

SITE DEVELOPMENT USING PRE-DESIGNED PLANS

BUILDING HOUSING FASTER AND AFFORDABLY USING THE CMHC DESIGN CATALOGUE

Intelligent, Intuitive, Inspired

IN ENGINEERING
+ PLANNING

PLANNING
LAND DEVELOPMENT
ENGINEERING
BUILDING DESIGN

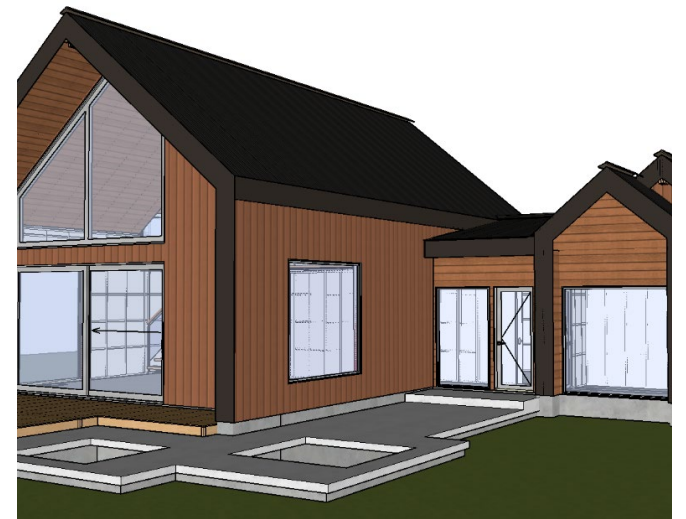
Integrated Project Services

IN DESIGN +
CONSTRUCTION

DESIGN
RESIDENTIAL
COMMERCIAL
CONSTRUCTION

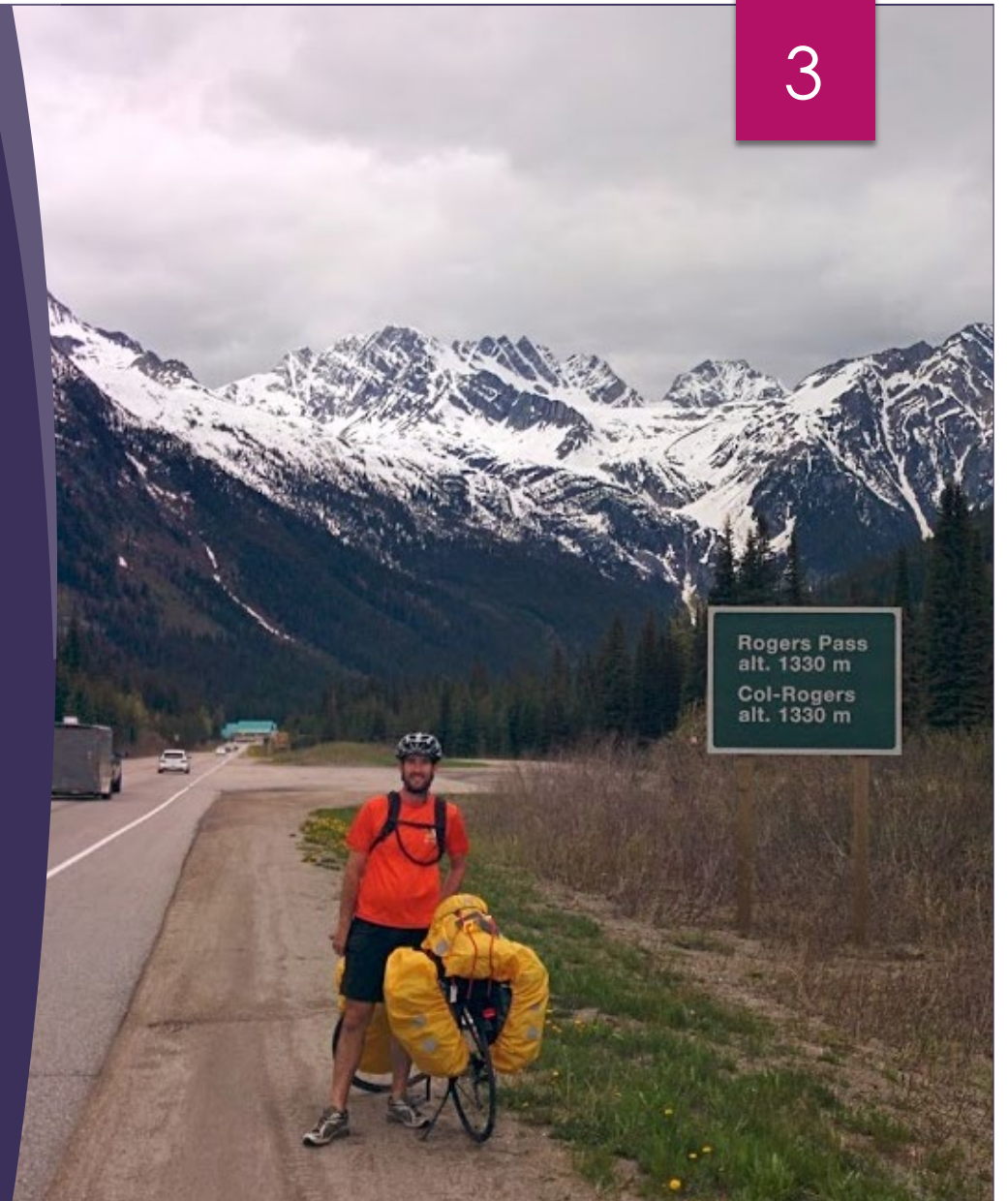
Agenda

- ▶ Introduction
- ▶ Picking a pre-designed plan
- ▶ Land-Use Compatibility
- ▶ Spatial Analysis
- ▶ Site Servicing
- ▶ Code Compliance



Introduction

- ▶ Andrew F. Melchers
 - ▶ M.Eng & B.Eng from Carleton University
 - ▶ Professional Engineer (Ontario, Nova Scotia, Nunavut, Northwest Territories, New York State)
 - ▶ Internationally Licensed Engineer
 - ▶ BCIN Licensed Building Code Practitioner
 - ▶ Member of Royal Architecture Institute of Canada
 - ▶ Owner and Technical Lead at IN Engineering + Planning, IN Design + Construction
 - ▶ Recognized Expert in Civil, Structural, Code Compliance, Site Development



Intelligent, Intuitive, Inspired

iN ENGINEERING
+ PLANNING

PLANNING
LAND DEVELOPMENT
ENGINEERING
BUILDING DESIGN

- ▶ Services:
 - ▶ Feasibility & Studies
 - ▶ Land-Use Planning
 - ▶ Civil Engineering
 - ▶ Structural Engineering
 - ▶ Building Code Compliance
- ▶ Coordinating Licensed Professionals
- ▶ Site Plan Approval
- ▶ Building Permits

Integrated Project Services

iN DESIGN +
CONSTRUCTION

DESIGN
RESIDENTIAL
COMMERCIAL
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- ▶ Residential & Commercial Design
- ▶ Project Management
- ▶ Permitting and Approvals
- ▶ Construction Management
- ▶ Budgeting and Schedule
- ▶ Commissioning

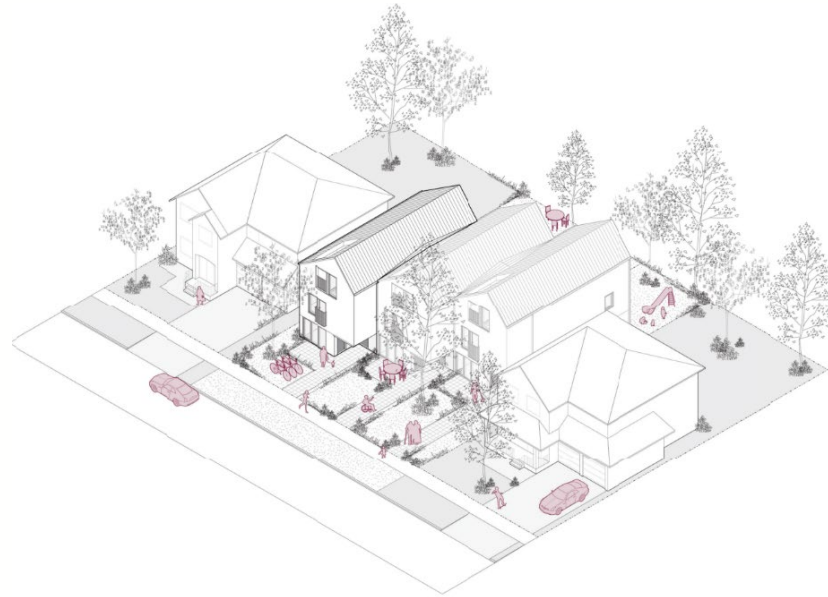
Case Study: Densification near the Municipal Centre

- ▶ We purchased the house across the road.
- ▶ You want to add additional units to increase rental supply.
- ▶ You need your building permit by the Spring to start renting by the Fall.
- ▶ You believe it's a good spot since it's on the corner of two roads and near a municipal center.
- ▶ You are considering a modular/pre-fab builder or using the CMHC housing catalogue.





HOUSING DESIGN CATALOGUE
ON - STACKED TOWNHOUSE 02



We decide replacing the existing house with the Stacked Townhouse02 from the CMHC catalogue

Pre-Designed Plans



Feasibility

Are the plans designed for my jurisdiction?

What engineering support will I require?

Site Design

Do I have the budget and schedule for this project?

What approvals are required?

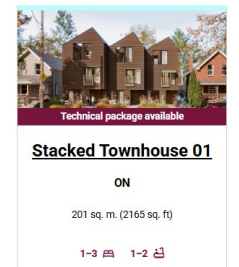
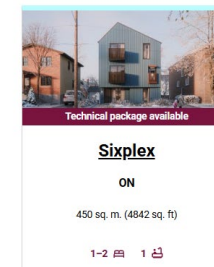
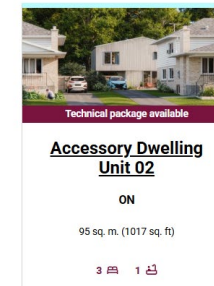
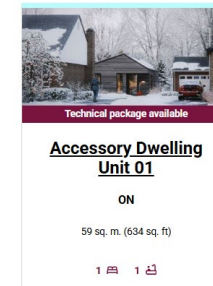
Building Design

How many units do I need to make the project feasible?

What are my requirements for the project?

Pre-Construction

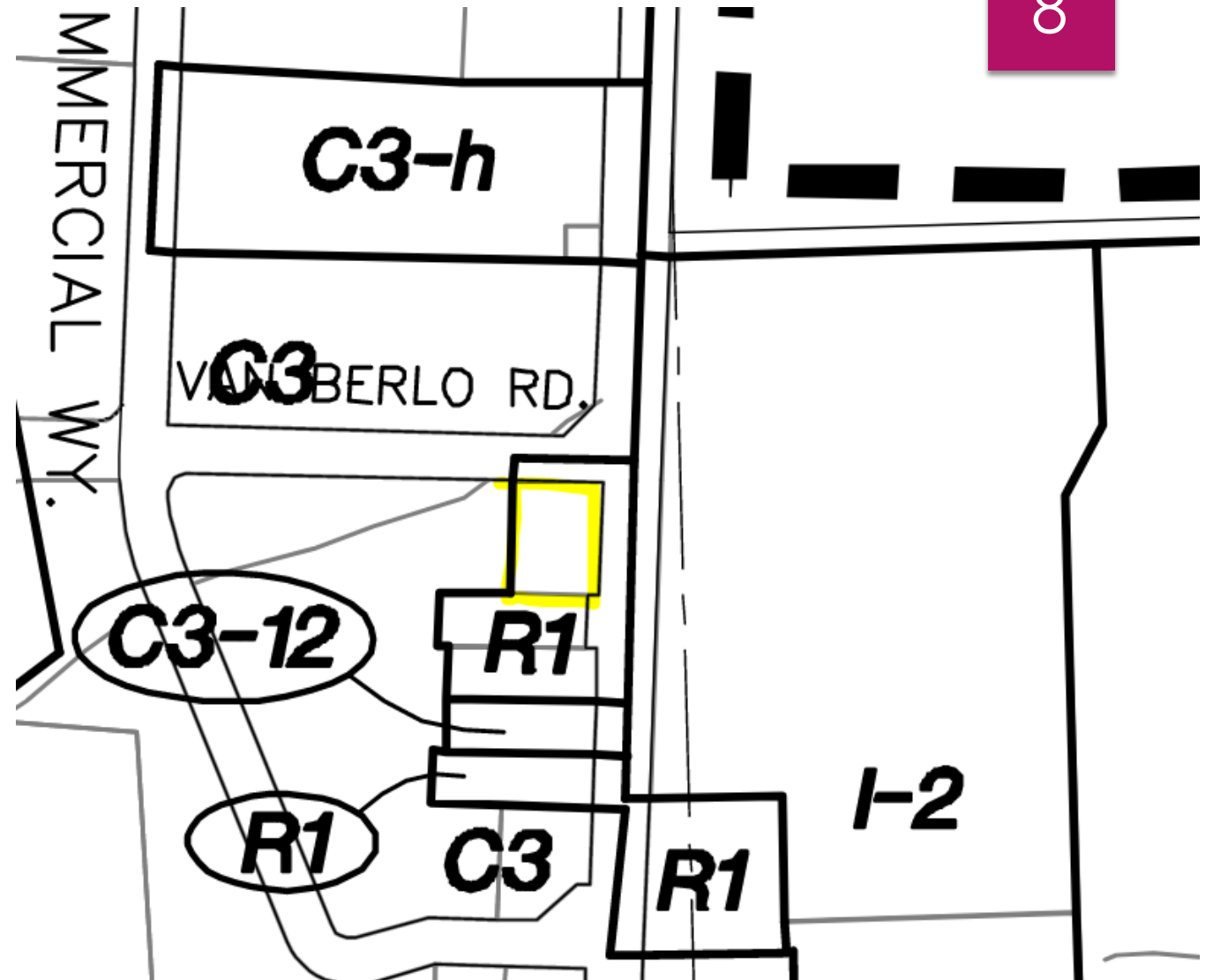
Construction



Note: About 10% of your project budget is usually Design & Engineering

Land Use Combability

- ▶ Check the Zoning
 - ▶ What is the lot's current zoning (R1)?
 - ▶ Is multi-unit residential permitted, or would a Zoning By-law Amendment be required?
 - ▶ Does the Official Plan support intensification at this location?
- ▶ Confirm Zoning Limitations
 - ▶ Setbacks
 - ▶ Parking
- ▶ Do you need site plan approval?



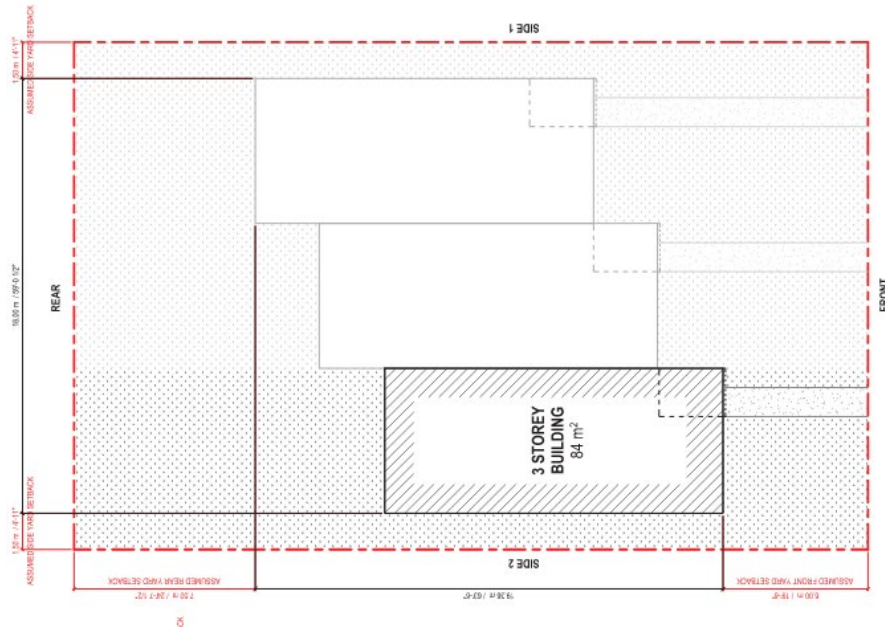
Review of Zoning By-Law

- ▶ Zoning Restrictions: R1, Residential
- ▶ 1 parking space per dwelling unit with 1 being accessible, in lot format.
- ▶ Driveway within 7m of intersection – minor variance
- ▶ Parking lot design, lighting, surfacing & drainage
- ▶ 3m Landscaped areas next to commercial and industrial zones
- ▶ Not within the conservation authority or environmentally regulated area (waterfront, swamps)
- ▶ Not within MTO or Railway regulated areas
- ▶ Not within federally regulated areas (world heritage sites)
- ▶ Site triangle at intersection – 10m along each street
- ▶ Site Plan Control is Required
 - ▶ Professional Survey
 - ▶ Site Plan
 - ▶ Landscape Plan
 - ▶ Site Servicing Plan
 - ▶ Grading & Drainage Plan
 - ▶ Stormwater Management
 - ▶ Architectural Concepts
 - ▶ Other Studies

Potential Plans and Studies/Reports to be Submitted:

Plan and study/report requirements are outlined for the applicant during the pre-application consultation process or in correspondence with a planner. If you fail to consult with staff, the Municipality of North Grenville cannot guarantee the completeness or accuracy of your application submission, which may result in processing delays.

- Planning rationale
- Building elevations
- Sun shadow study
- Minimum distance separation (MDS)
- Archaeological assessment
- Hydrogeological report
- Geotechnical report
- Servicing plan
- Servicing brief/report
- Stormwater management brief/report
- Traffic impact assessment
- Noise study
- Environmental Impact Statement (EIS)
- Phase I/II Environmental Site Assessment (ESA)



Studies for Site Plan Control

R1: Residential First Density Zone

- ▶ Zoning By-Law Amendment & Minor Variances
 - ▶ R1 to R3
 - ▶ Lot Coverage
 - ▶ Reduced Parking Requirements
 - ▶ Building Height
- ▶ Site Specific Zoning

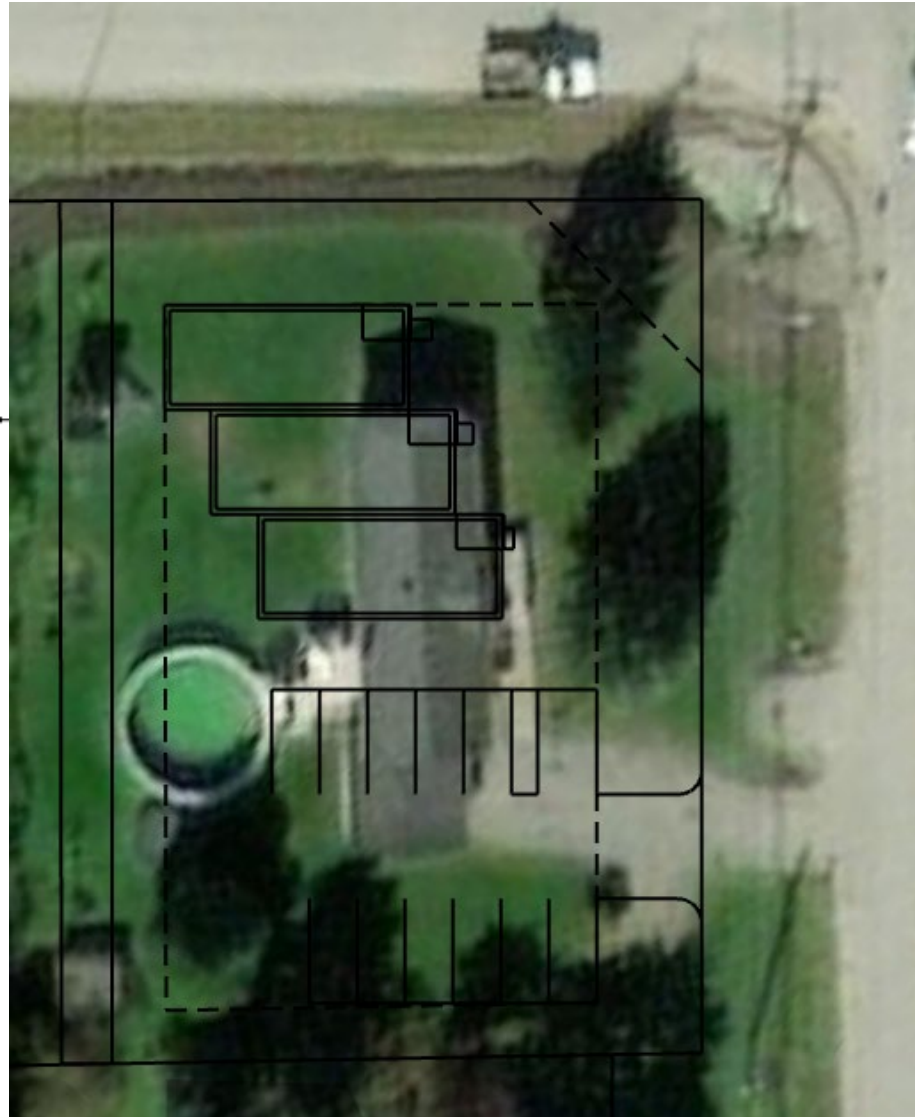
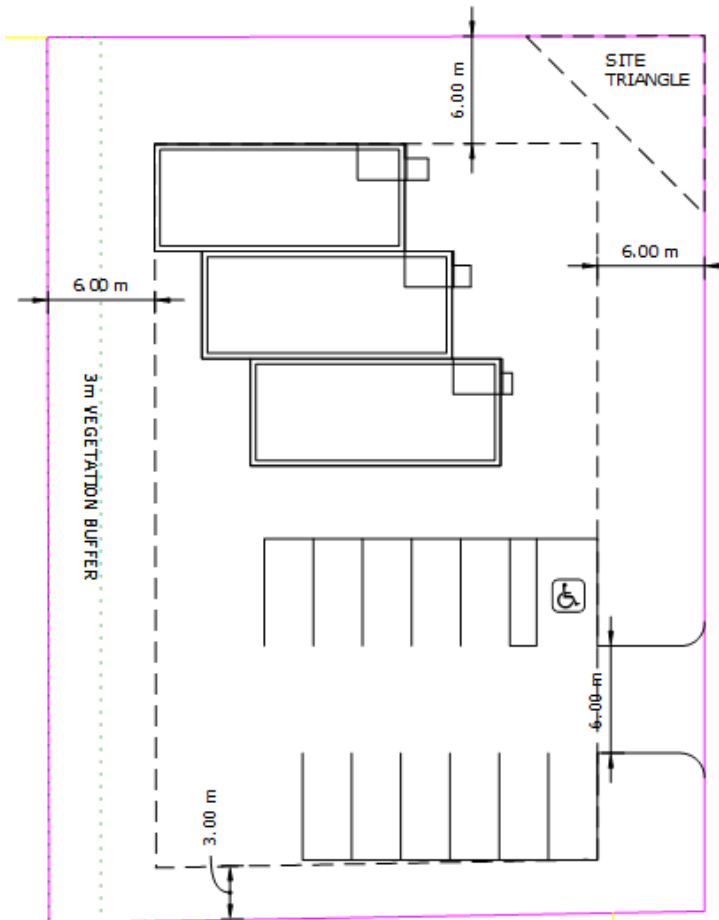
13.2 Zone Regulations

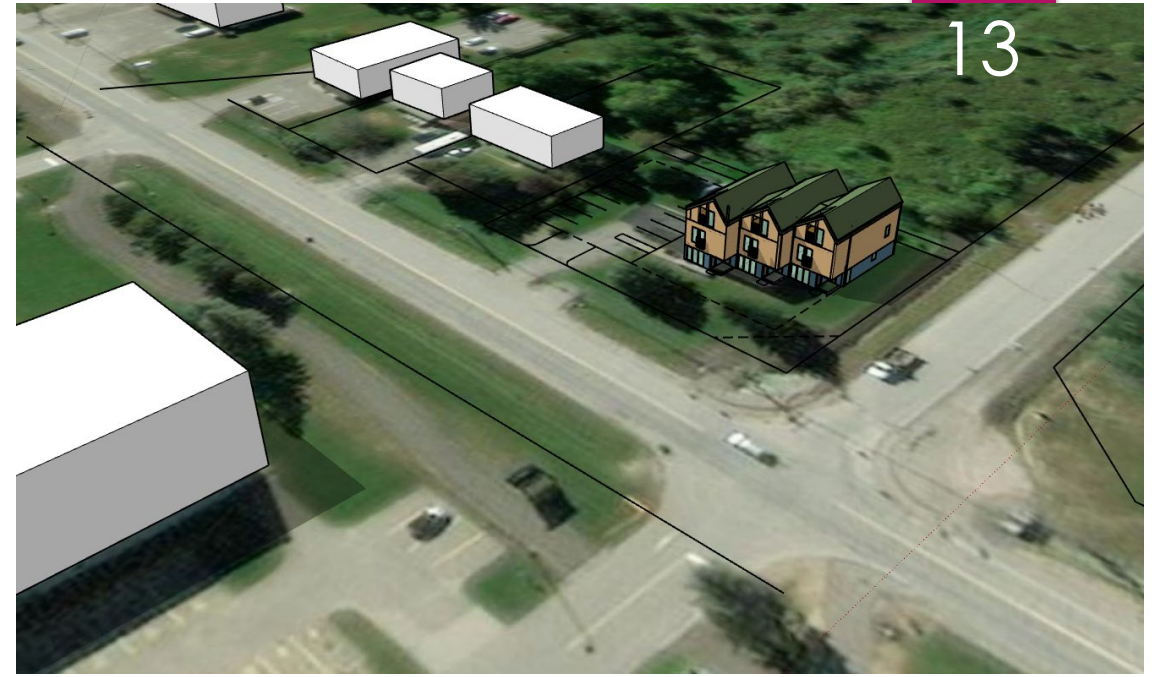
<u>Provisions</u>	<u>No Municipal Water or Sewer</u>	<u>Municipal Water and Sewer</u>
Minimum lot area	2000 m ² (21528 ft ²)	465 m ² (5,005 ft ²)
Minimum lot frontage	30 metres (98.43 feet)	10 metres (32.8 feet)
Minimum front yard	6 metres (19.7 feet)	6 metres (19.7 feet)
Minimum rear yard	6 metres (19.7 feet)	6 metres (19.7 feet)
Minimum side yard	3 metres (9.8 feet)	1.2 metres (3.9 feet)
Minimum exterior side yard	6 metres (19.7 feet)	6 metres (19.7 feet)
maximum height detached dwelling	11 metres (36.1 feet)	11 metres (36.1 feet)
maximum lot coverage	30 %	30 %

13.1 Permitted Uses

- a single detached dwelling
- duplex dwelling in accordance with 14.2
- semi-detached dwelling in accordance with 14.2
- bed and breakfast
- home occupation – domestic and household arts
- home occupation - professional use
- Additional Residential Unit
- a Type A group home
- buildings, structures and uses accessory to a permitted use

Spatial Analysis





3D Views

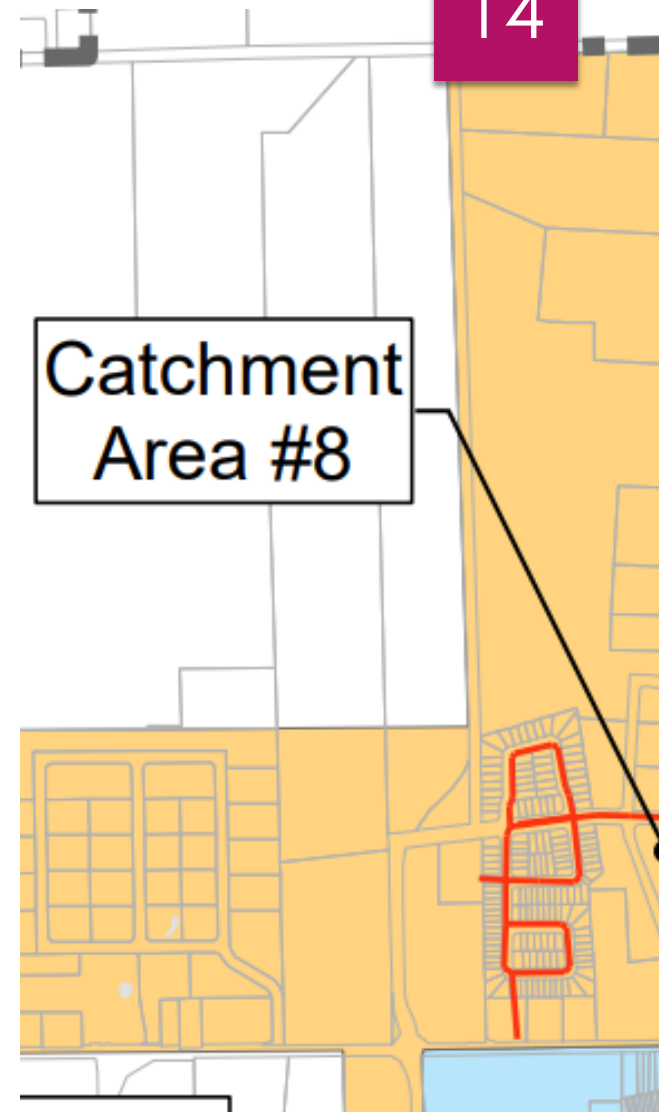
Site Servicing

Primary Servicing

- ▶ Water
- ▶ Sewer
- ▶ Stormwater
- ▶ Erosion Control
- ▶ Gas
- ▶ Power
- ▶ Communications

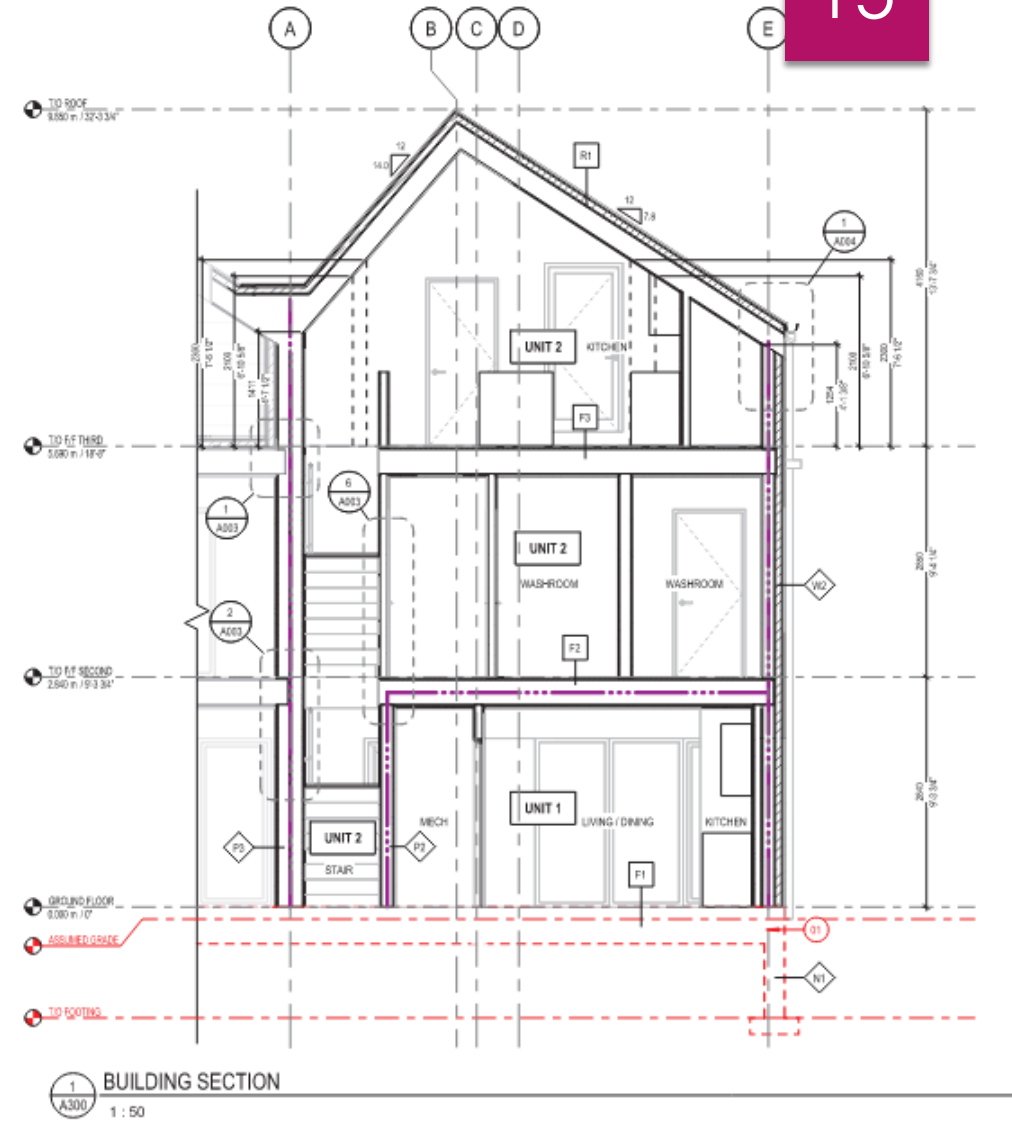
Other Servicing

- ▶ Garbage Disposal
- ▶ Snow Storage
- ▶ Firefighting Capacity
- ▶ Easements
- ▶ Metering
- ▶ Bicycle Parking
- ▶ Playground



Building Permit Requirements

- ▶ Review by a Local Engineer and Building Code Practitioner (Schedule 1 Form)
- ▶ Missing fire safety requirements (i.e smoke and CO alarms)
- ▶ Missing bathroom blocking details
- ▶ Missing Spatial separation requirements
- ▶ Missing auxiliary structures (decks, porches, patios)
- ▶ Updated Code Matrix required for submission
- ▶ Missing Energy Efficiency Design Summary & HRAI Design
- ▶ Missing local Structural Engineering review
- ▶ No foundation plan & geotechnical information
- ▶ Shop Drawings for Pre-Engineered Components (trusses, guard rails, stairs)



Low Rise Residential	Average Cost (per sq.ft.)	Cost
Substructure	\$27	\$209,622
Structure	\$97	\$745,495
Exterior Enclosure	\$67	\$512,236
Partitions & Doors	\$25	\$191,504
Finishes	\$25	\$191,080
Fittings & Equipment	\$29	\$224,059
Mechanical	\$45	\$344,085
Electrical	\$23	\$174,803
General Requirements	\$38	\$288,177
Sub Total		\$2,881,060
Site Design & Engineering		\$47,000
Civil & Landscaping		\$500,000
Grand Total		\$3,428,060

Tally up the
Costs, was
the pre-
designed
worth it?

Engineering & Design Costs

Site Plan	\$8,000
Concept Drawings	\$2,000
Zoning Change/Minor Variance	\$4,500
Municipal Fees	\$3,500
Traffic Study	\$3,000
Land Survey	\$6,500
Landscape Plan	\$1,500
Site Servicing Plan & Brief	\$2,000
Erosion Control	\$1,000
Grading & Drainage	\$3,500
Stormwater Management Report	\$2,500
Geotechnical	\$4,000
Other Studies	\$5,000
Total	\$47,000

Architectural	\$5,000
Structural	\$2,000
Mechanical	\$1,500
Electrical	\$1,000
Plumbing	\$1,000
Local Engineer Review	\$2,000
Local Code Practitioner	\$1,000
EEDS	\$500
HVAC & Heat Loss/Gain	\$500
Revisions to Drawings	\$2,000
Submission Coordination	\$1,500
Comment Review	\$1,500
Shop Drawing Review	\$2,000
Construction Drawings	\$5,000
General Reviews	\$1,500
Total	\$28,000

Approximate Savings using
CMHC Design Catalogue

\$12,500 or
0.3% of total project costs

Maybe we look at a Micro Development

3 Units with no Site Plan Approval

- ▶ Renovate the Primary Dwelling
 - ▶ Required custom design & engineering
- ▶ Secondary Suite
 - ▶ Requires custom design & engineering
- ▶ Accessory Dwelling/Garden Suite
 - ▶ Manufacturer or CMHC options

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DISCLAIMER

This design was created for use solely as part of the CMHC Housing Design Catalogue. It is a sample of standardized housing design, reflecting general design intention only and does not incorporate any elements of other information specific to any location or project. This design is provided for illustrative purposes only and must not be used for construction or permitting purposes. In using this design, you are responsible for your compliance with the Terms and Conditions, including but not limited to engaging the services of a Qualified Professional.

Questions