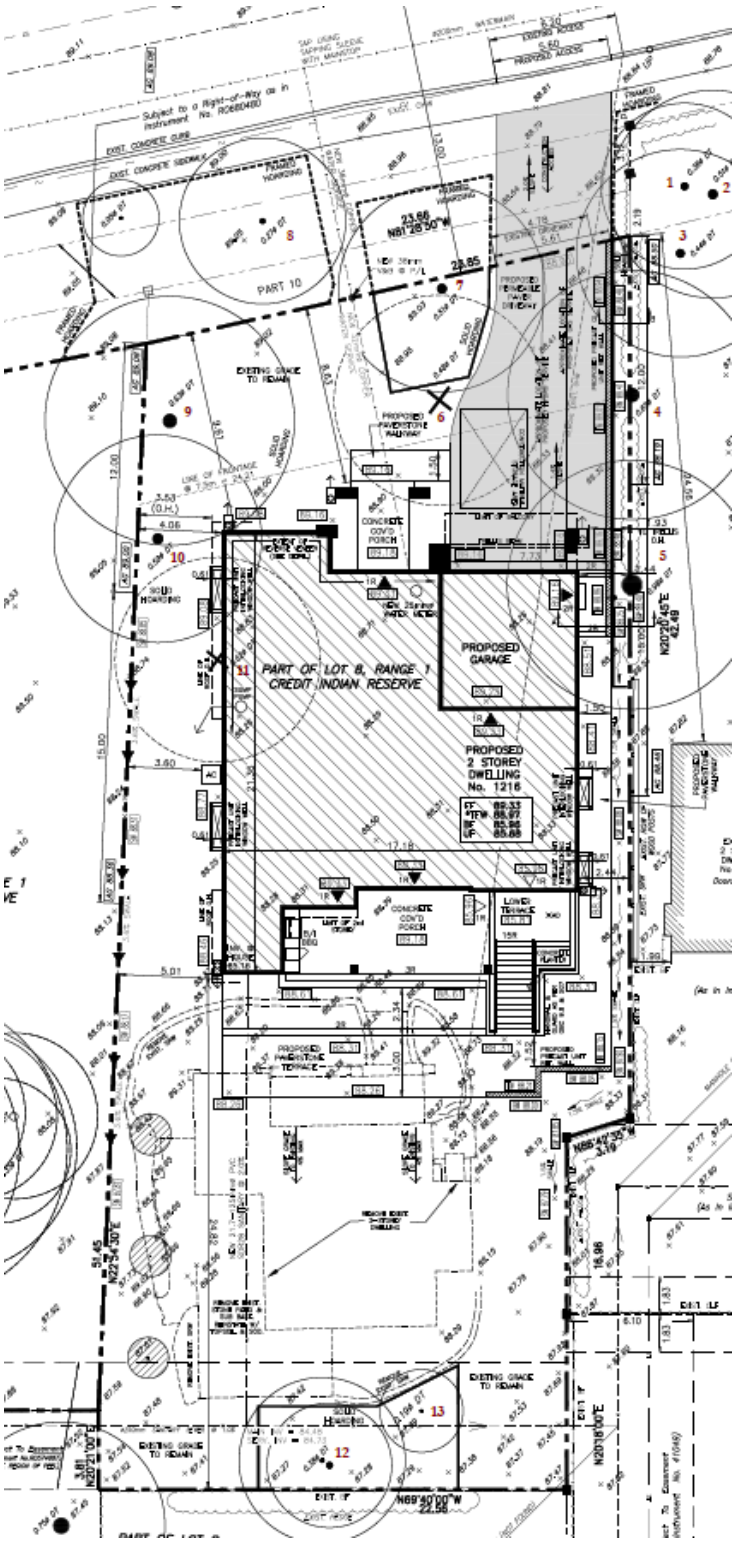
The following pages include the site plan, floor plans and architectural elevation plans. We have provided a rendered streetscape of the proposed dwellings between the two adjoining properties.

Site Development Plan (an excerpt of the plan)

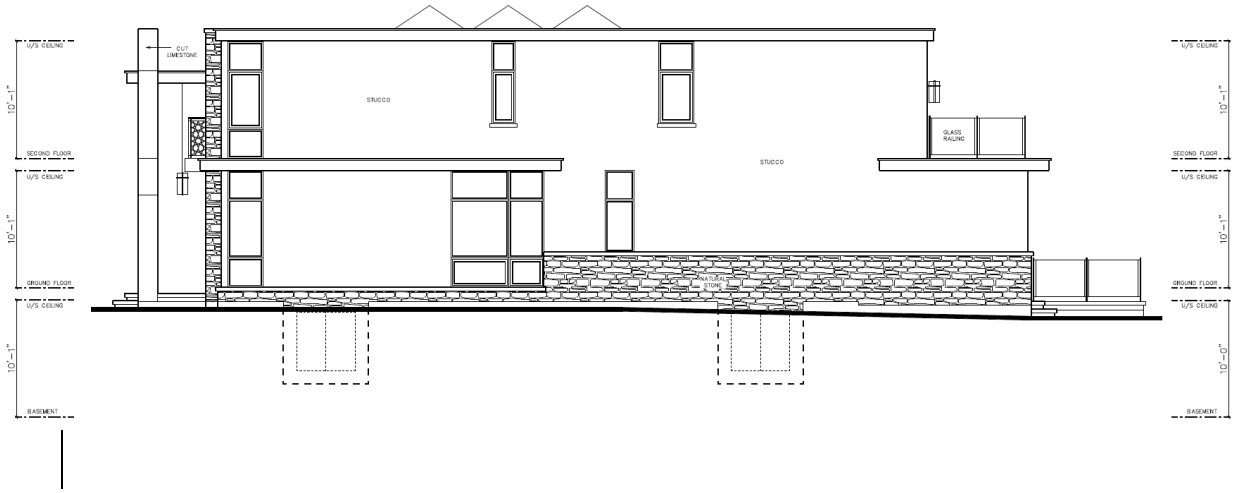
1222 Mississauga Road:



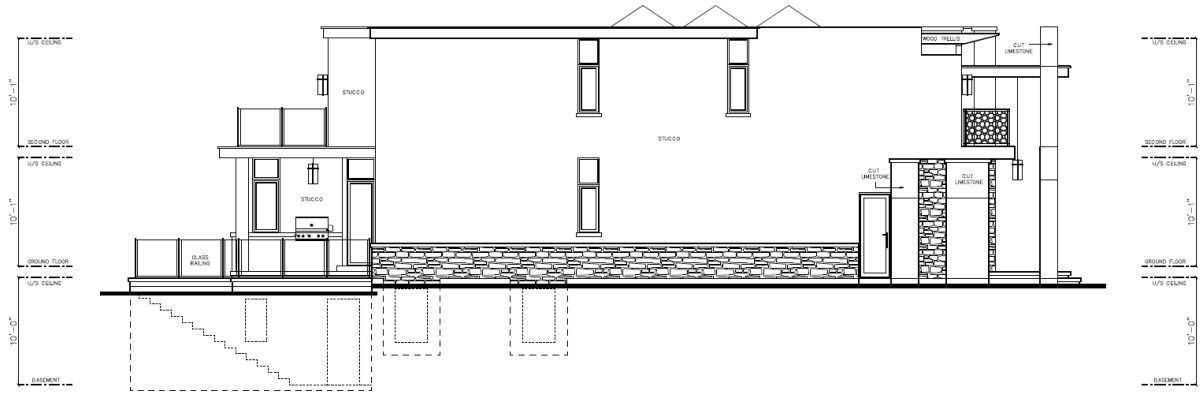
1216 Mississauga Road:



Proposed Front & Right Elevations (1216 Mississauga Road):



Proposed Rear & Left Elevations (1216 Mississauga Road):



Proposed Front & Right Elevations (1222 Mississauga Road):

Proposed Rear & Left Elevations (1222 Mississauga Road):

Proposed Streetscape Elevation:

1214 Mississauga Road | 1216 Mississauga Road | 1222 Mississauga Road | 1232 Mississauga Road

Mississauga Road Scenic Route (F-TC-4):

"Mississauga Road has been classified as a scenic route in the City Plan because of the distinctive features that distinguish it from other major collector streets within the City. An initial reference to the term scenic route was made in 1976 when Council chose to restrict any widenings to the roadway in order to maintain its existing character between North Sheridan Way and Springbank Road."

Excerpt from City of Mississauga Mississauga Road Scenic Route Study

"Mississauga Road is one of the oldest roads in Mississauga. Its alignment caries from being part of the normal road grid in the north to a curvilinear alignment in the south following the top of bank of the Credit River. The scenic quality of the road is notable because it traverses a variety of topography and varying land use from old established residential neighbourhoods to new industrial and commercial areas. From Streetsville south the boulevards and adjacent landscapes are home to some of the oldest and most spectacular trees in the City. It is acknowledged as an important cultural landscape because of its role as a pioneer road and its scenic interest and quality."

Excerpt from City of Mississauga Cultural Landscape Inventory F-TC-4

The Cultural Landscape or Feature Criteria that have been identified as being applicable to the Mississauga Road Scenic Route are:

LANDSCAPE ENVIRONMENT:

- Scenic and Visual Quality
- Horticultural Interest
- Landscape Design, Type and Technological Interest

BUILT ENVIRONMENT:

- Consistent Scale of Built Features

While there are further attributes associated with the Mississauga Scenic Route, this report has been scoped with City staff due to the previously approved Heritage Report for the property.

The following will focus and expand on the above items.

The Mississauga Road Landscape Environment:

Mississauga Road has truly earned its Scenic Route title. Its natural topography, beautiful homes, and mature trees create a stretch of road that is unparalleled by any other street in the City. Together these features create an attractive environment that people want to enjoy.

Looking north along Mississauga Road from the subject properties.

The topography of the properties is generally level, with both sloping gently from a peak in the front half of the properties. There are several mature trees at the front of the properties and a small cluster of mature trees closer to the rear of 1222 Mississauga Road. The houses are placed on the lots in a way that provides generous side yard setbacks comparable to the immediate neighbours and allows the lots to keep their spacious appearance from the street. Additionally the majority of trees that currently exist on the property are intended to be preserved and several new trees are proposed to be planted.

1216 Mississauga Road

1222 Mississauga Road

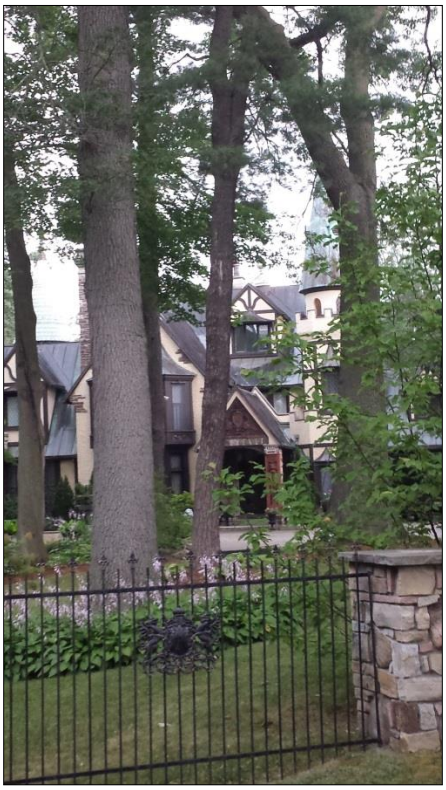
The Mississauga Road Built Environment

Housing: Mississauga Road contains a broad range of housing sizes, configurations and styles. The area has homes that represent the architectural style of various decades since development started occurring in this area in the early half of the twentieth century. This uniqueness and character are a large part of what makes Mississauga Road so attractive. Below are examples of broad range of housing styles along the Mississauga Road Scenic Route.


1422


1470

The housing stock continues to evolve as redevelopment continues to occur. Many different architectural styles have been constructed along the street, but the area has still managed to maintain the aesthetic appeal that makes is so attractive. Attention to architectural detail and craftsmanship have been the most important characteristics in the redevelopment of the area. Below are examples of newer and older homes, larger and smaller homes, and homes of varying architectural styles coexisting comfortably.



Houses of varying architectural styles

Houses of distinct size differences

Houses both old and new

THE SURROUNDING BUILT FORM

The two properties on either side of 1216 and 1222 Mississauga Road are both two-storey homes. The home to the north appears taller with a more prominent roof line, whereas the home to the south has a shorter appearance due to the natural dip in the topography around the shared property line.

1214 Mississauga Road

1232 Mississauga Road

Along this portion of Mississauga Road the houses across the street have a much different relationship to the road than those on the West side of the street. The houses are set much further back and have additional screening from several mature trees and large front yards.

1233 Mississauga Road

1227 Mississauga Road

THE PROPOSED HOMES

The proposed dwellings have been designed in a way that is respectful to the unique character of Mississauga Road. The proposed architectural style will complement the eclectic mix of architecture that has been very effectively introduced along Mississauga Road.

The proposed dwellings will be set closer to the street than the existing dwelling, however it will maintain an appropriate setback and massing for Mississauga Road. The homes have been carefully designed for their properties and will sit on the property with the front door having a very comfortable relationship to the existing grades. The proposal maintains the bulk of the mature trees, which contribute to the streetscape and neighbourhood character.

The exterior finishes of the proposed dwelling will be a mix of materials including natural stone, wood siding and stucco that will complement the surrounding built form.

Section 7 | Summary and Conclusions

The proposed homes at 1216 Mississauga Road and 1222 Mississauga Road have been designed in a way that respects the size, massing, and character of the immediate neighbours as well as Mississauga Road as a whole. The massing of the proposed two-storey homes will complement the immediate adjacent neighbours and have been designed in a manner that will successfully co-exist with the existing dwellings.

1214 Mississauga Road

1232 Mississauga Road

The scales of the proposed dwellings are similar to other dwellings located along the West side of Mississauga Road in this stretch. As seen on the site plan sketch in Section 5 of this report and the site photos on the following pages of this report, this property and surrounding lands contain mature trees, manicured lawns and landscaping. The proposed development will require the removal of some trees, which come into conflict with the proposed site plan or pose a safety risk as they are in poor health, however the vast majority of trees in the front yard of both properties will be maintained in order to help preserve the character of the area.

Summary Statement and Recommendations:

The impact of the proposed development in terms of both the proposed home and the streetscape presence was part of the consideration when designing the home. The proposed dwellings were designed to respect the scale of the surrounding properties. The proposed dwellings match the two-storey appearance of the surrounding homes while using modern materials and finishes to ensure they do not simply blend into the street, but instead contribute to the character of Mississauga Road.

The development proposal is sensitive to the Landscape Environment of the Cultural Landscape in terms of proposing a development that respects the streetscape of Mississauga and maintains the mature trees that Mississauga Road is known for.

The development proposal complements the Built Environment of the Cultural Landscape in the context that the proposed built form will represent an appropriate relationship to the adjoining properties and houses, as well as Mississauga Road as a whole.

There are no ecological considerations with the redevelopment as there are no Conservation Authority regulations applying to the property. The removal of trees is addressed through the City of Mississauga Urban Forestry section. Through the Site Plan Approval process, the requirement for replacement trees will be determined and implemented.

The proposed redevelopment upholds the policies and objectives of the Mississauga Road Scenic Route designation applying to the property. For the aforementioned reasons we recommend that the proposed developments be permitted on the subject properties.

Mandatory Recommendation:

As per criteria set out in Regulation 9/06 of the Ontario Heritage Act, the following reasons are why the subject property is not worthy of heritage designation and does not meet such criteria stated in Regulation 9/06.

1. *Does the property meet the criteria for heritage designation under the Ontario Regulation 9/06, Ontario Heritage Act?*

   The property is listed on the City of Mississauga Heritage Register under the Mississauga Road Scenic Route Cultural Landscape.

   Based on the conclusions and recommendations contained in the original report approved by the City, the existing house does not meet criteria set out in Regulation 9/06, Ontario Heritage Act for consideration for designation or preservation.

2. *If the subject property does not meet the criteria for heritage designation then it must be clearly stated why it does not.*

   A thorough review of the property has been completed through the previously approved report which concluded that neither the existing dwelling nor the property has any significant heritage value worth conserving.

3. *Regardless of the failure to meet criteria for heritage designation, does the property warrant conservation as per the definition in the Provincial Policy Statement?*

Section 2.6 of the Provincial Policy Statement, 2014 sets out that significant cultural heritage landscapes shall be conserved.

Conserved is specifically defined in the Provincial Policy Statement as:
"the identification, protection, use and/or management of cultural heritage and archaeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a conservation plan or heritage impact assessment."

The property is listed on the City of Mississauga's Heritage Register as being within the Mississauga Road Scenic Route Cultural Landscape. The City has developed policies which require the preparation of Heritage Impact Assessment. This report constitutes that assessment.

This report has considered the context of the Cultural Landscape and how the proposed development of the property supports the values, attributes and integrity of the cultural heritage landscape. It was determined that the proposed dwellings to not have any negative impact on the stated goals of the Mississauga Road Scenic Route policies or goals.

The sensitive architectural design relates the house to the topography of the property and preserves the trees on the property. The new development is sensitive to the adjoining properties in terms of massing and separation between the homes. The introduction of the new homes along Mississauga Road has been carefully planned to complement the streetscape and enhance the character of the Cultural Landscape.

As such, it is the conclusion of this report that the policies of the Mississauga Road Scenic Route Cultural Landscape have been appropriately addressed and that no further designation is required for the subject property.

Section 8 | Bibliography

Dieterman, Frank A. Mississauga The first 10,000 Years. The Mississauga Heritage Foundation Inc., 2002

McIlwraith, Thomas F. Looking for Old Ontario. University of Toronto Press, 1997

City of Mississauga Cultural Landscape Inventory L-RES-6 Community Services Department January 2005

City of Mississauga Mississauga Road Scenic Route Study Planning & Building Department May 1997

City of Mississauga Services Online – eMaps http://www6.mississauga.ca/eMaps/(lafipz55wrpwqa55adxyff55)/default.aspx

Arborist Report and Tree Preservation Plan
Prepared by Welwyn Consulting
Dated
1216 Mississauga Road

Arborist Report and Tree Preservation Plan
Prepared by Welwyn Consulting
Dated
1222 Mississauga Road