HOMEOWNER'S
Building Guide

GARDEN RIVER FIRST NATION HOUSING DEPARTMENT

KETEGAUNSEEBEE
GARDEN RIVER
First Nation

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Building Guide
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PREAMBLE

First Nations people are now recognized as the youngest and fastest growing segment of the Canadian population, which only highlights the ever-growing demand for housing on-reserve. In 2005, there was an estimated back log of 80,000 units on-reserve in Canada. And, as nearly 90% of First Nation communities still have viable land to build on, many more community members are choosing to self-build[1].

Some challenges that remote, northern First Nation communities face when building homes on-reserve is the lack of insufficient infrastructure (roads, water, sewer, power), as well as the high cost of building materials. A large portion of housing materials and services are only available in larger urban centers. Needing to transport these materials far distances, combined with the high cost of freight, results in cost increases of nearly 30% for northern communities compared to those located in the south[2]. For communities like Garden River First Nation, located in close proximity to a large urban center and accessible to building supplies and services, community members are steadily increasing their decisions to build their homes privately on-reserve.

Many benefits exist when choosing to build privately. First, choosing to self-build allows the homeowner to adequately deliver safe, secure and sustainable housing that meets their individual needs exactly. When designing and building a home, the homeowner has complete control over every aspect (including quality control), with the benefit of working with and gleaning information from certified builders, contractors, technicians, planners, project managers and engineers. Second, self-built homes allow the individual to work with the most innovative technologies, as new bespoke homes are at the cutting edge of technology (such as heating, climate, lighting and entertainment). Self-built homes are also a desirable option for individuals requiring specific accessibility needs as a way to achieve a home to fit their special requirements. Lastly, homeowners choosing to self-build gain an intimate understanding of the technical inner workings of their home.

Regarding the National Building Code (NBC) background, under the Constitution Act, responsibility for building regulation in Canada rests with the provinces and territories[3]. This responsibility was generally delegated to municipalities, and as a result, there was an extensive variation in building regulations across Canada; at times, there were also inadequate or non-existent municipal building regulations, leading to dangers to health and safety.

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[1] Assembly of First Nations (2013), Fact Sheet: First Nations Housing On-Reserve; https://www.afn.ca/uploads/files/housing/factsheet-housing.pdf

[2] Assembly of First Nations (2013), Fact Sheet: First Nations Housing On-Reserve; https://www.afn.ca/uploads/files/housing/factsheet-housing.pdf

[3] CMHC (1995). The Meeting of Federal/Provincial/Territorial/Industry Stakeholders on Building Code Issues Related to Housing: Final Report.

The NBC is a comprehensive document of largely technical requirements for building construction; it is revised every five years to maintain the code as an up-to-date minimum standard for health, safety, structural sufficiency and energy efficiency[4]. Since 1941, this model code has provided Canadians with a high standard of housing.

In 1983, the National Building Code Part 9 (residential), was imposed as the minimum standard in the construction and renovation of on-reserve housing using Indigenous Services Canada (ISC) housing subsidies[5]. The NBC establishes a standard of fire safety for the construction of buildings, the reconstruction of buildings, including extensions and alterations, buildings involving a change of occupancy and upgrading. Although not legislation, the code ensures that threats to health and safety in newly constructed and/or renovated buildings is minimized. The NBC is used in conjunction with the National Fire Code. There has been strong support for the harmonizing "code" across Canada, although the provinces and territories indicated that they need flexibility to respond to unique circumstances in their jurisdictions. Most believed that this core document should be limited to include health, safety, structural sufficiency, and energy efficiency[6].

Any new builds on Garden River First Nation land adhere to the National Building Code, as well as the Ontario Building Code, whichever is more stringent in a certain context.

[4] CMHC (1995). The Meeting of Federal/Provincial/Territorial/Industry Stakeholders on Building Code Issues Related to Housing: Final Report.
[5] CMHC (1992) Guide and Technical Requirements for CMHC's Healthy Housing Design Competition
[6] CMHC (1995). The Meeting of Federal/Provincial/Territorial/Industry Stakeholders on Building Code Issues Related to Housing: Final Report.

ACKNOWLEDGEMENT

This document would not have been made possible without a host of amazing people and organizations. Thank you to the Garden River First Nation Housing Department staff for your continued efforts in keeping the vision of safe, equitable and healthy homes alive in Garden River.

Thank you to Garden River First Nation leadership for believing in this vision and supporting it from the beginning. Miigwetch to all the stakeholders and partners (Garden River Lands and Resource Department, Economic Development Department, Water Department, Fire Department, Energy Coordinators, The North Shore Tribal Council and Inspectors, Algoma Power) for your efforts in engaging in the consultation, research and revision stages to ensure that this guide is accurate and reflects local processes.

To the Youth and Elders in Garden River, thank you for holding us accountable to the visions of our community and contributing your knowledge, wisdom and experience.

Thank you to the developers, writers and designers who created this document and so succinctly brought it to life: Anne Headrick (GRFN Housing Supervisor), Katrin Sawatzky (M.Sc., Independent Consultant) and Carmen Misasi (Carmen Misasi Design). Miigwetch to the funders at IESO under the Capacity Building stream, who have made this project possible.

We would like to dedicate this document to the seventh generation. Planning is about the future. We hope that this Homeowner's Building Guide will lead us to sustainable, safe, inclusive and equitable decision-making and home building that serves the well-being of generations to come.

Chi-Miigwetch,
The Garden River First Nation Housing Department

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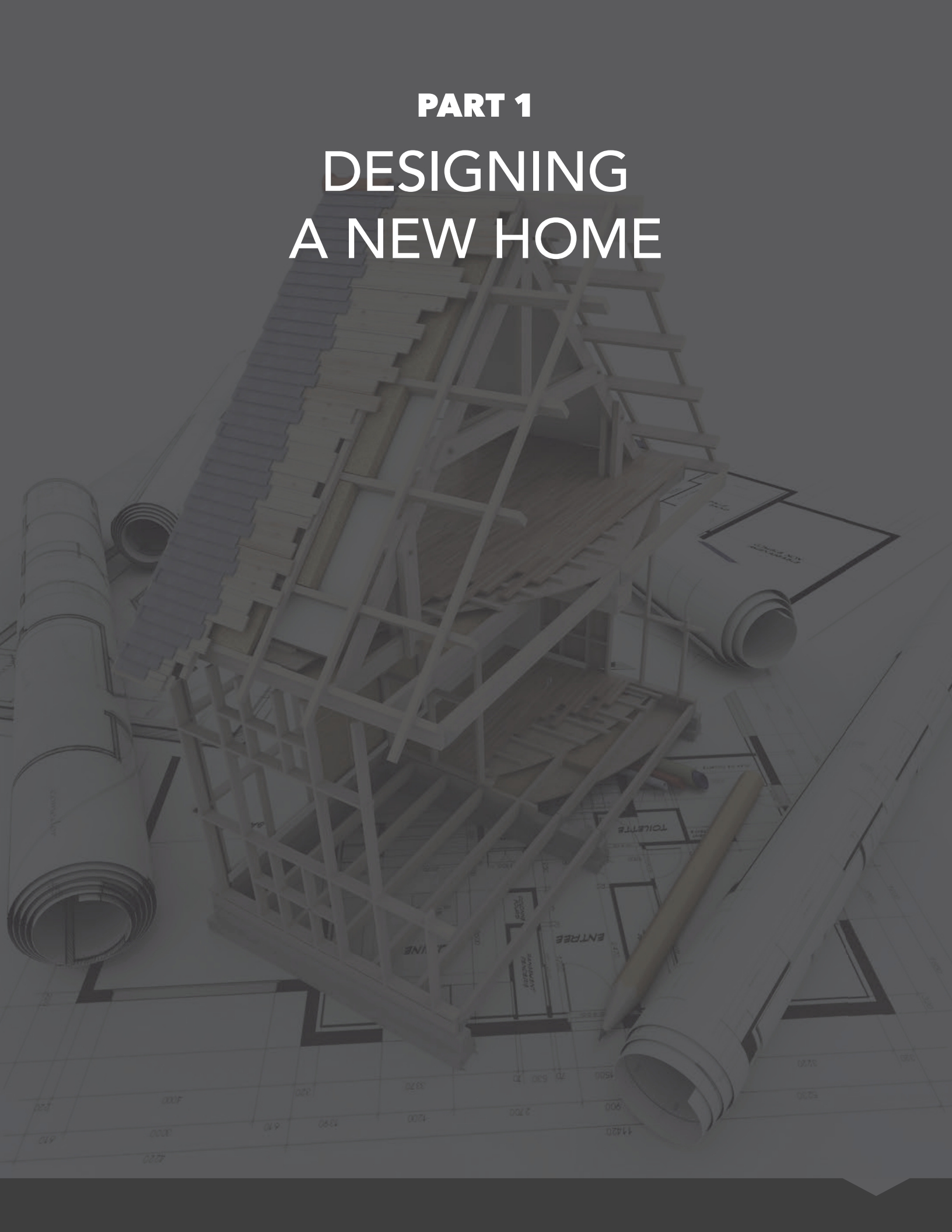


PART 1

DESIGNING A NEW HOME

CHAPTER 1:
HOMEOWNER'S BUILDING GUIDE AS A TOOL

The Homeowner's Building Guide is a tool to empower, educate and support Garden River membership in building new homes privately on-reserve. For the purpose of this document, individuals wishing to build homes on reserve will hereon in be referred to as *proprietor, homeowner* and *resident.* Should any questions or concerns arise during the stages of homebuilding, the Garden River First Nation Housing Department and Lands and Resource Departments are available for support and consultation. By reading and following the information in this guide book, and keeping a close relationship with the Garden River First Nation Housing Department, the homeowner has managed to:

- Prepare plans
- Understand and organize workplace safety and insurance
- Submit the building or renovation application
- Receive a building permit and all other approvals from the required GRFN department(s)
- Understand how to select, contract and terminate contracts; paying subcontractors, tradespeople and suppliers
- Build the home and have it inspected (with the opportunity to be involved in reviewing, revising, approving and supervising work)
- Keep neighbours happy and informed

LETTER OF CONFIRMATION

The preliminary step before a proprietor begins the building process is acquiring a **Letter of Confirmation**. A Letter of Confirmation is required when building a new home prior to obtaining a building permit in the following circumstances:

- Building a home on land that the individual owns; AND
- If the individual wishes to exercise significant control over the construction of all or part of the home; AND
- The individual (or a tenant) will live in the home

Obtaining a Letter of Confirmation will require:

- A complete and signed application form, signed by the land owner (see Appendix)
- A submission of proof of ownership (Certificate of Possession)
- A copy of the Project Management contract, if applicable

NEW HOME CONSTRUCTION – REGULATORY REQUIREMENTS

In alignment with the Garden River First Nation Housing Policy, there are a series of regulatory requirements that a homeowner needs to follow in order to construct a new home on Garden River territory. In summary, the regulatory requirements needed include the following:

1. Homeowners are responsible for managing the construction of their Privately Owned Homes and for ensuring that the construction complies with the Development Procedures and all other applicable codes and regulations.

2. The cost of housing inspection, as well as other costs associated with building are the Homeowner's responsibility.

3. When constructing a new Privately Owned House, the Homeowner must:

   (a) Be entitled to possession of the lands on which the new house will be constructed in accordance with the Garden River First Nation Land Requirements;

   (b) Comply with all requirements of the Development Procedures, including submitting a Site Plan Package to the GRFN Housing Department for review and approval;

   (c) Obtain the Housing Department's approval of the contractor prior to retaining him/her;

   (d) Have all housing plans and contracts reviewed and approved by the Housing Department;

   (e) Have the installation of services approved by the Public Works and Housing Departments;

   (f) Adhere to Garden River approved construction practices, as set out in the Development Procedures;

   (g) Have the house inspected by a Garden River approved Qualified Building Code Inspector at specified intervals and in accordance with the Garden River First Nation Construction Inspections Procedures;

   (h) Adhere to the National Building Code and/or the Ontario Building Code (whichever is the more stringent);

   (i) Ensure that all workers are covered by Safe at Work Ontario; and

   (j) Ensure all construction sites are covered by appropriate construction and liability insurance;

   (k) Use and follow the recommendations of the Electrical Safety Authority (ESA) guidelines, to ensure code compliance, safety and quality assurance; and

   (l) Complete an Environmental Assessment (EA) and follow EA guidelines to ensure code compliance, safety, respect of environmental factors, and responsible building.

The subsequent sections of the Homeowner's Building Guide will outline each of these regulatory requirements, along with additional processes and recommendations for the homeowner to follow while constructing or renovating their home.

CHAPTER 2: LAND ALLOTMENT AND ZONING (LANDS & RESOURCE DEPARTMENT)

The Garden River First Nation Council recognizes that Garden River Land is limited, and that effective land management and decision-making is required to ensure a sufficient and fair distribution of land among Citizens for residential purposes. The purpose of the Land Allotment Policy is to provide a fair and transparent process for granting Allotments in Garden River Land to Citizens for residential purposes. The policy is used in conjunction with the Homeowner's Building Guide to advise Garden River's decision-making concerning allotments. It is not intended to replace the rules and procedures concerning allotments which are set out in the *Indian Act*, the AANDC Lands Management Manual, or the RLEMP Manual.

The Allotment Policy is intended to work together with all such Federal laws and policies, as well as with Garden River's Zoning Bylaw, Development Approval Procedures and Housing Policy, and all other Garden River policies, procedures, and bylaws.

The information in this chapter takes a deep dive into Garden River's policies and procedures around land, and it is recommended for the homeowner to work closely with both a GRFN Housing representative and Lands representative to ensure that all steps in land allotment are closely followed.

For the remainder of this chapter, the following terms will be frequently used and are important to understand:

Allotment means a parcel of Garden River Land to which a Citizen has a right of possession as a result of that land having been allotted to him / her under section 20 of the *Indian Act* (See schedule D) by the Council with the approval of the Minister, and includes CPs, Cardex holdings, NETI holdings and notices of entitlement.

Certificate of Possession or **CP** means a Certificate of Possession or Location Ticket issued to a Citizen under section 20(2) or by virtue of section 20(3) of the *Indian Act.*

Citizen means a person whose name appears on the Garden River membership list.

Community Land means any Garden River Land which is not subject to an Allotment, Designation or other exclusive interest other than that of Garden River First Nation.

Designated Land means any Garden River Land which has been designated for the purpose of the lands being leased or other right or interest in the lands being granted, pursuant to section 38(2) of the *Indian Act.*

Land Use Plan means a plan approved by Council addressing land use for Garden River Lands.

Natural Resources means any minerals (including gravel and rock), oil, gas, substances, groundwater, water, vegetation (including timber and medicinal plants) or animals found on, under or in Garden River Lands which, when removed, have economic or other value.

Serviced means, in relation to an Allotment of Community Land, lands which are connected to services required for the proposed development, including, but not limited to: septic, water, and electrical services.

Site Plan Package means a site plan package prepared in accordance with Development Approval Procedures adopted by Council.

Zoning Amendment means a zoning amendment approved by Council in accordance with Development Approval Procedures adopted by Council.

Zoning Law means the Garden River First Nation Zoning Law, as amended from time to time.

GENERAL ALLOTMENT CRITERIA

In order to be eligible to construct a new Privately Owned House, a Member must have been allotted the lands on which the new house is to be built in accordance with the Allotment Policy.

As stated directly in the Land Allotment Policy, the **general allotment criteria** in Garden River First Nation is:

1. An Allotment of Community Land may only be granted in accordance with this Policy.
2. A new Allotment of Community Land
   (a) Subject to section 7, may only be granted to a Citizen who has attained the age of eighteen (18) years and who has never received a new Allotment from Council;
   (b) must have legal road access which may include a right-of-way, and must not result in land-locking or blocking of access to another Allotment;
   (c) may only be granted in respect of a surveyed parcel;
   (d) must be Serviced or capable of being Serviced;
   (e) may only be granted for residential purposes, and within zones permitting residential uses; and
   (f) must be of a size consistent with that which is permitted under the Zoning Law for the zone.
3. Citizens wishing to acquire an interest in Community Land for commercial, agricultural, or any purpose other than residential, may apply to obtain a lease or other tenure in accordance with Council policies and procedures for commercial, agricultural and other uses of Community Land.
4. Citizens may operate Home-based Businesses or carry out other secondary uses on lands subject to an Allotment only if the operation of the Home-based Business or other secondary use is permitted under the Zoning Law and the Housing Policy, and provided that the dominant use of the Allotment remains residential.
5. For greater certainty, approval of an Allotment does not relieve the Allotment holder of the requirement to comply with any other applicable Garden River law, by-law or policy.

6. (1) Notwithstanding any other provision of this Policy, Council must not approve any Allotment that:

   (a) would cause Garden River to be in breach of a contractual commitment (for example, a rent-to-own agreement or other agreement);

   (b) is incompatible with an existing interest in land that is documented in writing;

   (c) is inconsistent with the current Land Use Plan, Zoning Law or other Garden River by-law, or any other applicable law; or

   (d) is otherwise not in the best interests of Garden River First Nation or its Citizens.

   (2) For certainty, an application for a Land Use Plan Amendment or a Zoning Amendment may be submitted concurrently with the Allotment Application, however Council must not make a motion establishing pre-conditions for Allotment approval unless and until approval of the Land Use Plan Amendment or Zoning Amendment is given in accordance with the Development Approval Procedures adopted by Council.

7. (1) A Citizen who has previously received a new Allotment from Council but who no longer holds the Allotment as a result of a settlement agreement or order concerning the disposition of spousal property following the dissolution of a spousal relationship is eligible to apply for a new Allotment in accordance with this Policy.

   (2) At the time of approval of the Allotment Policy, Garden River's Matrimonial Real Property Law is under development. The Allotment Policy should be interpreted in a manner consistent with the rights of spouses and former spouses under the Matrimonial Real Property Law (once enacted) and all other applicable law.

ALLOTMENT PROCESS

1. Any Citizen who is eighteen (18) years of age or older may apply for an Allotment by submitting a completed application to the Lands Officer in the prescribed form (See Appendix).

2. Upon receipt of an application form, the Lands Officer will complete membership (citizenship) verification, a land status report, will review the application for completeness using the checklist attached as Schedule B (see Appendix).

3. Applications for new Allotments of Community Land will be considered by Council on a first-come, first-served basis, in the order that applications are confirmed complete by the Lands Officer.

4. If the application is incomplete, then the Lands Officer may advise the applicant in writing to re-submit the application once the applicant has addressed the deficiencies.

5. (1) If the application is complete, then the Lands Officer will prepare a written briefing note to Council which must indicate whether or not each of the Lands, Public Works and Housing Departments are prepared to support a recommendation that the application be approved (with or without conditions).

(2) The briefing note must attach a completed Schedule "B" Checklist and draft Motion either approving (with or without conditions), or rejecting, the application. The Public Works, Housing and Lands departments must all sign off on the completed Schedule "B" checklist before the application proceeds to Council for decision.

6. Upon receipt of a briefing note, Council will within a reasonable time call a meeting to decide whether to accept the application, with or without conditions.

7. Council may take into account the following additional factors when making a decision on whether or not to accept an Allotment Application:

   (a) Whether the applicant already holds a Certificate of Possession/ Allotment; and

   (b) Whether the applicant will be requiring the First Nation to guarantee a loan to develop the Allotment, and if so, the applicant's credit-worthiness.

8. Upon making its decision on the application, Council must either:

   (a) Make the following Motions:

      (1) that the Council will grant an Allotment by BCR once the Applicant has met all pre-conditions, if any, and specifying those conditions which may include, without limitation, survey of the parcel and bringing Services to the parcel;

      (2) requesting that Natural Resources Canada issue survey instructions (if required); and

      (3) approving a conditional letter of support for a mortgage (if required) only once all criteria set under the Housing Department Policies have been met, **or**

   (b) Make a Motion rejecting the application, and direct the Lands Officer to deliver to the applicant a notice that the application is rejected.

9. If Council makes a motion which establishes conditions, the Applicant is responsible for the cost of fulfilling or complying with all conditions, unless the motion expressly states otherwise.

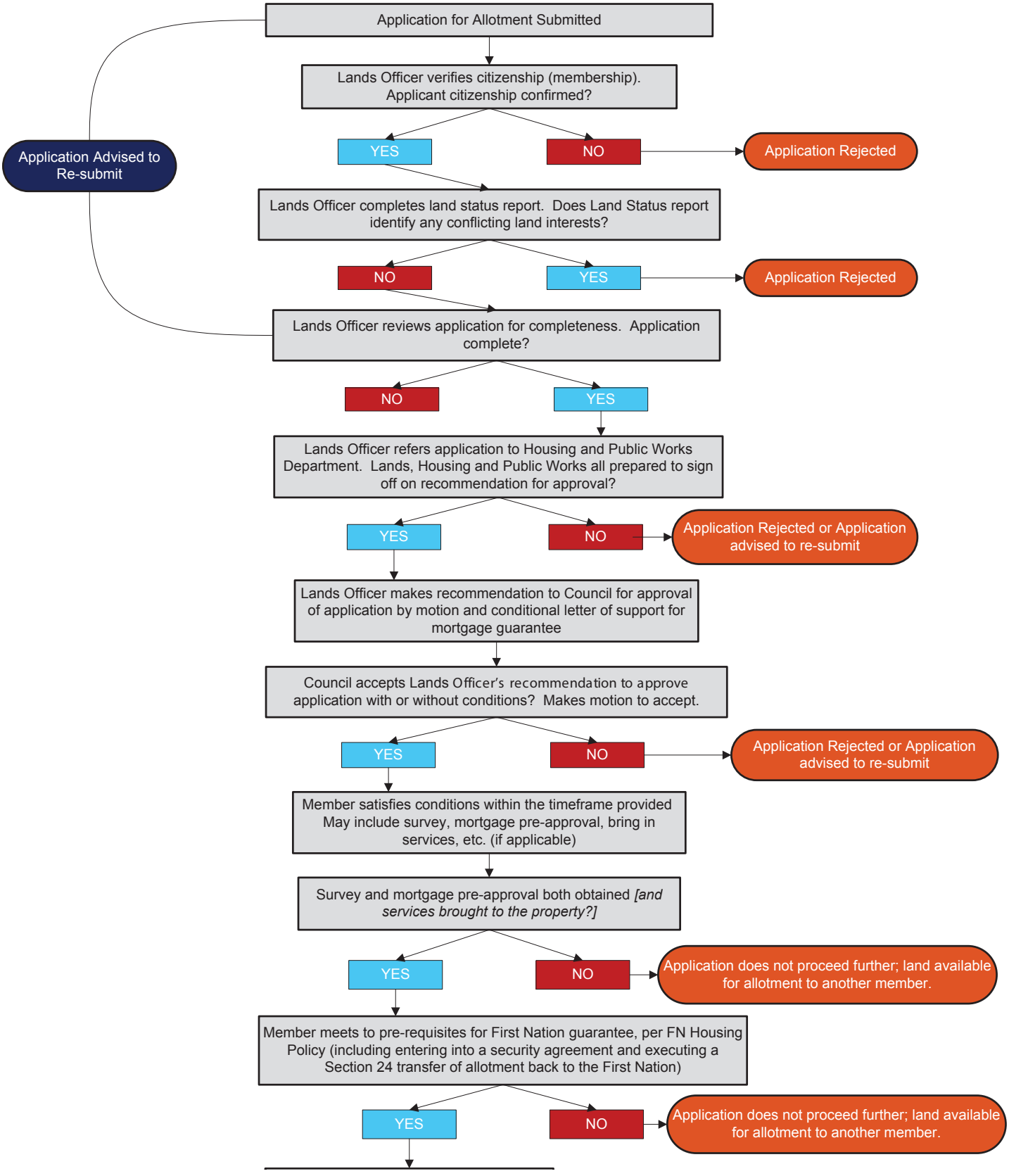
10. If the applicant complies with all pre-conditions set out in the Council motion, then Council must issue a BCR allotting possession to the Applicant in a form and with the content required by Directive 3-2 of AANDC's Lands Management Manual, as it may be amended or replaced from time to time.

11. (1) An applicant whose application is rejected may, within 30 days of receipt of a rejection notice, make an application for reconsideration by Council by delivering a written request for reconsideration which includes a concise summary of the grounds on which the applicant believes the application should be re-considered, together with any supporting documents, to the Lands Officer who must forward it to Council.

    (2) Upon receipt of a reconsideration request that meets the requirements, Council shall re-consider the application within a reasonable time by any means Council deems appropriate (e.g., written submissions; in-person hearing).

    (3) Council must provide an opportunity for Lands and Resources, Housing and Public Works staff to be heard, and must give reasons for its re-consideration decision.

Allotment Approval Process



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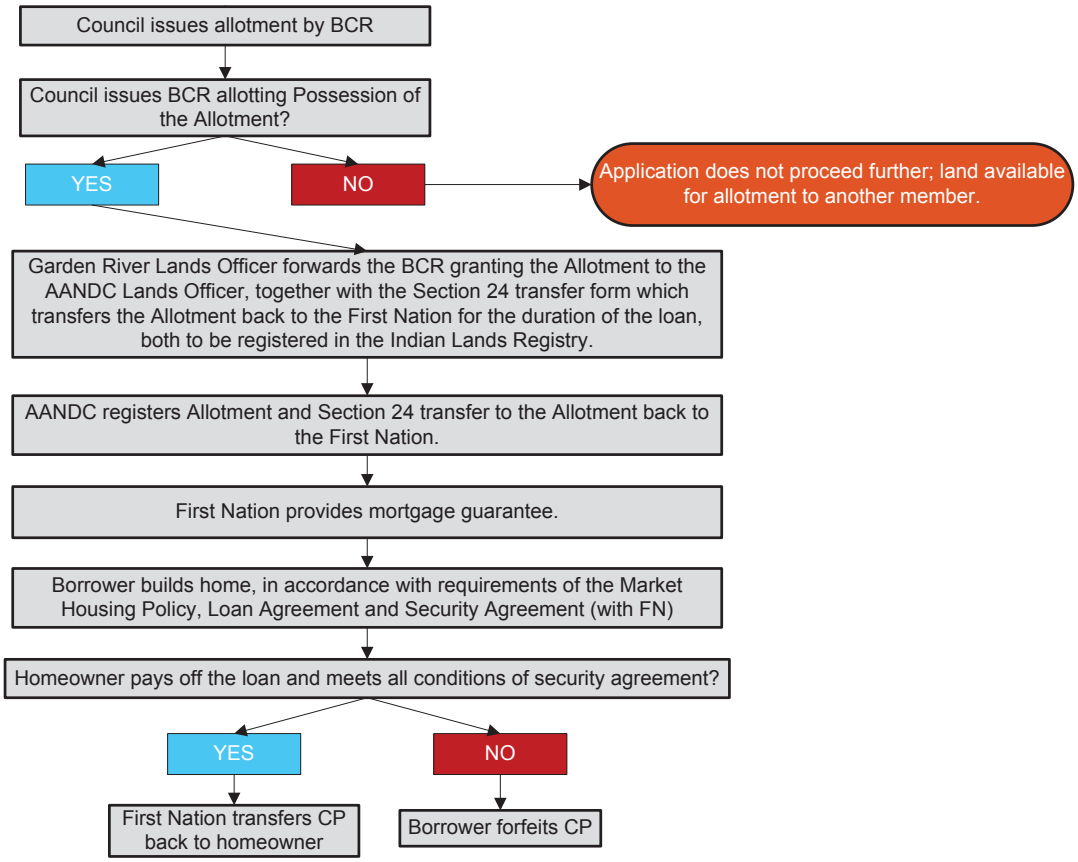
Allotment Approval Process – continued



ALLOTMENTS RELATING TO MORTGAGE AND HOUSING AGREEMENTS

1. Where, under an agreement between Garden River and a Citizen,

   (a) Garden River has committed to grant an Allotment to a Citizen once that Citizen has paid out a CMHC mortgage, built a home, or otherwise satisfied the conditions of the agreement, or

   (b) a CP is temporarily cancelled or surrendered for the purpose of allowing a Citizen to participate in a housing program authorized by Garden River or to allow the Citizen to benefit from a guarantee provided by Garden River or for other purposes, Council will by BCR grant an Allotment of the subject lands to the Citizen once the following conditions have been met;

   (c) the Citizen has provided documents to demonstrate that all relevant mortgages, loans and housing agreements relating to Garden River have been paid out;

   (d) the Citizen has satisfied all the conditions of the agreement;

   (e) the Citizen has complied with all relevant Garden River Policies and has paid any relevant servicing, administration or Allotment acquisition fees; and

(f) if requested by Council, the Citizen has signed an acknowledgement agreement and a release and indemnity to release and indemnify Garden River from any liability or payments for any past mortgages or debts relating to the house, unit and/ or the Allotment.

2. After the Effective Date of the Land Allotment Policy, Council will not make an agreement committing Garden River to grant an Allotment to a Citizen in the future unless the proposed Allotment complies with the current Land Use Plan, zoning, all applicable Garden River laws, by-laws and policies.

COMPLYING WITH ZONING BYLAWS

Every property and every project is unique and every project must comply with the Zoning Bylaw. The Lands, Resources and Economic Development Department can assist in clarifying if your proposed build complies with the Zoning Bylaw. As stated previously, be sure to work closely with a Lands representative, as well as a housing representative to ensure that the build also complies with Garden River First Nation's Lands and Resource Policy.

For example, plans for decks and verandas must show the following:

- Details of footings, including footing size, spacing, depth, height above grade and frost protection details
- Sizes and locations of all columns; sizes, locations and spans of all beams
- Stair construction details, including height and depth of stair treads and headroom above stairs
- Guard construction details, including information about openings and the location of the guards with respect to stairways, landings, and edges of the proposed platform

CHAPTER 3:
BUDGET & FINANCING

EVALUATING FINANCIAL CAPACITY

Building a home can be exciting, but it is also an incredibly demanding process. It is important to acknowledge the time, energy and resources required before beginning a project of such large scope.

Evaluating financial capacity is an essential step when planning to build a home. It is important to develop an accurate home building budget that not only takes into consideration the finances, but priorities, needs and future goals of a homeowner. A mortgage calculator assists in making accurate estimates monthly payments and finance projections. Once a solid estimate is obtained, the homeowner can begin shopping around for the best loan options. It is recommended that the homeowner ensures that they prequalify for a construction and mortgage loan well in advance of the purchasing of land and house plans so that, should any credit issues or outstanding debts arise, they have enough time to reconcile them.

CREATING A BUDGET

The total housing costs should not be greater than 32% of the gross monthly revenue of the homeowner's household, and a maximum of 40% of one's household gross monthly revenue should go to repaying debts. Project budgets will range from proprietor to proprietor, and it is important to anticipate all costs as meticulously as possible for each construction step in the order that they will be accomplished.

Direct vs. Indirect Costs

Costs include direct costs (material and labour) and indirect costs (permits, evaluation fees, inspection fees, evaluation fees, legal fees, etc.). 'Direct' costs include prices that can be completely attributed to production of specific goods. Some costs, such as fees associated with the build, are 'softer' and more difficult to calculate up front, and are therefore referred to as 'indirect' costs. It is important to stay as close to budget as possible, and account for a 15% margin of unforeseen or contingency costs.

A general summary of the various direct costs associated with building a home include (but are not limited to):

	Step	Details	% of Total Project Cost
1	Excavation & Foundation	Foundation, footings & walls, pouring cement, floor joists, etc.	33%
2	Framing & Closing Up	Windows, stairs, roof, electricity, plumbing, insulation, exterior finishing, etc.	33%
3	Installing Drywall	Walls & Ceilings	9%
4	Finishing	Cupboards, counters, exterior stairs, bathroom fixtures, flooring, connecting to public services, painting, landscaping	28%

For budgeting indirect costs:

- Procure estimates for professional honoraria
- Evaluate the cost of installation of connecting to services (internet, hydro, water, etc.)
- Estimate the land transfer tax (if applicable)
- Evaluate the cost of moving, as well as purchasing new furniture, appliances, etc.

Additional recommendations include:

- **Anticipate in a general timeline of eight (8) to twelve (12) months for project completion, not including the planning, zoning and permitting stages**
- **Procure two (2) to three (3) written estimates from material suppliers and subcontractors (including delivery dates)**
- **Some materials (such as prefabricated walls) are more expensive to buy, but they save time and labour costs**

FINANCING

Once the building budget is prepared, evaluated, and precisely detailed, the homebuilder is ready to look at financing.

Lenders can play a strong, supportive role in community development but not all lenders are familiar with First Nations funding arrangements and the legislation that affects their lands. The number of lenders acquiring this knowledge and working effectively with First Nations is growing. It would be beneficial if Canadian Lenders helped develop appropriate funding mechanisms that recognize the unique opportunities and hurdles that must be overcome in First Nation communities[7].

[7] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 184

When seeking financial services, a First Nation should expect that their lender will:

1. Explain their terms and conditions very clearly,
2. Be respectful of any criteria a First Nation might wish to put in place in order to make a stronger financial arrangement with their member, and
3. Provide a listing of their services and their service standards.

Many lenders also offer community education in specialized areas such as personal finance and credit management. A long term relationship with a lender can be valuable to the First Nation but it is important to periodically review the conditions to ensure good, valuable service is being delivered.

First Nation Market Housing Fund – "Credit Enhancement"

The Garden River Market Based Housing Program is designed to provide eligible, qualified Members with access to affordable mortgages and loans in order to construct, purchase, renovate or refinance Privately Owned Homes on Garden River Land.

The First Nation Market Housing Fund (FNMHF) has approved a maximum credit enhancement facility of $7,000,000 for Garden River to serve as a financial backstop to mortgage and loan guarantees given by Garden River. If a Borrower defaults on a mortgage or loan and Garden River is unable to meet its obligations as guarantor, the lender can seek compensation for a portion of the loan from the FNMHF.

The maximum mortgage guarantee that can be given by Garden River under the Market Based Housing Program is $250,000.

As with any other loan guarantee program, any Garden River mortgage or loan guarantee related to the Market Based Housing Program is granted at the sole discretion of Council and subject to Garden River's available funds and/or credit.

All fees and costs associated with the Market Based Housing Program are the responsibility of and payable by the Borrower unless otherwise specified.

Eligibility

To be eligible to become a Borrower, a Member must qualify for Homeownership of a Privately Owned Home and must meet all the program and lending requirements of the Market Based Housing Program.

Security Agreement and Insurance

All mortgage and loan guarantees given by Garden River under this Housing Policy & Procedures, including through the Market Based Housing Program, must be secured by a Security Agreement between the Borrower and Garden River in favour of Garden River and Borrowers must comply with all the terms of the Security Agreement, including obtaining appropriate insurance in an amount sufficient to cover the entirety of the mortgage or loan.

Any policy of life insurance, mortgage life insurance or home insurance obtained by a Borrower in accordance with the Market Based Housing Program requirements must stipulate that loss is payable first to the Lender and second to Garden River.

Under the terms of the Security Agreement, the Borrower will execute a CP Transfer Form to transfer to Garden River his/her CP for the lot where the Privately Owned Home is, or will be, located as security for Garden River acting as loan guarantor. Garden River will register the transfer in the ILRS. When the Borrower has paid the mortgage in full and has provided the Housing Department with evidence satisfactory to Garden River that the mortgage has been discharged, Garden River will transfer the CP back to the Borrower using a CP Transfer Form and the transaction will be registered in the ILRS.

If a Member's Application to Build is approved, the Member is selected for Homeownership, and the Member requires a loan in order to finance construction of the house, then the Member will be required to transfer the Member's right to possession of the lands to Garden River by submitting a Transfer of Land on an Indian Reserve to the Housing Department, which will submit the Transfer request to Indigenous Services Canada (ISC) for approval. Once the Transfer request has been approved, the Member or 'the Borrower' and Garden River First Nation or 'the Lender' enter into an On-Reserve Mortgage Program Guarantor Agreement.

Upon confirmation that Indigenous Services Canada (ISC) has approved the Transfer, the Member and Garden River will enter into an On-Reserve Mortgage Program Promissory Note through which Garden River agrees to guarantee or provide a loan and holds the right to possession of the Member's lands as security for same. The On-Reserve Mortgage Program Promissory Note must be completed before construction can commence or any funds can be released to the Member.

Program Details – New Construction

New construction means the construction of a new Privately Owned Home on an existing, serviced lot or an increase in the livable area of an existing privately owned home.

Maximum mortgage	$250,000.00
Maximum amortization	25 years
Garden River fee	1.00% of mortgage amount (may be included in mortgage)
Down payment	Mandatory 5.00% cash equity
Life Insurance	Mandatory
Home/Fire Insurance	Mandatory
Builder's Risk Insurance	Mandatory
Security Agreement Estate Planning	Borrower must have a will that addresses what is to happen to the subject property and loan if the Borrower dies.
Security	Security Agreement in the favour of Garden River
Gross Debt Ratio	Not to exceed 32%
Total Debt Services Ratio	Not to exceed 40% (debt ratios to be calculated using gross up factors)
Debts owed to Garden River	Any Garden River loans in good standing will not affect a borrower's eligibility for the Market based Housing Program, but the repayment terms will be included in debt ratio calculations
Hold back on construction	Lender will withhold 10% of all disbursements until final completion certificate is issued by Garden River Housing Department.

CHAPTER 4:
PRE-DESIGN/FEASIBILITY

The pre-design is the phase of development that occurs after some research has been completed, land allotment has been established, and some form of budget feasibility has been completed. During the pre-design phase, studies are done to analyze the space requirement issues, the constraints and opportunities of the proposed site, and the cost versus the budget. The Garden River First Nation Housing Department can assist the homeowner in completing the various pre-design aspects. During this phase, the homeowner works closely with their selected builder or contractor, as well as the Garden River First Nation Housing Department representative to investigate technical issues in order to determine scope, budget and project schedule.

The design drawings are usually submitted for financing and lot applications. Garden River First Nation requires construction drawings of houses to be submitted as a condition of financing for the project, or before permission to start construction is granted. For more information on preparing a site plan package (drafting plans and drawing), see the following chapters.

Feasibility studies can:

- **Provide a planning process to articulate project vision**
- **Articulate the project context**
- **Test project assumptions**
- **Identify the scope of work**
- **Estimate capital and operating budgets**
- **Outline planning framework**
- **Determine whether the project is feasible**
- **Build confidence in the project internally and externally**

CHAPTER 5: CONCEPT DESIGN

CHOOSING THE RIGHT HOME PLAN

When evaluating the right home plan, it is recommended to put together a list of essential features depending on features, needs and values. Some of these include (but are not limited to): determining if the house will be a one-story or two-story design, determining the square footage, number of bedrooms, garage size, energy efficiency, etc. A homeowner's personal style will influence the preference for the interior layout.

Prompting Questions

When designing a home, it is important to ask guiding questions that help to uncover the homeowner's true needs and desires for a home. Answers to the following questions can support the homeowner in creating a framework that will guide how to design and, further, use the home:

1. What is unique and special about the land that you're planning to live on?
2. Where and how does/will your house sit on the land?
3. What views/environments will you see from the entry, living room, bedrooms, kitchen, etc.?
4. Which of these views are important to you?
5. Which part of your home do you currently spend the most time in now?
6. Describe your current home – what do you like about it? What is missing? How would you like to change the space you have now?
7. What materials and finishes are you most interested in using (interior and exterior)?
8. Is being environmentally conscious important to you? If so, how will you build energy efficiency into your home?

One way to ensure that houses can be enlarged is to allow room on the lot for an addition, usually at the side or rear of the house. Site pre-planning is important to avoid a potential conflict between a future addition and existing septic systems, driveways, garages and underground services. Pre-planning also ensures that necessary services are roughed-in and capped at the right location, and that required windows are not blocked by a proposed addition[8].

Design and build your houses so that they can be easily expanded in the future

[8] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 567

DESIGNING FOR FAMILIES

In some communities, the family unit includes two or three generations of the same family, from grandparents to grandchildren and in some cases great-grandchildren. To ensure that privacy is maintained and that various activities can take place at the same time, house designs should permit the dwelling to be 'divided' into active zones (living room, dining room, kitchen) and passive zones (bedrooms and bathrooms). The zones can be separated with rooms such as storage rooms and closets to create a visual and sound barrier[9].

Because of the potential for large family gatherings, living spaces should be open-concept to allow the expansion of sitting areas and dining tables. House designs incorporating separate dining and living rooms results in spaces that are less utilized than others, making that design inefficient. Conversely, large open spaces facilitate natural cross-ventilation of the room (helping to exhaust stale humid air), as well as making it easier for parents to keep an eye on their small children. Whenever possible, the main living spaces should include a high ceiling to further encourage natural ventilation (by the use of high and low level windows), to allow for more natural light from high level windows, and to ensure the space has the right proportions.

SITE PLANS

A **site plan** includes an **architectural plan, landscape architecture document, and a detailed engineering drawing** of proposed improvements to a given lot. A site plan usually shows a building footprint, travelways, parking, drainage facilities, sanitary sewer lines, water lines, trails, lighting, and landscaping and garden elements[10]. Such a plan of a site is a "graphic representation of the arrangement of buildings, parking, drives, landscaping and any other structure that is part of a development project"[11]

A site plan is a set of construction drawings that a builder or contractor uses to make improvements to a property. Communities can use the site plan to verify that development codes are being met, as well as a historical resource. **Site plans are often prepared by a design consultant who must be either a licensed engineer, architect, landscape architect or land surveyor**.[12]

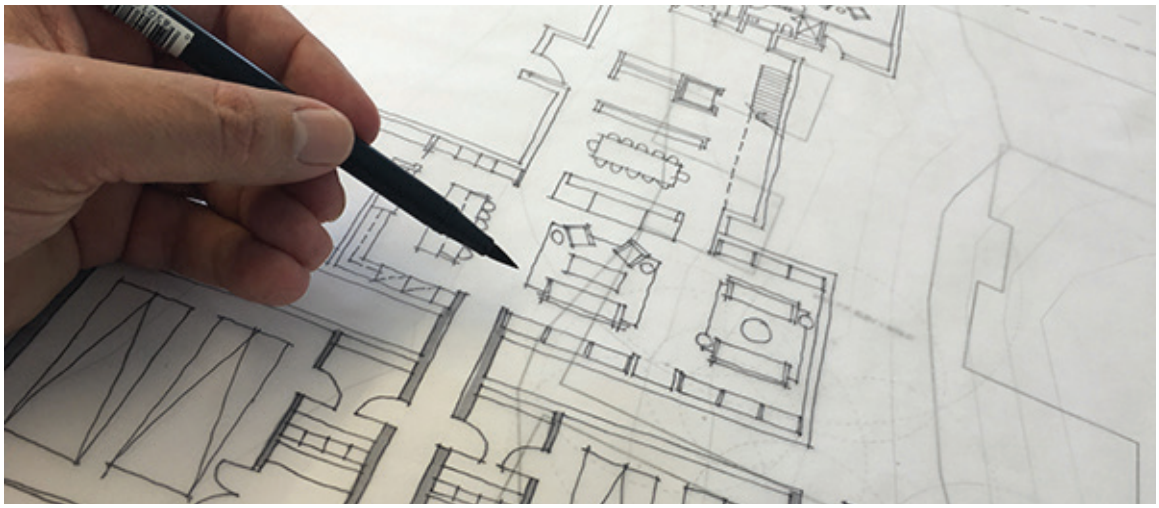
[9] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 539
[10] Department of Building and Development Land Development. Loudoun County Government.
[11] https://en.wikipedia.org/wiki/Site_plan, accessed September 2019.
[12] https://en.wikipedia.org/wiki/Site_plan, accessed September 2019.

DRAFTING PLANS & DRAWINGS – PREPARING A SITE PLAN PACKAGE

Architectural design drawings are simplified drawings of a building used to describe the overall shape, size and some finishes of a house and its rooms. Design drawings are often submitted for financing and lot applications, but should not be used for construction purposes as they contain very little technical information[13]. Garden River First Nation reviews the design drawings, which must include:

1. **An architectural site plan** that describes the lot on which the house is proposed to be built, and the proposed orientation of the house on the lot, as well as proposed location of any other natural and built features such as garages, driveways, wells, septic beds, etc.
2. **Plans of all floors** that show the overall dimensions of the house, its building area and its gross floor area. The plans should include room names, room dimensions and typical furniture to help the viewer understand the size of the rooms.
3. **Building elevations** for each side of the house that show all windows and doors and the proposed exterior finishes of the house.
4. At least one building sections that can help explain the vertical relationship between various elements of the house.
5. **An exterior rendering of the house**, in 2D or 3D,
6. **Construction specifications** describing the building materials (can also be provided as a separate document) as well as construction notes, symbol legends, and assembly legends to better explain the project and facilitate construction.
7. Various **construction schedules** such as room finish, door and window schedules.

If the design drawings are also used to provide a quote for the house from a contractor, then specifications of all materials and finishes should also be described, either directly on the drawings or as in a separate document such as outline specifications.



[13] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 810

DESIGN CONSIDERATIONS

A well designed building will be reflective of the topography and local climate of a site, will incorporate local materials, and will use materials and methods suited to the skills of the local trades people. A well designed building will also meet the current needs of the Occupants including being adaptable to their future health and mobility needs. Addressing all of these issues will result in good quality housing that is culturally-appropriate, sustainable, healthy, durable, accessible and adaptable. Designing buildings that ignore any of the above can result in buildings that perform poorly or fail prematurely[14].

DESIGN CONSIDERATIONS THAT ARE RESPONSIVE TO THE CLIMATE AND ENVIRONMENT

Designing with nature was a principle of First Nation construction prior to the arrival of Europeans in Canada. First Nation people are said to be the original 'green builders', carefully using materials that were at hand yet never wasting precious resources. Today, in light of global warming concerns, designing a house that respects nature, a more complex and technical process than in the past, is a concept that is often ignored.

A majority of First Nation houses are located in remote areas of the country that experience severe weather, yet the design for many of these building is often based on southern Canada environmental conditions. Depending on the severity of a community's climate, First Nation house designers should consider the use of simple good design features to protect the house and its occupants from the elements. In some communities, the practice of reusing plans, construction materials and construction methods that have performed adequately or poorly in the past must be re-examined in light of new sustainable design considerations. Most of these design suggestions should be considered before employing high-tech heating and cooling solutions that are dependent on professional maintenance and repair technicians[15].

[14] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 505
[15] A Path for Seven Generations First Nation Sustainable Development Standards (2015), p. 509

CHAPTER 6:
PLANNING THE HOME CONSTRUCTION

TYPES OF HOMES: MODULAR HOME, STICK BUILD

There are two variations of homes that the homeowner can choose to pursue when construction – a modular (or prefab home) or a stick build home. A modular home is partially built at a plant and then shipped to the construction site where it is set on a previously constructed foundation. A typical one-story bungalow consists of two to three modules. All home building comes with hurdles; while the use of modular prefab building techniques helps to overcome some of the difficulties associated with stick construction, the prefab process has some unique challenges[16]. This section will discuss the pros and cons of both options, exploring themes such as cost, time it takes to build, and environmental impact.

The Cost of Building

The cost of building depends on a variety of components; home design and layout, the number of bedrooms, the number of floors, the size of the home, and types of materials used in construction. It also is dependent on the contractors used, and the type of lot. It is an assumption that modular homes cost less to build, given the time and labour savings. Although building a home in a factory is perceived to be cheaper than building it on site; the costs associated with trucking and crane fees, the company profit, staffing in-factory fees, and transport insurance indicate that there is no real price difference in the actual construction of a modular versus stick home from start to finish.

Time it Takes to Build

Building a custom home takes time; the average home takes between six (6) and twelve (12) months to complete. As discussed in previous sections, building a custom home includes planning, obtaining permits, completing onsite prep work, foundation construction, framing, servicing and finishing. When pursuing a modular home build, the homeowner can save up to two (2) months, as prefab construction can take place at the same time as the on-site prep work or when the weather conditions are not suitable for outdoor work. Very generally, prefab homes are approximately 50% to 80% finished upon delivery[17]. The amount of remaining "finishing" work to be completed can range from six (6) to ten (10) additional weeks depending on the complexity of the house.

Environmental Impact

As modular homes are built in factory settings, it may appear that they produce less waste by setting aside off-cuts and reusing it in other places. However, when the materials used in transporting prefab home to the construction site contribute to its environmental impact as well. When comparing stick home builds to modular home construction, the environmental impact is similar. It is up to the homeowner to make the conscious decision to incorporate energy-efficient technology and green building materials into their homes to decrease its environmental impact.

[16] https://buildersontario.com/prefab-homes-ontario, accessed August 2019.
[17] https://buildersontario.com/prefab-homes-ontario, accessed August 2019.

Design Considerations

One of the largest advantage to building a custom home is the ability to make changes to the floor plan. Although it will come at a cost to the homeowner, the contractor or architect can make changes to the approved plan. As modular homes are predesigned, often times, the only changes that are able to be made include cosmetic changes. Additionally, there are very few design restrictions when designing and building custom homes (both with types of materials used, to the number of windows, to the height of the building). Modular home companies do not often offer customization. If the homeowner's plans are not very intricate and do not include large windows, modular construction may be the best option.

Should the homeowner choose to pursue a modular build, there are additional work that will need to be performed that is **not** completed by the manufacturer[18]:

- Excavating and constructing the foundation
- Constructing garages or bump-outs
- Drilling a well and/or arranging for a septic system
- Any additional 'finishing' work
- Utility connections
  - HVAC system completion
  - Taping joints, sealing drywall cracks
  - Interior clean up and painting
  - Exterior concrete work
  - Construction of wood decks and/or porches

It is important to note that there are many additional cost associated with prefab homes that are not included in most modular home contracts in Ontario. These include (but are not limited to): the cost of the land; soil tests required by the GRFN Lands Department; tree cutting and lot clearing; surveying the land and hiring an engineer if needed; concrete work, basement finishing of insulation, flooring, drywall and electrical/plumbing; telephone and cable connections to public services; HST; etc.

In summary, there are pros and cons to both custom home and modular home construction; it depends on the priorities of the homeowner. If speed is preferred, prefab is a better option due to its efficiency in construction. If flexibility of design is a priority, then stick build may be more effective. Ultimately, the quality of the home is comparable between the two options. For more information on the most reputable prefab home manufacturers in Ontario, please book an appointment with the Garden River First Nation Housing Department.

[18] https://buildersontario.com/prefab-homes-ontario, accessed June 2019

CHOOSING APPROPRIATE BUILDING MATERIALS

Selecting the right construction material is often an overwhelming task when costs, availability, and understanding of the role of the material are taken into account. Materials that are more energy efficient may off-gas VOCs (Volatile Organic Compounds). The 'greenest' construction material may also be the most expensive, have a poor payback period and may not be as durable as less environmentally-friendly materials. The use of a local or regional material may be good for the economy, but the extraction of that material may be harmful to the environment. When First Nation communities specify alternate construction materials and technologies, they should consider all environmental issues with respect to those construction materials and technologies. The goal of this section is to provide the reader with information relating to common and new building materials in order to help the reader make an informed decision on the best product to use for a specific project and in a specific region[19].

When selecting building materials, First Nations should not only consider the cost, but should also consider its durability, its health properties and its sustainability. While each of these factors generally increase the cost of a building material, the extra cost is often offset by reductions in future repair and maintenance expenses, and a reduction in health care expenses related to poor housing. In some First Nation communities, the annual housing repair costs associated with the repair of less expensive building materials now exceed the new house construction budget. Before selecting a lower cost construction material, a life cycle cost analysis should be undertaken to determine the impact that using the material will have on future repair and maintenance budgets[20].

Use locally-owned companies and materials like:

- *Bellow Lumber* **– a community-owned company that provides raw lumber from our local forests (spruce, pine and fir trees) to use as framing for the building**
- *Garden Truss* **builds trusses and installs flooring systems**
- **Local silver maple to build furniture**
- **Local saw mill**

HIRING AND DEVELOPING CONTRACTS

Self-build housing means that the construction of the home, in full or in part, was done by the homeowner. After buying the land, the individual builds the home themselves or subcontracts the work to one or several subcontractors, who are building professionals. These contracts should not exceed 50% of the construction cost[21]. The following information will provide an outline and recommendations for hiring professionals and developing contracts. It will also describe the benefits of adopting and encouraging the use of various construction, employment and labour contracts and construction safety regulations and enhancing them with community-specific regulations where appropriate, in order to ensure that the roles and responsibilities of Owners, Clients, Contractors, Builders and Employees are clearly defined.

Some projects in First Nation communities sometimes fail because detailed standards for construction are not established before the contract is signed, if it is even signed

[19] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 573
[20] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 573
[21] Desjardins, Builder's Guide (2017) https://www.desjardins.com/wcm/idc/pdf/b25-guide-sommaire-autoconst-e.pdf, accessed June 2019

at all. This section describes the standards for the construction of projects, including construction contracts, labour standards and health and safety standards, and includes recommended examples that can be adopted or adapted by the homeowner in order to minimize future construction related problems[22].

Construction Contracts

The information in this section comes directly from the First Nation Sustainable Development Standards. In most First Nation communities, the contract describing the scope of work for a construction project and the roles of the Owner/Contractor often lack any substantial details. Typically, the contract is a two or three-page standard form with the name of the project, the Owner and the Contractor, and the agreed price for the work. If there is a detailed standard contract, it is often not properly executed, that is to say, not reviewed by all the parties, not signed or the signing conditions not enforced. Worst yet, in some communities, contracts are not used at all … the parties preferring to rely on 'handshake' agreements as is often the tradition in the community. It is critical for the homeowners to use a well-written construction contract to ensure the construction of the project proceeds as designed. This Topic will describe the qualities of a good construction contract and will provide samples and links to sample documents.

Industry-approved construction contracts are a valuable resource for a construction project. Several Canadian organizations and associations have produced standard construction contracts or other construction documents and guides, including the Canadian Construction Document Committee (CCDC) and the Canadian Construction Association (CCA). The documents are available for download from each organization's web site for a nominal price ($10-$40). In order to protect the copyright, each document must be sealed with a copyright sticker, which the organization will mail to you.

When the scope of work is clearly defined by drawings and specifications, and when there are no unusual conditions or timetable issues, a **Stipulated Price** (Fixed Fee) contract should be used (CCDC 2 for contractors). A Stipulated Price contract gives the most assurance to the Owner that the project will be completed for a specific or fixed price, subject to any approved change orders. Accurate and detailed construction documents together with a Stipulated Price contract will help ensure that the project will stay on budget and go smoothly[23].

[22] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 903
[23] A Path for Seven Generations: First Nation Sustainable Development Standards, p. 909

List of Owner/Contractor Standard Contracts:	
Canadian Construction Document Committee (CCDC) 1900 - 275 Slater Street, Ottawa, ON K1P 5H9 613.236.9455 www.ccdc.org/	
The following is a list of contract documents available for purchase at the CCDC. These documents are primarily for the use of the Owner and Contractor. They can be ordered from the address above and used in the homebuilding process:	
CCDC 2	2008 Stipulated Price Contract
CCDC 3	1998 Cost Plus Contract
CCDC 4	2011 Unit Price Contract
CCDC 5A	2010 Construction Management Contract – For Services
CCDC 5B	2010 Construction Management Contract – For Services and Construction
CCDC 9A	2001 Statutory Declaration
CCDC 9B	2001 Statutory Declaration
CCDC 11	1996 (R2006) Contractor's Qualification Statement
CCDC 17	2010 Stipulated Price Contract between Owner and Trade Contractor for Construction Management Projects
CCDC 12	1994 Project Financial Information
DOCUMENT 14	2000 Design-Build Stipulated Price Contract (CCA, CSC, RAIC)
DOCUMENT 15	2000 Design-Builder/Consultant Contract (CCA, CSC, RAIC)
CCDC 18	2001 Civil Works Contract
CCDC 220	2002 Bid Bond
CCDC 221	2002 Performance Bond
CCDC 222	2002 Labour and Material Payment Bond

Adapting or Adopting Construction Contracts – Tips & Recommendations

Revised construction contracts should be short and use simple common language while being detailed enough to capture all the issues that apply in each community. **A good construction contract will set out the scope of work of a project, describe the start and expected completion dates, and detail the roles of the Owner, the Contractor and when required, the Consultant. Good contracts will also describe the licensing requirements for contractors and what insurance such as builder's risk, worker's compensation or performance bond is necessary. A dispute solving mechanism, payment procedures, the process for pricing and approving changes to the scope of work, or the process for approving alternative building materials not specified should also be provided**[24]. Additional conditions such as procedures in the event of bankruptcy of either party, the discovery of artefacts or resources, training for First Nation employees etc. can also be included. Standard construction contracts should be enhanced for use by First Nations to reflect First Nation values and issues unique in First Nation communities[25]. The homeowner can work directly with the Garden River First Nation Housing Department to adopt or adapt their chosen contracts.

[24] Canadian Construction Association. "CCA Standard Documents." *http://www.cca-acc.com.* Canadian Construction Association, n. d. Web. 2019. <http://www.cca-acc.com/en/industry-practices/cca-documents>

[25] Canadian Construction Documents Committee. "Download CCDC Documents." *http://www.ccdc.org*. Canadian Construction Documents Committee, n. d. Web. 2019 <http://www.ccdc.org/downloads>

BUILDING OFFICIAL/ENGINEER TASKS

While it is possible that some communities will hire their own Building Inspector, most First Nations communities will hire the services of a Building Inspector from an adjoining community, from their Tribal or Regional Council, from a First Nation Technical Services Corporation, or from an Architectural or Engineering firm. Because the Building Inspector may work in a variety of communities including other First Nation communities, he or she will have to become familiar with the codes, regulations, standards and contracts adopted by the community he or she is visiting. Garden River First Nation requires the Building Inspector to take on additional tasks such as plans examination, construction contract administration, payment certification, and construction training. The inspector will have to[26]:

- **Understand the Community's Codes and Regulations**
  Building Officials and Review Engineers should become very familiar with the First Nation community's codes, regulations, standards and contracts. Garden River First Nation follows the National Building Code and is enhanced with regulations reflective of the community.
- **Understand the construction documents**
  Building Officials and Review Engineers should become very familiar with the construction documents submitted for a building permit. It is not enough to ensure that a building conforms to the local building code. The building should also conform to the enhanced and improved specifications described in the construction documents and requested by the homeowner. Other than the Designer, who may complete limited site reviews, especially in more remote communities, the Building Officials and Review Engineers are often the only persons qualified to ensure the conformance of the base and enhanced specifications.
- **Attend construction meetings**
  Building Officials and Review Engineers should attend pre-construction meetings to help explain what is expected of the General Contractor and his or her trades people. This includes explaining to the Contractor the stages of inspections required, and making the Contractor responsible to inform the Inspector of the readiness of the work to be inspected well in advance of the work being covered (the number of days should be set at the meeting). Inspectors and Designers should also explain any specific or unusual construction issues and where they believe extra caution should be taken to ensure excellent construction. The Contractor should also be made familiar with his/her contract and the additional conditions with them. Finally, the contractor should be asked to document the construction both in writing and with digital photos. This would include daily weather and activity reports, problems uncovered and resolved and safety and workplace issues.
- **Inspect the project**
  Building Officials and Review Engineers should review the construction at each mandatory building inspections stage, and additional inspections as may be required. See below for further details
- **Document the inspection and construction**
  Building Officials and Review Engineers should accurately document observations made during their review or inspection of the work, and record their findings both in writing and with digital photography. Any infractions and their required remedies, including instructions on when the remedy should be completed and whether or not it needs to be re-inspected

[26] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 931

prior to covering, should be very well documented. Inspectors should provide copies of all photographs, documents and records to the First Nation, the Owner of the project and the contractor on a timely basis. Finally, Inspectors should complete an pre-occupancy review and document the findings in a list of deficiencies prior to final inspection.

- **Project Close Out**
  Building Officials and Review Engineers should provide an Occupancy Permit only when they are fully satisfied that the project is ready to occupy. This includes ensuring that minimum life safety devices are in place and working correctly, that building services have been properly connected, that all required health and plumbing facilities are operational, that the building is weather-tight and leak-proof, and that heating and ventilation equipment is working properly. Building Inspectors and Review Engineers may also have to perform other duties relating to the closeout, such as assuring that the building is substantially completed prior to allowing the building services to be turned on, or authorizing final payments to the Contractor, if that role has been assigned to the Inspector

Hiring a Designer

The Ontario and National Building Codes require that designers preparing plans are qualified and registered by the Ministry of Municipal Affairs. Designers should also provide their Building Code Identification Number (BCIN) on every document submitted for a building permit.

Hiring an Architect or Engineer

Architects are qualified and registered by the Ontario Association of Architects (OAA) and Engineers are qualified by the Professional Engineers Ontario (PEO). Architects and Engineers are not required to be registered or qualified with the Province of Ontario's Ministry of Municipal Affairs.

Hiring a Project Manager/General Contractor

The project manager/general contractor will work with the homeowner on every detail throughout the construction process, monitoring the scope of work and cost throughout. Key things that they will consider and complete include (but are not limited to):

- Occupant health
- Energy efficiency
- Resource efficiency

- Environmental responsibility
- Affordability
- Scope of work: size and design of build
- Land, zoning & permits
- Timeline of construction and coordinating all stakeholders
  - Work closely with all other building specialists (architects, engineers, trade workers, etc.), as well as GRFN Housing Department and lawyers (if deemed necessary)
- Standards of work
- Insurance
- Selecting appropriate construction methods and strategies
- Complying with legal requirements, building and safety codes and other regulations
- Overseeing specialized contractors and other personnel
- Schedule and coordinate all design & construction processes to ensure a productive and safe work environment
- Plumbing & electrical
- Heating & ventilation
- Write proposals, plans and budgets clearly for everyone involved in the building process

The following outline some recommendations when choosing suppliers and contractors[1]:

SUPPLIERS:

1. **Conduct research on their reputation;**
2. **Verify the availability of materials at the time of starting work; and**
3. **Verify payment conditions and credit availability**

CONTRACTORS:

1. **Research their reputation and solvability;**
2. **Verify their license number;**
3. **Ask for recommendations from friends and neighbours;**
4. **Get references;**
5. **Make a list of exactly the projects that require completion; remember that changing plans in the middle of a project will cost extra money;**
6. **Set a clear budget;**
7. **Know that workers and independent operators in the construction industry must possess workplace safety and insurance coverage. There are some exceptions; for more information and to check coverage, contact the Workplace Safety and Insurance Board (WSIB);**
8. **Ask if the tradespeople hired have their certification from the Ontario College of Trades**
9. **Consider dealing with a local company. This may make it easier to check references, enforce a warranty or have follow-up work done;**
10. **Obtain written estimates from at least three (3) contractors;**
11. **Never accept an estimate over the phone or without the contractor inspecting the area;**
12. **Remember that good contractors ask a lot of questions so they can understand and plan out the project. For example, in driveway paving, they should ask if any heavy vehicles will be parked on the driveway; and**
13. **Do not pursue a deal that sounds too good to be true**

hts-when-starting-home-renovations-or-repairs, accessed July 2019.

Under Ontario law, any home renovation contract worth more than $50 must be in writing[27]. Be prepared to pay for any extra materials or any work that are not in the contract. If something is not written in the contract, the homeowner may not get it.

[27] https://www.ontario.ca/page/your-rights-when-starting-home-renovations-or-repairs, accessed July 2019.

Before signing a contract for home renovations or repairs, ensure that[28]:

- Down-payments are kept to a minimum (**recommended 10%**);
- Never pay the full amount of the contract before the work is done. This will help ensure that the contractor will finish the job. It will also protect from lost money if the company goes out of business or declares bankruptcy before finishing the project;
- Discuss with the contractor how disagreements or disputes will be dealt with; this should be addressed in the contract; deal with any disagreements or disputes. Ideally, this should be addressed in the contract;
- Check warranties and guarantees carefully; and
- If cash is paid, ensure that a detailed, signed receipt from the contractor is received

In signing a contract worth $50 or more in the home, **the homeowner has the right to a 10 calendar-day cooling-off period**. The contract may be cancelled for any reason and without having to pay any cancellation fees within these 10 days. However, if a contractor is hired and the work was started during the cooling-off period, the contract may be cancelled, but the homeowner will be responsible for reasonable compensation for work and materials that the contractor has provided. For a template of a contract, please see the Appendix section. Further information regarding your rights can be found at Ontario.ca or by visiting the Resources section of this Guide

Working with Builders and contractors:

1. **Have good communication skills.**
2. **Understand and implement the concepts of the First Nation Sustainable Development Standards.**
3. **Attend pre-construction meetings.**
4. **Understand the challenges of working in First Nation communities, both remote and rural.**
5. **Be qualified and have construction safety training.**
6. **Have proven experience and a wide base of construction knowledge in both the field and office.**
7. **Understand standards contracts, construction schedules, and cash flow schedules.**
8. **Have Workers Compensation Insurance.**
9. **Be willing to train and mentor or be trained and mentored in the use of new materials and technologies.**
10. **Be financially stable enough to not unduly endanger progress on a construction project.**

[28] https://www.ontario.ca/page/your-rights-when-starting-home-renovations-or-repairs, accessed July 2019.

CHAPTER 7:
CODES AND ENERGY EFFICIENCY STANDARDS

Good building construction is achieved when a project is built as designed and specified, in a safe manner, and with all parties to the construction project clear about and adhering to their roles and responsibilities.

NATIONAL BUILDING CODE

As outlined in the Introduction of this guide, the purpose of the National Building Code is to provide minimum standards for the safety of buildings under four principle categories: public health, fire protection, accessibility and structural sufficiency. The NBC applies to new construction, renovation and demolition of buildings, as well as a change of use of a building even if no work is proposed (if the change of use compromises the safety of the building). The NBC does not apply to existing buildings nor is it retroactive[29].

DID YOU KNOW?
The 2010 NBC is available in two volumes containing the following:

Volume 1 of the NBC is divided as follows:
Division A - Compliance, Objectives and Functional Statements
- *Part 1 Compliance*
- *Part 2 Objectives*
- *Part 3 Functional Statements*
- *Appendix A Explanatory Material*

Division C - Administrative Provisions
- *Part 1 General*
- *Part 2 Administrative Provisions*
- *Appendix A Explanatory Material*

Attribution Tables of Division B

Volume 2 of the NBC is divided as follows:
Division B – Acceptable Solutions
- *Part 1 - General*
- *Part 2 - Reserved*
- *Part 3 - Fire Protection, Occupant Safety and Accessibility*
- *Part 4 - Structural Design*
- *Part 5 - Environmental Separation*
- *Part 6 - Heating, Ventilation and Air-Conditioning*
- *Part 7 - Plumbing Services*
- *Part 8 - Safety Measures at Construction and Demolition Sites*
- *Part 9 - Housing and Small Buildings*
- *Appendix A Explanatory Material*
- *Appendix B Fire Safety in High Buildings*
- Appendix C Climatic Information
- Appendix D Fire-Performance Ratings

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Part 3 to Part 7 apply to all Group A (assembly occupancies), Group B (care and detention occupancies), and Group F1 (high hazard industrial buildings) buildings. Parts 3 to 7 also apply to Group C (residential), D (mercantile), E (business and personal services), F2 (medium hazard industrial) and F3 (low hazard industrial) buildings that are greater than 600 square metres in building area or more than 3 stories high. Buildings falling under Parts 3 to 7 require professional design by an Architect and or Engineer. Part 9 applies to Group C, D, E, F2, and F3 buildings where the building area is less than 600 square metres and the building is three stories or less in building height.

The National Building Code (2010) has recently been revised to clarify conflicting regulations, to suit new or revised reference standards, to account for new construction materials and equipment, or has simply become more stringent in some situations.

FIRE CODE

The following information is reiterated from the First Nation Sustainable Development Standards:

According to statistics, the likelihood of fires in First Nation communities is more than double the risk for the rest of Canadians. There are several environmental, economic and cultural reasons for that. Most First Nation communities are located in close proximity to environments that burn easily, such as the boreal forest, brush and fields. And

[29] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 8.53

many First Nation homes utilize wood burning heating appliances because firewood is available and affordable. Finally, many First Nation people use fire for cultural, social, arts and craft, and subsistence purposes (burning underbrush to encourage the growth of berries and other plants). Fire restriction regulations are one way to reduce the risk of outdoor fires spreading to buildings and houses. But only a Fire Code supported by regularly enforced Fire Regulations can reduce the risk of fire to people and property[30].

The 2010 version of the National Fire Code of Canada (NFC) is an objective-based code that details minimum fire safety requirements for buildings, structures and areas where hazardous materials are used for the following objectives[31]:

a) Safety

b) Health

c) Fire and Structural Protection of Buildings

The National Fire Code of Canada addresses fire protection and fire prevention in new and existing buildings and structures. Fire Codes are meant to complement building codes, but unlike building codes, fire codes are generally retroactive and can require changes to existing buildings even if no new work is proposed. The Garden River First Nation Housing Department requires the installation of hard-wired smoke detectors in all existing houses (whereas the building code requires the same in *new* houses only).

PLUMBING CODES

Plumbing codes regulate the design, installation and maintenance of plumbing pipes and fixtures such as sinks and toilets, floor drains, hot and cold water pipes, waste water pipes and rain water pipes. Plumbing codes ensure the safe and effective delivery and disposal of potable water, heating and cooling water, and waste water, to reduce the risk of the spread of disease and mold growth due to water leaks. The NPC covers the design and installation of plumbing systems in buildings and facilities[32]. It is an objective-based code format in which all requirements are linked to one or more of the following objectives:

a) Safety

b) Health

c) Protection of Buildings and Facilities from Water and Sewage Damage

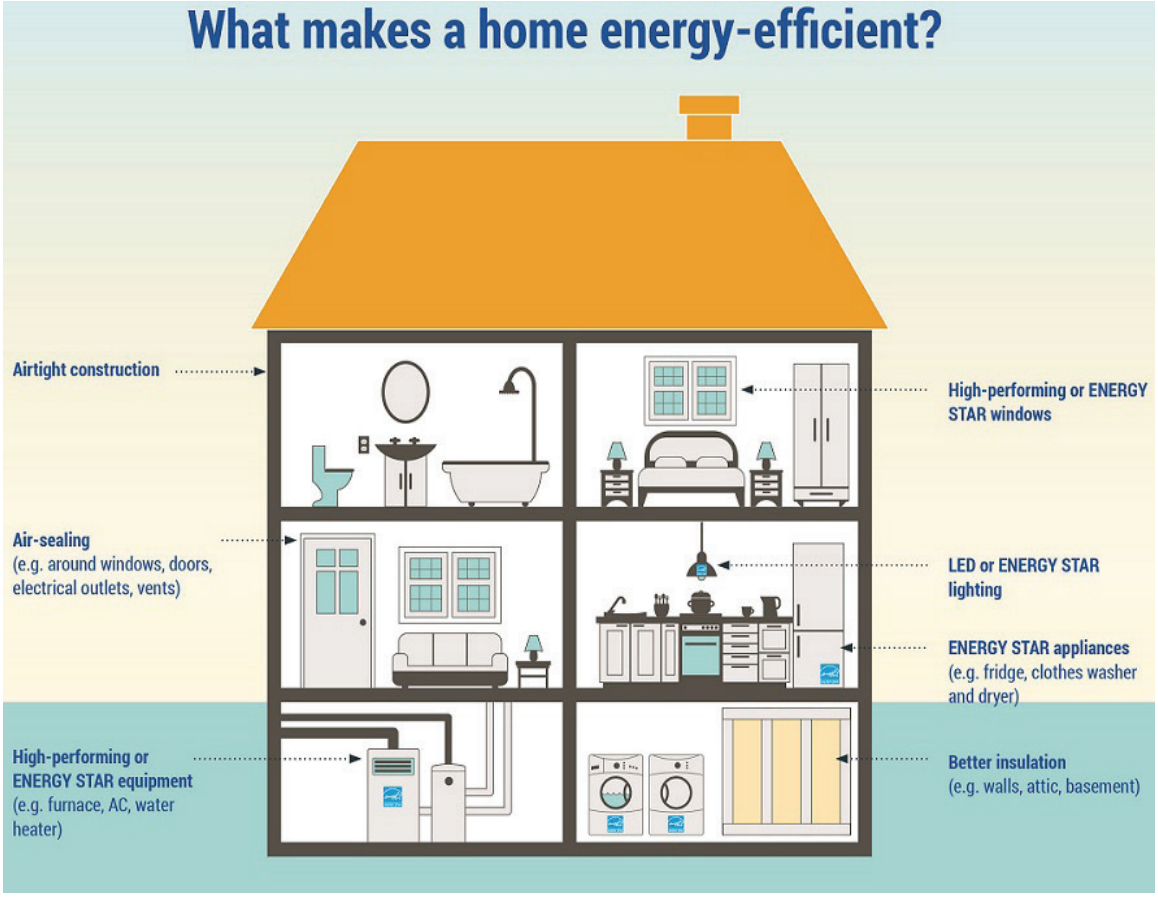
The design and installation of plumbing in First Nation communities is generally left up to the (licensed or unlicensed) plumber to sort out. And often the plumbing work is not inspected, or is reviewed by a building inspector who is not qualified or equipped to review plumbing work. Plumbing problems are varied and can cause several problems, the worst being occupant illness if the drinking water pipes and water treatment equipment are not installed properly. Other problems include noxious gas odours lingering in a house if the drainage system is not properly vented, mold growth if plumbing elbows and joints leak, and general water damage if the pipes burst due to poorly installed or frozen pipes[33].

[30] Aboriginal Affairs and Northern Development Canada. "First Nation Fire Protection Strategy 2010-2015." *http://www.aadnc-aandc.gc.ca.* Government of Canada, 2010. PDF.
[31] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 861
[32] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 867
[33] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 867

ENERGY EFFICIENCY STANDARDS & CODES

The goal of this topic is to describe the benefits of adopting and encouraging the use of advanced energy-efficiency standards and enhancing them with community-specific regulations where appropriate, in order to reduce the amount of energy consumed by buildings, their equipment and appliances.

There are currently four or five energy-efficiency standards for buildings competing for designer's attention in the marketplace. This is in addition to the various energy-efficiency standards applicable to all residential appliances, heating and cooling equipment and water. The purpose of energy-efficiency standards is to reduce the amount of energy consumed by equipment or appliances, when compared to an older model[34]. Reducing energy consumption helps to keep energy costs under control, while helping Canada to reduce its greenhouse gas emissions[35].



PROVINCIAL ENERGY EFFICIENCY STANDARDS

According to the First Nation Sustainable Development Standards, the province of Ontario has a long history of developing building energy standards and codes, publishing the first code for energy efficiency for buildings in 1975. Over the years, Ontario' energy efficiency standards have continued to advance. With the release of the 2006 Ontario Building Code, energy efficiency

[34] International Code Council. "International Green Construction Code Public Version 2.0." *www.iccsafe.org*. International Code Council Inc., Nov 2010. <http://media.iccsafe.org/IGCC/docs/IGCC-PV2.doc>
[35] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 879

standards where incorporated directly into Part 12 of the Code. Today, Part 12 of the 2012 OBC includes two companion energy efficiency sections titled SB-10 Energy Efficiency Supplement for use in larger buildings and SB-12 Energy Efficiency for Housing (revised March 2013)[36]. The residential guides utilize user-friendly summaries of Ontario's enhanced version of the NECB 2011. The latest improvements include the following:

a) low maximum U-value requirements (higher R-Value requirements),

b) providing or increasing the minimum efficiency requirements for heating, cooling and ventilation equipment,

c) stricter air-tightness and new thermal bridging requirements,

d) increased performance labelling through EnerGuide,

e) performance-based requirements for residential buildings undergoing renovation

SUSTAINABILITY STANDARDS

Today, 17 percent (17%) of the energy consumed in Canada is used to operate our houses and Canadians use an average of 329 litres of water per day for domestic use, second only to Americans. The numerous public and private 'green' rating systems available and in use in Canada today include R2000, the *EnerGuide Rating System,* ENERGY STAR for New Homes, CMHC's Net-Zero housing, Green Globes and LEED for Homes. A goal of the GRFN Housing Department is to ensure that each new house that is built is healthier, more durable and sustainable.

R-2000 Standard

R-2000 is an energy efficiency, indoor air quality and environmental responsibility voluntary standard that was developed in 1981 by Natural Resources Canada (NRCan) and the Canadian Home Builders' Association. Instead of specifying how a house should be built, the R-2000 standard sets criteria for how an R-2000 home must perform with respect to its requirements, while conforming to applicable building codes. In general terms, and taken directly from the First Nation Sustainable Development Standards (p.889), the R-2000 Standard involves the following:

a) Only home builders who have completed R-2000 builder training and hold a current R-2000 builder license can build homes that can be certified to the R-2000 Standard.

b) R-2000 homes need to use 30 percent less energy to operate than conventional new homes of their construction type and in their climatic zone.

c) Every R-2000 home must have a whole-house ventilation system that supplies fresh outdoor air to all living areas in the home.

d) Every R-2000 home builder must choose from a "pick list" of options for indoor air quality and environmental features. The indoor air-quality features can include items such as hardwood flooring, low-emission cabinetry, low-emission (low volatile organic compound [VOC]) paints, and non-solvent-based adhesives and finishes. Features to conserve materials include choices for insulation, siding, sheathing, wall studs and foundation drainage.

[36] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 881

e) The heating systems in the home must not be susceptible to combustion spillage.

f) Every R-2000 home must be equipped with water-conserving toilets, faucets and shower heads.

g) Every home submitted for R-2000 certification must undergo a series of independent inspections and tests to verify that the requirements of the R-2000 Standard have been met.

During the past 15 years, R-2000 has been overshadowed by various other more 'marketable' green rating systems that are much more complex and wide reaching that R-2000. While R-2000 has not become the 'normal' standard for house construction in Canada, it has inspired many other sustainable building systems, and continues to be acknowledged as one of the best energy-efficiency building standards available today[37].

EnerGuide Rating System

The EnerGuide rating system was developed by Natural Resources Canada to label and rate the energy consumption or energy efficiency of specific products such as household appliances, heating and cooling equipment, houses and vehicles.

A house's EnerGuide rating describes how energy efficient the house is compared to other 'normal' houses. The house's energy efficiency level is rated on a scale of 0 to 100 with a rating of 0 describing a house with major air leakage, no insulation and extremely high energy consumption, while a rating of 100 represents a house that is airtight, well insulated, sufficiently ventilated and requires no purchased energy on an annual basis[38]. A new house built to existing NBC standards will typically achieve a rating of between 65 to 72. Adding some energy efficient equipment may raise that rating to 79. An energy-efficient house (such as an R-2000 house) will achieve a rating of between 80 and 90. A higher level is possible with Net-Zero houses. In 2005 the average home in Canada had a rating of 66 on the EnerGuide scale[39].

For a new house to receive an EnerGuide rating, the following steps must be taken:

a) The house plans must be reviewed by an energy advisor qualified under the EnerGuide for New House program,

b) The advisor recommends energy-saving upgrades and may work with the contractor to develop a cost for those options and alternatives if required,

c) The contractor presents a quote for the approved energy-efficiency upgrades to the client,

d) At the end of construction, the EnerGuide advisor visits the house to verify that the approved upgrades have been installed and are functioning. The advisor will also perform a blower door test to check the air-tightness of the house,

e) After the data has been collected and analyzed, the homeowner will receive an EnerGuide for New Houses rating between 0 and 100,

f) The homeowner is sent an official EnerGuide rating label to display on the home's furnace or electrical box.

[37] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 889
[38] http://en.wikipedia.org/wiki/EnerGuide, accessed August 2019
[39] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 890

ENERGY STAR® for New Homes

Just as there are Energy Star labels for appliances, heating, cooling and ventilation equipment, lighting fixtures, electronics, windows and doors and office equipment, there is now an Energy Star label for Houses. Energy Star houses are 20% more energy efficient than houses built to Code[40]. Similar to other programs, houses that are Energy Star qualified have more insulation than required by code, and use a variety of ENERGY STAR certified equipment, appliance, lighting fixtures and windows. ENERGY STAR buildings must employ a heat or energy recovery ventilation system (HRV or ERV) and are built by builders licensed by the Government of Canada. ENERGY STAR houses often have a EnerGuide rating, but it isn't always necessary because builders can also choose a building options package that does not require an EnerGuide rating.

One of the disadvantages of an ENERGY STAR houses it that is focuses solely on energy efficiency, while R-2000 houses also employ indoor air quality strategies and environmental features that make them some of the most energy-efficient homes on the market. Many provinces, municipalities and utilities offer rebates and subsidies for using ENERGY STAR appliances, equipment and fixtures. For a complete list refer to Natural Resources Canada's website[41].

LEED Homes

The Canada Green Building Council (CaGBC) administers the Leadership in Energy and Environmental Design (LEED) green building rating system in Canada. LEED was originally developed by the US Green Building Council (USGBC) and was based on several other green rating systems including BREEM and Passive House. Today, LEED is the most popular green building rating system in North America[42].

[40] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 891
[41] http://oee.nrcan.gc.ca/equipment/manufacturers/6661
[42] US Environmental Protection Agency. "Tribal Green Building Codes: Development Guidance." *http://www.epa.gov.* - US Environmental Protection Agency, n. d. Web. 2014. <http://epa.gov/region9/greenbuilding/codes/index.html>

LEED is a point-based rating system that allows users to earn up to 110 points for implementing sustainable design strategies, materials and equipment in their buildings. Designers pick and choose credits appropriate for their budget to achieve a rating of Certified (40 to 49 points), Silver (50 to 59 points), Gold (60 to 79 points) or Platinum (80 or more points)[43]. The seven topic areas include:

- Site development
- Water efficiency
- Energy efficiency
- Material selection
- Indoor environment quality
- Innovation in design
- Regional priority

What distinguishes LEED from other building rating systems is that it requires third party verification of the data submitted, adding to the cost of the program. LEED buildings tend to cost more than non-sustainable buildings, but the additional cost is often recouped in less than 10 years[44].

[43] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 892
[44] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 892

CHAPTER 8: PERMITS

WHAT IS A PERMIT?

Building permits help protect the home, the homeowner and the interests of the community by making sure the project is structurally sound and follows the Ontario Building Code, National Building Code (whichever is more stringent in a particular area), zoning and other applicable laws. Permits for construction, along with inspections from Garden River First Nation inspectors, assist in upholding standards that result in safe, healthy and legal housing for current and future occupants. A building permit is necessary when you wish to construct, renovate, demolish or change the use of a building.

The following section provides a general outline of the building permit process in Garden River First Nation, and will help first-time applicants complete their home builds. It is important to note that each application and situation is reviewed and evaluated on a case-by-case basis.

WHO ADMINISTERS AND GOVERNS THE PERMIT?

Building code enforcement, including issuing building permits, is administered by the Garden River First Nation Housing Department. On-site sewage systems are coordinated by the Garden River First Nation Water Department in conjunction with the Lands & Economic Development Department. Garden River First Nation follows the Ontario Building Code and the National Building Code, whichever is more stringent in its regulations for the relevant project. Some examples of regulations include:

- Insulation requirements
- Plumbing and mechanical systems
- Fire separation requirements

TYPES OF PERMITS

Building Permits are issued for different things, so you may have only one project, but multiple building permits. Some of the types of permits include (but are not limited to):

- Building Permit (BLD) for a Small Residential Project (SR)
- Plumbing Permit (PLB) for Plumbing System (PS)
- Heating and Ventilation Permit (HVA) for a Mechanical System (MS)
- Water Permit
- Septic Permit

WHEN IS A BUILDING PERMIT REQUIRED?

Garden River First Nation requires homeowners to apply for a permit when homeowners wish to construct or renovate their own house. Specifically, a permit is required when you are:

1. Building a new structure that is larger than ten meters squared (108 square feet);
2. Building any addition to an existing structure;
3. Renovating;
4. Demolishing all, or part of, a building;
5. Installing new, or altering existing, mechanical or plumbing systems

Your permitting process will be determined by the scope of your building project. Generally, the process has five steps:

1. **Determining** if your project complies with zoning and applicable laws;
2. **Drafting** your own plans or **hiring** a qualified designer/engineer to prepare your application and drawings;
3. **Applying** for a building permit application to the Garden River First Nation Housing Department and obtaining a permit;
4. **Starting** construction and **calling** for your inspections; and
5. **Closing** your permit by **calling** for your final inspection.

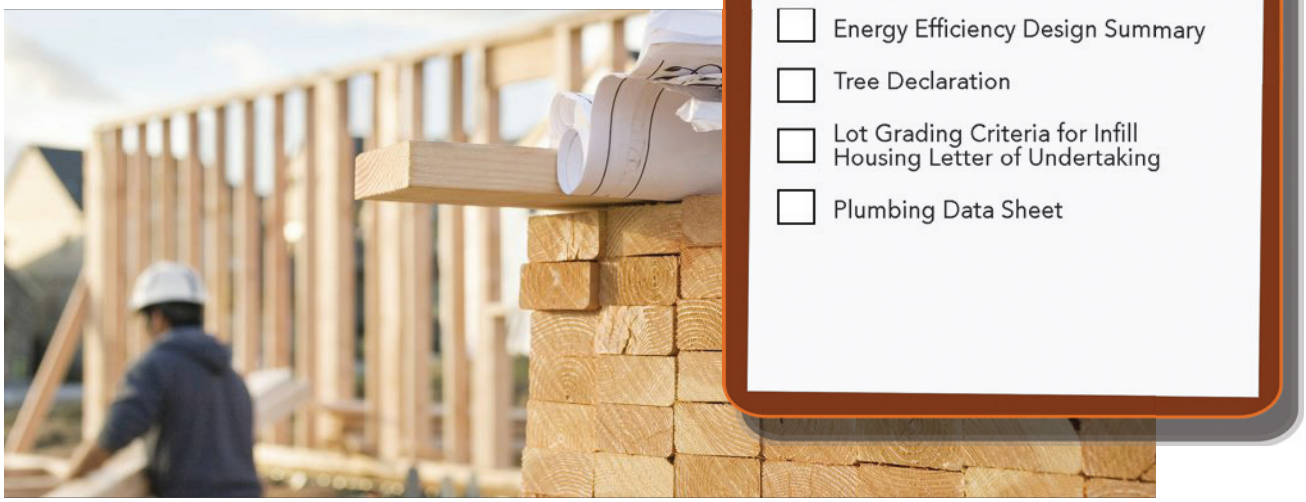
APPLYING FOR A BUILDING PERMIT

An application for a building permit can be obtained through the Garden River First Nation Housing Department. Staff at the Housing Department can assist you in all steps required in completing the application. Once completed, the application is submitted to the Housing Department for review. The application must include drawings, plans, and any additional required documents.

It is recommended to connect with the GRFN Housing Department prior to submission, as the staff can advise on any additional materials that may be required as part of the submission package. There is a $25 fee attached to any building permit applications.

Staff in the Housing Department will review the application to confirm that the proposed work complies with the Building Code, zoning standards and any other applicable laws. They may send the application to adjacent departments, such as the GRFN water department and Lands, Resources & Economic Development department for review and additional comments.

Reviews generally take 30 days, and can take up to 60 days for more complex builds. In order to be issued for a permit, the proposed construction must comply with the Building Code. If you need a zoning change or a minor variance from the zoning bylaw, or if the proposed construction does not comply with the Building Code, a permit will not be issued until the zoning change or minor variance has been obtained, or the proposed construction complies with the Building Code.



APPLICATION REFUSAL

Once the application is reviewed, there are two possible outcomes:

1. The permit is issued; everything is in order and the homeowner may begin building in accordance with the approved plans; or
2. The application does not satisfy certain requirements
    a. If compliance is a problem, the homeowner will be issued a notice documenting why the project does not comply. The homeowner will have to submit further information or a revision to the application if they wish to continue.

If the GRFN Housing Department refuses the building permit application, the homeowner will be told why. If the problem relates to technical requirements set out in the Building Code, the homeowner may appeal to the Building Code Commission. The Building Code Commission is an independent adjudicative tribunal of the provincial government whose mandate it is to hear disputes related to the compliance with the technical requirements of the Building Code. If the issue relates to compliance with the other applicable laws, such as the interpretation of the zoning bylaw, and if the matter cannot be resolved with the Lands, Resource and Economic Development Department, the homeowner can appeal to a judge of the Superior Court of Justice, who will review the matter. It is advised that one seeks legal counsel prior to commencing this action.

PERMITS DURING CONSTRUCTION

Various stages of construction require inspections at each stage, according to the Building Code. It is the responsibility of the permit holders to contact the Garden River First Nation Housing Department for an inspection when the project is at the stage where inspection is required. A GRFN Housing Inspector will carry out the inspection within two (2) working days of being notified. For construction of a sewage system, the inspector has five (5) working days to conduct the inspection. During the inspection, the inspector will inspect the work to determine if it is carried out in accordance with the Building Code, the homeowner's permit and the approved plans. The homeowner will also be required to:

- Display the permit in a window or another place where it is easily visible;
- Keep copies of plans on site;
- Update the Garden River First Nation Housing Department about any changes to the proposed construction, which will have to be approved by both the Housing Department & the Lands, Resource and Economic Development Department; and lastly
- The inspector must always be able to see the work
  - If it is different than the work that was approved and, unless permission is received on a revision to the plans, the homeowner will be told to correct it. If they fail to do so, the Garden River First Nation Housing Department can take enforcement action, such as issuing orders authorized under the Building Code Act, 1992.

CONTRAVENING THE BUILDING CODE

If an individual is charged and found guilty of an offence under the Building Code Act, 1992 (such as building without a permit), they can be fined for up to $50,000 for a first offence and up to $100,000 for subsequent offences. Failure to comply with an order from the Garden River First Nation Housing Department is also an offence under the Building Code Act, 1992.

In addition to the planning approvals and building permit which are required for a building project, other permits and approvals may be required in particular circumstances, e.g., approval from the Lands, Resource and Economic Development Department.

THE FIRST NATION SUSTAINABLE DEVELOPMENT STANDARDS

The First Nation Sustainable Development Standard recommends that First Nation communities should:

a) Enact a band council bylaw or resolution to develop a Building Code by-law to establish a mechanism for enforcement of their selected building code regulations,

b) Adopt the 2010 National Building Code as their building code regulation. Other important regulations such as the National Energy Code of Canada for Buildings 2011, the National Fire Code the National Plumbing Code and the national accessibility standards should also be adopted,

c) Adopt or adapt other private regulations that define guidelines for non-traditional housing materials such as rough-sawn (ungraded) lumber, round logs, small diameter timber, and straw bale, to name a few, and,

d) Establish (either locally or at a Tribal Council level) a 'Building Department' to oversee the proper enforcement of the various adopted codes by the use of building permits and building inspections[45].

In conjunction with this guide, it is recommended for the homeowner, builder, project manager, inspector, any tradespeople and anyone else involved in the home-building process, to follow the guidelines outlined in the First Nation Sustainable Development Standards.

[45] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 855

CHAPTER 9: AUTHORIZATIONS

AUTHORIZATIONS & POWER/WATER/HYDRO HOOK-UPS

Garden River First Nation Housing Department

The Garden River First Nation Housing Department will review and provide signatory permission to move forward with power, water and hydro hook ups. Be sure to include a housing department representative in each of the following steps:

Water Department

The Garden River First Nation Water Department will provide assistance with a site plan. The Water Department will coordinate with the excavation process by working with the homeowner and contractors to plan and execute a successful water line installation.

The Water Department will order and install '160 series PVC pipe. The costs to the homeowner include:

- Pipe ($125 – 100ft roll)
- Operator/excavation ($55/hr)
- Installation equipment: fittings and tapping ($55)
- Insulation – if required ($27 per sheet 2.75x8)

The first 50ft of the homeowner's water line is installed by the Garden River First Nation Water Department at no cost. Prices are based on the amount of pipe required and length of excavation.

The Garden River First Nation will provide a site map with a Water Line Location which will include depth, size of pipe, pressure upon installation and list of fittings and materials used in the homeowner's water line installation.

The Water Department will provide maintenance to the homeowner's water line for life. The Water department tests for biological parameters weekly to ensure safe and potable water. They can also provide a personal test and site visit upon request. The Water Department offers expert advice from their qualified team on any water-related issues the homeowner may have. The homeowner will receive an agreement stating that the completion and confirmation of the homeowner's new water line, as well as the agreement to pay the residential fee of $6 per month.

Please do not hesitate to contact Cody Boissoneau or any of the Garden River Water Department staff for further information. *Cody Boissoneau, Overall Responsible Operator, Water Treatment level III, Water Distribution II, GRFN cmboissoneau@gardenriver.org*

Waste water treatment systems
Septic systems are usually designed to accommodate two people per bedroom so adding two bedrooms can overload a septic disposal bed and cause it to fail. If a washroom is planned for a

basement, ensure that the waste water can be discharged to the septic system by gravity flow whenever possible, instead of relying on a sanitary sump pit and ejector pump that can fail[46].

Union Gas

The following information is taken directly from the Union Gas website <www.uniongas.com>. It is recommended to work directly with Union Gas and the Garden River First Nation Housing department on all steps associated with hook up to ensure timely service.

New Customer
If you're opening an account in your name for the first time, or if you are installing natural gas for the first time, sign up for your gas account through the 'Start Gas Service' link on the Union Gas website.

Information Requirements
- Your contact information: name, phone number, and email address.
- Date of birth
- Your new address

Timing
To ensure your gas service is available when you need it, sign up for your gas account through the 'Start Gas Service' link before your moving day.

Connection/Transfer Charge
A $35 connection/transfer fee will be charged on your first bill.

Security deposit
- If you are a new customer, a security deposit equal to two average month's gas usage, based on the last 12 months use, will be charged.
- You have the option to pay the security deposit over a maximum of six monthly instalments without interest.

Billing
- You will receive your first bill within 30 days from the date your service becomes active. After that, you will receive a bill around the same time every month, shortly after your gas meter is read.
- Bills are due when rendered and you are provided a period of 20 days for payment before a - Late Payment Charge is applied to your account.
- The *Equal Billing Plan* spreads your annual natural gas costs evenly through the year for easier budgeting and a more predictable monthly bill.
- Go to *understanding your bill* for billing explanations.
- *Choose a payment option* that suits you. Automatic payments and credit card payments are available.
- Choose *eBill* and have your gas bill emailed to you each month. You can also sign up for a yearly summary of your billing history emailed each January. You have the option to receive a payment reminder email each month so you never forget to make a payment.

Manage your account
Sign up for myaccount to manage your account online. You can monitor your energy use, view your bills from the past 24 months, or sign up for eBill.

[46] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 567

Algoma Power

Algoma Power Inc. operates a network with over 2400 kilometers of transmission and distribution lines in the Algoma District. More than 11,000 customers are supplied directly from their system. If you're a year-round residential Algoma Power Inc. customer, this is your connection for helpful information about billing and efficient energy use in your home. For more information, please contact our Customer Service Department at 705-256-3850 or toll free at 1-877-457-7378. Visit the Appendix Section for an example of the Algoma Power Connection Application.

All electrical work on private property is the owner's responsibility and falls under the Electrical Safety Code.

Prior to Contacting Algoma Power

STEP 1	You must decide if you're going to do the electrical work yourself or hire a licensed electrical contractor. A list of licensed electrical contractors can be obtained from the Electrical Safety Authority **(ESA)***
STEP2	What size of service do you require? 100 AMP, 200 AMP or larger? If you're uncertain consult an electrician.
STEP 3	Decide how you are going to supply your service. Overhead or underground? Each property is unique. You will need to decide which if best for you.
STEP 4	How far from the nearest utility pole is the proposed service? If your service is too far, you'll need to bring the primary voltage closer. If you're unsure, consult with an electrician.
STEP 5	Ensure you have your property bars, building site and all proposed pole locations staked prior to Algoma Power's site visit.
STEP 6	Obtain a Property or Subdivision plan. This is the plan approved for the property under the Planning Act. Plans can be obtained at the Land Registry Office located in the ServiceOntario building at 420 Queen St E (next to Court House) in Sault Ste. Marie. They may be contacted by phone at (705) 253-8887. This plan is required to assist the API Technician in deter mining the property boundary and the road allowance.
STEP 7	An Electrical Safety Permit is required before any electrical work is started. If you are doing the work yourself, contact the Electrical Safety Authority. If you've decided on a contractor, the contractor is responsible for obtaining the permit.

*ESA website: www.pluginsafely.ca Phone 1-877-372-7233

Now is the Time to Contact Algoma Power

STEPS	Once steps 1-7 are complete, it is time to schedule your service layout site visit with our Customer Service department. The Service Layout Application can be obtained by visiting our office at 2 Sackville Road, Suite A, in Sault Ste. Marie, or by visiting our website at www.algomapower.com.
	When the completed service layout application, accompanied by the property plan, are received in our office, a site visit appointment will be scheduled for you. You or your contractor must be present for the site visit.

CHAPTER 10:
HEALTHY, GREEN & ENERGY-EFFICIENT HOMES

In a time where energy and resources are becoming increasingly expensive, and maintaining the well-being of the natural environment is a higher priority, building a 'healthy' or 'green' home is an appealing option. Green buildings use less energy, water, create less waste, and are healthier to live, work, or go to school in than standard buildings. Contractors of green buildings incorporate techniques that use resources more efficiently during the entire building cycle—construction, renovation, operation, maintenance, and demolition—than builders of conventional structures[47].

The environmental benefits of building green include the protection of ecosystems and biodiversity, improved air and water quality, less waste flowing into streams, and the conservation of natural resources. Green buildings can also result in lower operating costs because they typically use less energy and materials and improved indoor air quality, which improves the health of occupants[48].

The home is cost-effective by simple design practices and energy-efficient appliances – the home is insulated and airtight, with high efficiency heating and cooling equipment that helps to keep utility bills low. It is outfitted with low-flow accessories to lower water consumption and water-heating costs. The people living inside the home keep temperatures reasonable, use electricity wisely and purchase energy-efficient appliances. It is designed to minimize heat loss, through minimizing building surface area, improving the thermal resistance, and reducing the natural air leakage[49].

[47] https://www.infoplease.com/math-science/earth-environment/why-build-green, accessed July 2019
[48] https://www.infoplease.com/math-science/earth-environment/why-build-green, accessed July 2019
[49] CMHC (1992) Guide and Technical Requirements for CMHC's Healthy Housing Design Competition.

The home is comfortable and healthy – it has good ventilation and excellent air quality; it is never too humid or dry. It uses natural building materials, free of chemicals that could harm the occupants. The home is kept clean, to minimize the risk of pests or mold that could affect human health[50]. The occupants of the home also use a programmable thermostat to manage heating and cooling at night when they are away.

The home is always adding value – it's fixtures show a commitment to energy efficiency which adds value to the home in the long run. Newer windows and doors, and high-efficiency lighting and appliances not only save money and energy, they are also appealing to buyers. Investments in renewable energy (solar panels) can also pay off for years to come[51].

Lastly, the home is kind to the environment. A 'healthy' or 'green' home lowers energy consumption, reduces greenhouse gas emissions, and shrinks the home's carbon footprint. The architect or builder can help to ensure that the windows in the home are South-facing so that the homeowner can get as much sunshine as possible, thereby heating the home. Time should be spent choosing the right insulation for the home, as well as choosing HVAC systems, energy-efficient appliances and water-efficient faucets and toilets.

In summary, there are many aspects that can make a healthy, green and energy-efficient home:

- **Air-tight construction**
- **Energy-efficient windows**
- **Air sealing (around the windows, doors and vents)**
- **LED lighting**
- **High performing energy-efficient equipment (furnace, AC, water heater)**
- **Energy-efficient appliances (refrigerator, washer and dryer)**
- **Better insulation (walls, attic, basement)**
- **Using green building materials during construction (like straw bales, bamboo and recycled plastic)***
- **Ensuring high water quality by removing bacteria through chlorination, iodination, distillation and ozonation**

* https://inhabitat.com/11-green-building-materials-that-are-way-better-than-concrete/,accessed June 2019

DESIGN CONSIDERATIONS FOR ENERGY CONSERVATION

The following information is repeated in the First Nation Sustainable Development Standards.

Designing for Sustainable Development:

- Design considerations that take into account placement of home to ensure optimal heat retention
- Durable, healthy and sustainable construction materials
- Choosing devices and equipment that manage and conserve energy
- Sustainable occupancy practices and methods

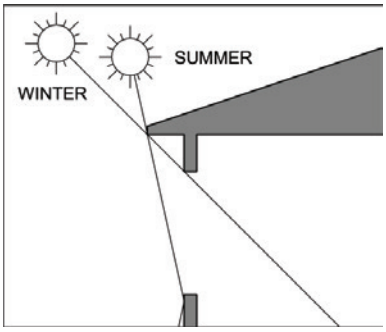
[50] http://www.healthyhomescoalition.org/what-is-a-healthy-home, accessed June 2019
[51] https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-homes/what-energy-efficient-home/20548, accessed June 2019

Air Lock Vestibules and Screen Porches

Many houses in First Nation communities do not include an air-lock vestibule or an open or screen porch even though these design features have been known for centuries to protect the house and its occupants. Air-lock vestibules at the principle entrance to the house keep the heat in during the winter and the flies out during the summer. Screen porches provide a breezy refuge from hot interiors especially if no air-conditioning is provided. While both of these design features improve occupant comfort they also reduce energy costs and make buildings more durable by providing a buffer between the interior spaces and the outside climate[52].

Roof Overhangs

Roof overhangs serve many purposes. They protect the walls of the building from inclement weather and they direct water away from the foundations, designed correctly, they will prevent direct sunlight from entering a house in the summer, while allowing the low winter sun to enter and warm the space. While larger roof overhangs increase the cost of a house slightly, they reduce energy consumption and future maintenance and repair cost. Large roof overhangs were a design feature of most houses before air conditioning was introduced and the need for sun protection was minimized. But the increased cost of energy has now rekindled the need to implement this design strategy for new housing[53].



Sun Shading Devices

The simplest sun shading device is a deciduous tree placed on the south or west side of a building such that it will prevent or reduce the sun's penetration into windows in the summer, but let the sun shine in during the winter. If deciduous trees are not an option, consider building or adding sun shading devices or louvers which can act similar to large roof overhangs. Sun Shading devices can be purchased ready-made or can be custom fabricated for a project. Pre-manufactured devices, while engineered to withstand most wind and other live structural loads, are also often costly. Custom-made sun shading devices can be made with readily available and local material such as lumber, welded steel brackets and metal chains. Sun shading devices can be built trellises and awnings placed over and above the windows to create shade when the sun is at its highest point in the sky (noon). Alternatively, sun shading devices can be deciduous trees (use native species only) that shade the building in the summer with their leaves, but lose their leaves in the winter to allow the sun in[54].

[52] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 509
[53] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 509
[54] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 511

Energy-Saving Space Planning Principles

The orientation of the house on a lot and the associated placement of rooms within the house have an important impact on the interior comfort level for the residents. Placing a kitchen on the south side of the house is sure to lead to overheating of the space during cooking. Similarly, living rooms facing north tend to be colder than necessary. When designing houses, try to adhere to the following design principles with respect to the location of the rooms within:

a) Place the rooms that will be used during the morning on the east side to take advantage of the heat and light of the rising sun. This could include bedrooms and breakfast spaces.

b) Place the rooms that will be used during the day on the south side. This might include day rooms, living rooms and dining rooms; that is those spaces that the family spends the most time in. Make sure that these rooms have large windows, and that those windows can be opened to provide fresh air. Provide blinds and shades to block out the strongest sun, or exterior sun shading devices to reduce the strong summer sun, but let in the much needed winter sun. Place the rooms that you will use in the evening (such as bedrooms and the living room) on the western side of the house, where the sun sets. The setting sun's rays will preheat those rooms to help reduce energy consumption and provide daylight where it is most needed.

c) Rooms such as kitchens, bathrooms, garages and storage rooms should be located on the north side of the house whenever possible. Cooking creates a lot of its own heat, so kitchens do not need to be placed on the hotter sun-exposed sides of the house. To ensure there is enough light in the kitchen, provide an opening to adjoining rooms such as the living room or the dining room[55].

Adhering to these design principles will make a house more comfortable for all the occupants and should translate into energy savings as well by preventing heating and cooling conflicts. For example, someone experiencing overheating in a kitchen in the winter might open a window to cool the space, not realizing that they will cool most of the lower level of the whole house before they experience any relief. Residents in other parts of the house will eventually feel cold and turn up the thermostat to compensate for the cold draft.

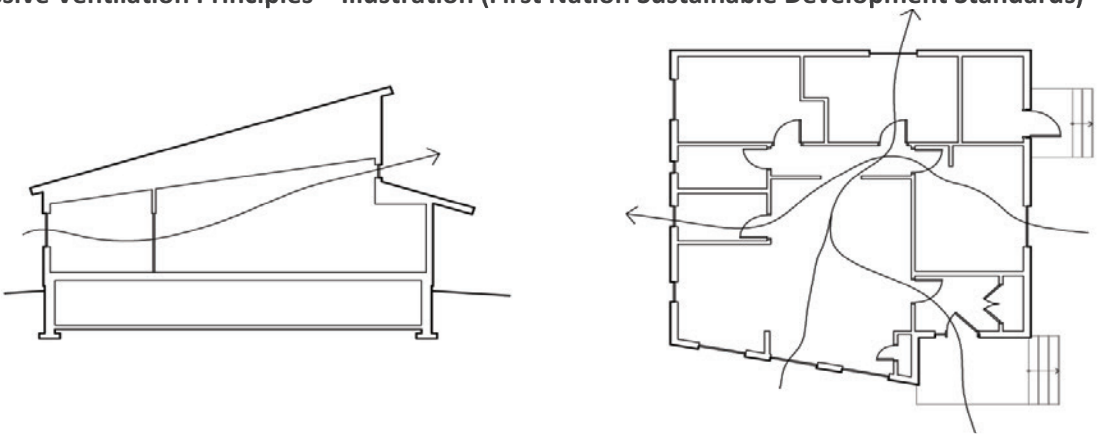
Passive Ventilation Principles

Countries with extreme heat climates have employed various passive cooling techniques for centuries, including stack ventilation, Bernoulli's principle and cross-ventilation. These techniques all aim to provide fresh, cooler air during the hot season. Stack ventilation is based on the concept that hot air rises since it is at a lower pressure than cold air. Also known as the chimney affect, it causes the smoke in a fireplace to rise while drawings colder air at the base. For a house design, providing operable windows at both a low and a high level, preferably in a cathedral ceiling or the second story of a two story volume, helps to bring in fresh cool air while exhausting warm stale air. Bernoulli's principle is based on the concept that air at a higher elevation moves faster than air at a lower elevation. So similar to the stack ventilation, having an opening high in a space and exposed to wind will draw air out of the space, which it then replaces with cooler air. The difference between Stack ventilation and Bernoulli's principle is that the stack ventilation

[55] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 511

works without wind, while Bernoulli's principle needs wind to function. Cross ventilation occurs when there are two openings on opposite sides of a room. To take advantage of the two prior principles, ensure that one of those openings is at a low level and one at a high level[56].

Passive Ventilation Principles – Illustration (First Nation Sustainable Development Standards)



The Garden River First Nation Housing Department recommends that homeowners make use of design strategies that allow new housing to be responsive to the climate and environment, such as air-lock vestibules, large roof overhangs to protect the building and occupants, sun shading devices and energy saving devices and design principles.

Preventing Air Leakage

Reducing air leakage from a house reduces costly energy consumption during both the heating and cooling seasons. Ensuring that you have a properly sealed vapour barrier and good quality windows and doors will reduce a substantial amount of air leakage. Ventilation ductwork and piping should also be properly sealed, especially where supply and exhaust outlets penetrate building assemblies. Poorly sealed attic hatches are another potential source of major air leakage. Providing a proper compressible gasket (weather stripping) and a mechanical latch will help to eliminate air leaks at attic hatches. Improperly installed or missing gaskets at sill plates on foundation walls are another source of air leakage that can be eliminated with good construction practices. Finally, unused fireplaces and wood stoves with poorly sealed dampers can also allow warm air to escape to the exterior. Finding a source of air leaks is a simple as lighting a candle and placing it next to potential sources and watching to see if the flame moves rapidly or is extinguished. First Nation communities should dedicate ample time to discuss air leakage at home maintenance workshops. Figure 93 illustrates sources of air leakage in a house[57].

Increased Insulation

One easy way to reduce energy use and heat gain or heat loss in a house is to simply increase the amount of insulation in the walls and ceiling of the house by 25% above building code regulations. This will create a more comfortable indoor environment, save energy and increase the lifespan of heating and ventilation equipment. During the heating season, a typical house loses heat when it is deliberately exhausted by bathroom fans, kitchen exhaust hoods and clothes dryers. Heat is also lost when air escapes through open doors and windows, through furnaces, water heater and fireplace. Increasing ceiling insulation will also result in lower cooling costs because solar

[56] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 512
[57] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 523

heat gain from the hot summer sun will be minimized. Recent changes to the energy efficiency guidelines of the National Building Code have increased the minimum insulation values in walls and ceilings, values that had remained unchanged for over 20 years[58].

A WORD ABOUT HEALTHY HOMES

Just as there are good basic house design principles, there are also good basic healthy housing principles. Some of these principles include designing houses and building envelopes that reduce or eliminate the potential for mold growth, that provide fresh air on a regular basis, that provide the appropriate comfort and safety level for their various occupants, that provide safety from occupant falls, that keep chemicals and weapons out of the reach of children, and that provide adequate space for its' occupants[59].

Controlling Humidity in a House

Controlling humidity in new houses requires both the addition and subtraction of humidity, depending on the season. Too much or too little humidity encourages the growth or spread of bacteria and viruses, while too much humidity allows mold and dust mites to propagate. The ideal indoor humidity range in a house is between 40% and 60% to reduce the growth of dangerous micro-organisms[60]. The following information is borrowed from the First Nation Sustainable Development Standards.

Humidity control in a house is often an afterthought, addressed only when symptoms of high or low humidity manifest themselves. Dry air can lead to the following problems:

1. Dry air can cause or aggravate respiratory problems like asthma, bronchitis and sinusitis,
2. Dry air can also cause other medical problems like nosebleeds and sore throats,
3. Dry air accelerates the body's dehydration and can cause skin irritations and eye itching,
4. Static electricity is more prevalent in dry air, and
5. Dry air feels colder than humid air, therefore the occupants tend to raise the temperature of the thermostat because they feel cold.

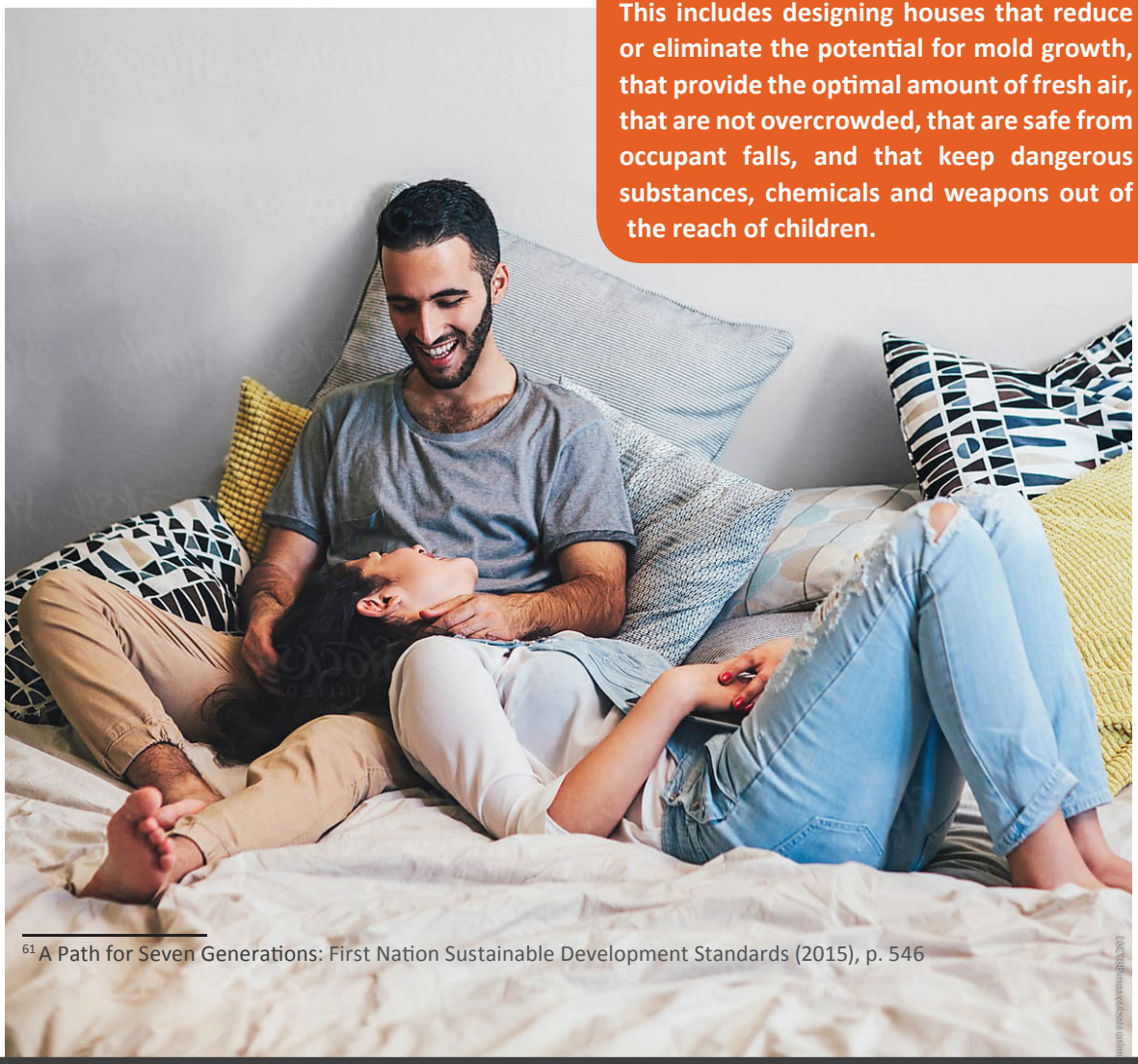
On the reverse side, humid air can also be detrimental to the occupants of the house and the house itself. Humid air can lead to the following problems:

1. Excess humidity (combined with poor quality glazing) can cause 'sweating' or condensation on the windows, especially in winter. This sweating may rot wood, damage other finishes and encourage mold growth,
2. Humid air can lead to wet finishes which encourage the growth of dust mites and mold, some of which are toxic if breathed in by humans,
3. High humidity in the summer can exacerbate heat stress, which can be dangerous for ill Elders, and
4. High humidity can also ruin books, clothing, leather and carpeting and can cause woodwork to swell and doors to bind.

[58] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 523
[59] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 543
[60] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 546

In the summer, humidity levels are often too high simply because the outdoor air temperature is also very humid. Excess summer humidity is easily controlled by air-conditioning, but is less controllable by ventilation because outdoor air often contains more humidity than indoor air. In those cases, ceiling or floor mounted fans can provide relief because it dries some of the moisture that accumulates on our skin. In the winter, cold dry outside air is introduced into a house by opening and closing doors and windows, by exhaust fans and by mechanical ventilations systems. In some cases, the indoor air becomes too dry and must be humidified. The easier way to achieve this is to install a humidifier and ensure that Occupants refill the water storage daily[61].

Most high humidity problems can be addressed by ventilation and dehumidification, but dry air requires more active means. If your house is heated by a central furnace system, a humidifier can be added to the air circulation system. Alternatively, a tabletop or floor space humidifier can be placed in each room where occupants need it most, usually the bedroom and the living room. Note that depending on the size of the reservoir, water must be added once or twice a day and these types of humidifiers do require regular cleaning.



TIP!

The Garden River First Nation Housing Department recommends that homeowners consider good basic healthy housing principles in the design of their new houses and the renovation of their existing ones. This includes designing houses that reduce or eliminate the potential for mold growth, that provide the optimal amount of fresh air, that are not overcrowded, that are safe from occupant falls, and that keep dangerous substances, chemicals and weapons out of the reach of children.

[61] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 546

CHAPTER 11:
PLANNING THE HOME'S INTERIOR DESIGN

One of the most exciting stages of the new home construction process is being able to select and design all of the products, colours and furnishings that will go into each room. This may include flooring, cabinets, countertops, appliances, lighting fixtures, millwork and trim, plumbing products and more.

During the beginning research and planning phase, it is advised to make a list of all of the products and appliances needed, including the cost and pros and cons of each. Read reviews and customer reports, and shop for the best prices before committing to a certain brand or model.

THE FEELING OF A SPACE

Some homeowners may choose to take on the design of their home on their own, while others hire an interior designer to help. In either case, it is important for the homeowner to have a firm grasp on the vision for their home. Start by thinking about how each room should *feel*. Comfortable in the living room; relaxed in the bedroom; energized in the kitchen, for example. Understanding how each room should feel will help in gathering inspiration pictures as you hone the types of furniture, fixings and appliances to be had in each space[62].

Next, gather pictures to create a vision board, outlining the types of colours and textures highlighted in each room. It can be a great help to build a room around a certain object or piece of furniture. Pick textures and fabrics that bring out the atmosphere envisioned; if the living room is intended to feel cozy and lived in, opt for soft fabrics, warm colours and lamps for gentle lighting.

PLAYING WITH COLOUR

Playing with colour is an effective way of achieving a specific mood in the environment. Pairing neutral colours (like white, beige, grey and brown) evoke a feeling of simplicity, minimalism and clarity. Warm colours like yellow, red and orange feel more personal and project a cozy energy, while cool colours (like blue and green) add a sense of calmness to a room. Alternatively, keeping a room's wall colour neutral and flexible, while bringing more colour into the pillows, blankets, and accessories of a room is another method to energizing a space[63].

[62] https://www.article.com/blog/choosing-furniture-for-your-home/, accessed July 2019
[63] https://www.article.com/blog/choosing-furniture-for-your-home/, accessed July 2019

CATEGORIZED DESIGN THEMES

Understanding themes helps to pick pieces that 'match' each room. General interior design themes can be divided into various categories: modern/contemporary, casual, traditional, casual and Old World[64]:

- Modern and contemporary furniture has sleek, clean lines and usually makes use of white, beige, or other neutral colors
  - Glass, metal, and shiny black lacquer are used more often than traditional woods
- Traditional furniture is elegant
  - It tends to look a little more formal and may include details like rolled arms and skirted bottoms
  - Colors range from ivory to rich hues of red and other colors
- Casual furniture is friendly and cozy
  - Many pieces make use of plaid, small prints, and other patterns
- Old World furniture combines styles from French, Spanish, and Italian designs
  - Rustic, antique pieces are especially appropriate, and you should look for deep, earthy colors

LAYOUT

Before purchasing the furniture and appliances decided upon, make sure to measure the length, width and height of each room. Make sure to account for the dimensions of any alcoves (like open doors, windows or closets) as well. Develop a floor plan of how the room is envisioned looking from a bird's eye view. Think about the layout of a room when deciding where to place furniture. Is the intention to have the room be a communal space (like a kitchen or dining room), or more of a private area (like an office or den)? If the homeowner has a young family, they may need to opt for sturdier, stain-resistant furniture. If the guest room is being designed, one could opt for more delicate fabrics and art-like pieces. Understanding how the room will be used will help to determine the position of the furniture, the lighting and seating options.

[64] https://m.wikihow.com/Choose-Living-Room-Furniture, accessed July 2019

CHAPTER 12: INSPECTIONS

WHY ARE INSPECTIONS IMPORTANT?

Inspections are a crucial element in establishing the safety, quality and project progress of a home build. When completing a home build project, the homeowner can rely on inspections throughout their home building process to identify deficiencies, ensure safety and quality of the build, and keep up-to-date with progress. Inspections are a valuable tool to ensure that contractors deliver the promised work and enable the continued flow of project dollars. Inspections help to identify common issues such as: structural defects (like foundation cracks or improper grading), drainage issues, window leaks, electrical problems, HVAC and plumbing issues, etc. Inspectors will visit the site multiple times throughout a homebuilding process. **In Garden River First Nation, inspections adhere to a set of objectives, which include:**

- To protect the health, safety and social wellbeing of community members
- To ensure the quality of construction renovation
- To extend the life expectancy of the home
- To provide the homeowner with information and service necessary for the maintenance of their home
- To provide employment for First Nation inspectors

Where housing is built by the owners, the homeowners will work with the Garden River First Nation Housing Department to facilitate inspections completed by the Construction Maintenance Coordinator or contract private inspectors on a fee-for-service basis. Particularly in areas where CP's are used for land tenure, the homeowner assumes considerable responsibility for the quality of the home.

The quality of construction is often tied to the payment schedule, and as a general recommendation, it is considered best practice to have an inspector approve the contractor's billing[65]. This safeguard ensures that the quality is built into the construction.

[65] First Nations Management (1994). Assessment of the Requirements to Establish First Nations Building Inspection Units.

TYPES AND SCHEDULE OF INSPECTIONS

Inspections occur throughout the entire building process, from when the project commences to the final walk through. The main types of inspections can be categorized into site inspections, structural inspections, plumbing & electrical inspections, and mechanical inspections. Below is a chart outlining the inspections most typically required for a new home build, in the order in which they will most often occur. Additional inspections may also be required depending on the scope of work. It is recommended to consult with the inspector or the Garden River First Nation Housing Department for further information.

	Required Building Inspections	When to Call for Inspection
1	Site Inspection	Before work commences, site inspection evaluates the site before ground is broken
2	Footings	At completion of formwork and prior to pouring concrete
3	Foundation	At completion of footings and foundations and prior to backfill
4	Plumbing Inspection	At completion of underground rough-in plumbing & septic; pressure test completed
5	Structural Framing	At completion and prior to insulating
6	Electrical, Plumbing & HVAC Inspection	At completion of electrical, plumbing and HVAC installation
7	Insulation and Vapour Barrier	At completion and prior to drywall
8	Fire Inspection	At completion of all required fire separations and closures and prior to drywall
9	Drywall & Painting Inspection	At completion of interior drywall installation and painting
10	Final Exterior	At completion of all exterior construction associated with the issued permit (siding, soffit & fascia)
11	Final Interior	At completion of all interior construction associated with the issued permit (bathroom & kitchen installation, flooring, millwork, etc.)
12	Hydro, Power & Water	At completion of all amenities hookup
13	Final Inspection	A Building Code official completes a final inspection and issues a certificate of occupancy. If any defects are found during this inspection, a follow-up inspection may be scheduled to ensure that they have been corrected
14	Occupancy	Prior to occupancy, only applicable to new houses

In order to ensure that a project is built correctly and is following standards and specifications, thorough reviews conducted by a qualified Building Inspector should be completed at clearly identified milestones. Those regular reviews should be supplemented by reviews by the prime design Consultant (if applicable) who would inspect the project for conformance to the construction documents as well as the quality of the work.

PROPOSED DUTIES OF A BUILDING INSPECTOR

The following information is borrowed directly from the First Nation Sustainable Development Standards, p. 936.

Prior to construction start:

a) Obtain copies of the contraction documents (specifications, drawings, geotechnical report and addenda) submitted for the building permit,

b) Obtain copies of any additional specific First Nation Standards and Codes,

c) Review the documents and become thoroughly familiar and understand them,

d) Become familiar with the general and special (or supplementary) conditions of the construction contract; as well as rights, responsibilities and relationships of all parties involved,

e) Attend the pre-construction meeting. Be aware of the status of documents to be processed prior to the start of construction, including but not limited to those items identified in the minutes of the meeting.

During construction:

f) Assist with the layout for the construction project. Review layout prior to construction to determine potential conflicts,

g) Be on the project site to inspect, observe, and record construction progress. This may require extended working hours or multiple day visits in order to inspect Contractors effort to complete a particular phase of construction, especially in remote communities,

h) Maintain open communication with all parties involved on the project,

i) The Building Inspector shall conduct him/herself in a professional manner at all times and properly present him/herself on behalf of the First Nation to everyone involved in the project

j) The Building Inspector must keep in mind that he/she represent the First Nation and that he/she must be courteous at all times regardless of the circumstances. Any queries or concerns from the public or neighbours must be investigated promptly and recorded in the project inspection binder,

k) Attend site meetings as required by either the First Nation or the Contractor, and obtain a copy of minutes of those meetings and review same,

l) Ensure there are no deviations between construction and contract documents. Major additions or deletions from contract must be approved by the First Nation's Contract Administrator,

m) Look ahead for possible construction problems and forward concerns and possible solutions to the First Nation's Contract Administrator,

n) If it becomes necessary for the Building Inspector to provide advisement to the Contractor,

it is to be done in the best interest of the First Nation and the Owner. This shall include notifying of the following:

i) Non-compliance of contract and standard First Nation requirements and practices prior to Contractor's progress from that stage of work,

ii) proficient methods to accomplish phases of tasks, resulting in strict adherence to project requirements,

iii) approved amendments, additions and deletions to the contract.

o) Bring to the Contractor's attention any obvious safety infractions and note same in the inspection diary. In the event corrections are not made to the infractions, the Building Inspector is to notify the First Nation's Contract Administrator who may follow up with the Ministry of Labour as required,

p) Be aware of the Contractor's safety arrangements to allow for proper inspection. For example: traffic control, trench shoring and egress, confined space safety requirements, fall arrest procedures, etc.,

q) Be attired and equipped in a professional manner in accordance with the Occupational Health and Safety Act for the field conditions which may be encountered under any given situation. Be conscientious of your own safety,

r) Do not participate in the actual construction activities of the Contractor. The Building Inspector may advise the Contractor of his/her opinion on how to perform a task but not actually perform it or direct contractor of same,

s) The First Nation's Contract Administrator shall be notified should the Building Inspector feel it is necessary to issue a stop work order,

Additional Duties:

t) Examine, quantify, and record relevant material and equipment brought to the site to determine its conformance with the shop drawings and contract documents,

u) Accurately and neatly complete and/or maintain reports, summary sheets, change orders, correspondence, photographs, samples, etc., and any other project related forms from time to time as required. First Nation standard forms are to be used, as applicable, and all are to be submitted to the First Nation's Contract Administrator in a timely manner for the purpose of appropriate action and/or information record keeping,

v) Update construction progress on the construction schedule and notify the First Nation's Contract Administrator of impending time related problems,

w) Prepare progress quantities for payment purposes at the interval set at the pre-construction meeting and submit to the First Nation's Contract Administrator for processing at the end of each month of work,

x) Provide the First Nation's Contract Administrator with a deficiency list related to the construction project prior to the contractor leaving a site and again prior to the release of the holdback.

INSPECTIONS CHECKLISTS AND REPORTS

Inspection checklists are critical in construction projects, especially those that are more isolated and difficult to access, and which are visited on an irregular basis. Without a good inspection checklist, Building Inspectors may forget what they have or have not inspected, often months prior to their next visit.

Building Inspectors should make use of a detailed inspection checklist and inspection reports to document all construction reviews. Using inspection checklists ensures that no construction stage is left un-inspected and records that it was reviewed. Construction reports are used to record who was in attendance at the time of review, record weather conditions at the time of inspections (important for weather sensitive construction materials and systems), record construction progress (for contractor invoicing review purposes), and to record construction deficiencies and any completed repairs. Inspection and construction reports should be kept on file at the Inspector's office, and a copy should be provided to the owner (and First Nation government if the inspector is a third party) of the project.

Inspection Report Template - Sample

DAILY CONSTRUCTION INSPECTION REPORT			
Contractor;		Equipment:	Labour:
Work Order #;			
Inspector;			
Certification #;			
Working Day No.;			
Date;			
Temperature;			
Weather;			
Working Hours;			
Project Name;			
WORK PROGRESS AND REMARKS			
Inspector Print Name		Signature	
Supervisor Print Name		Signature	

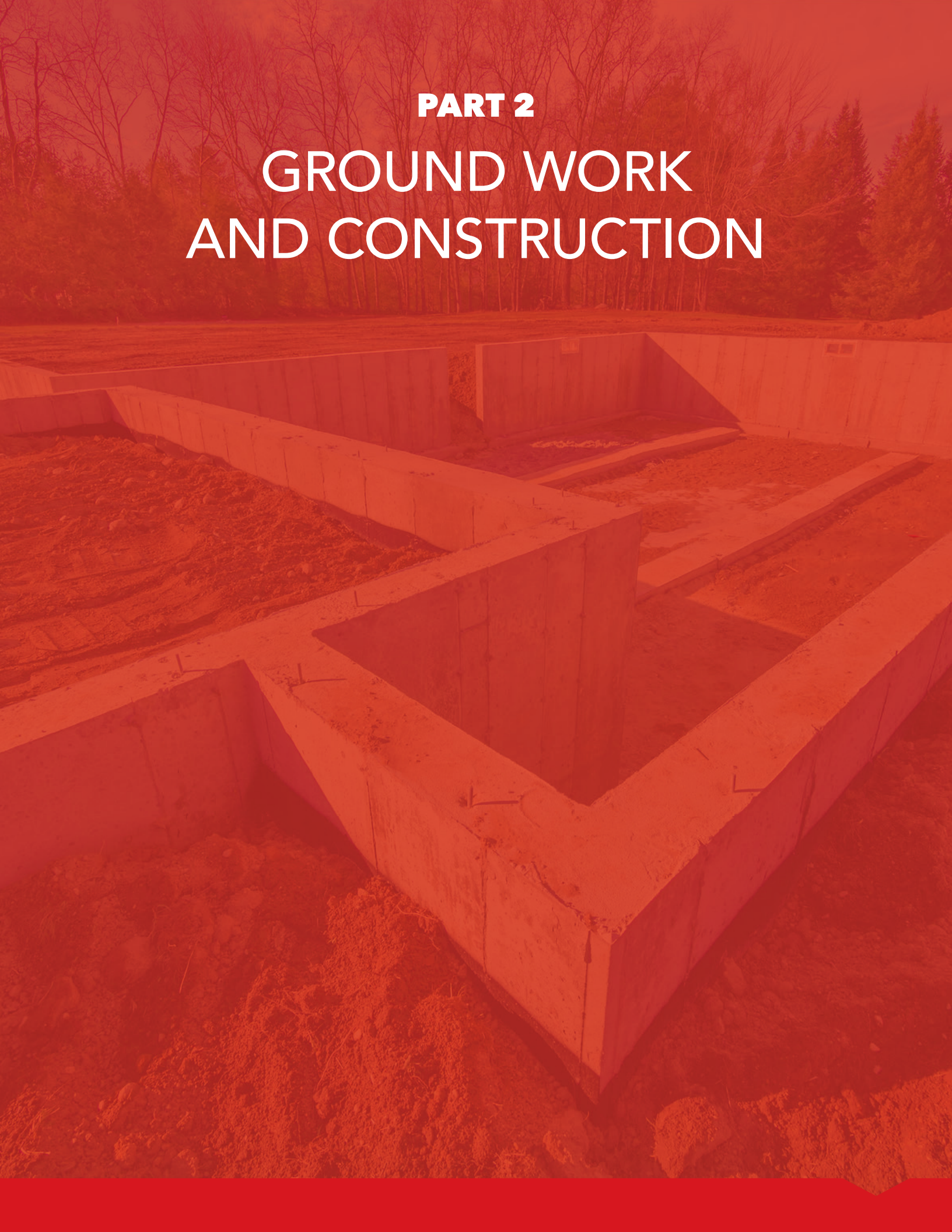
CHAPTER 13: INSURANCE

There are many risks associated with construction projects, from natural disasters like fire and wind storms to vandalism, arson and theft. The homeowner holds the responsibility to protect their home during construction with the right types of insurance coverages. Outlined here are the various types of insurance and why it may be required:

- Public Liability Insurance is a common type of insurance that protects against liabilities for injury to third-parties or the home during construction
- Contractor's all-risk coverage, also known as Builder's Coverage or Construction Insurance, is the insurance that protects the building during its construction. It helps to protect against the damages and losses that may occur
- Structural Warranty provides homeowners with ten years of protection from latent defects to the structure of their home. These are defects that occur during the build period but are not discovered until after completion. Structural warranties are usually bought by the builder or developer, but the warranty itself will provide cover for the person who purchases the completed building[66]

Set up a meeting with your contractor, inspector and the Garden River First Nation Housing Department to discuss the insurance types that will be required for your home build.

[66] https://www.labcwarranty.co.uk/blog/a-quick-guide-to-construction-insurance/, accessed May 2019.



PART 2

GROUND WORK AND CONSTRUCTION

In general, there are 20 steps included in building a home on-reserve once the financial, planning and permitting stages are complete. To summarize them in brief, the 20 steps to build a new home on Garden River First Nation soil include:

1	Site Inspection
2	Excavation & Inspection
3	Footings & Inspection
4	Walls, Foundation & Well
5	Foundation Inspection
6	Framing, Sheathing, Eavesdrops, Subfloor & Inspection
7	Plumbing & Inspection (Pressure Test)
8	Electrical, HVAC Rough-Ins & Inspection
9	First Official Walk-Through
10	Insulation, Vapor Barrier & Inspection
11	Roofing, Windows & Doors
12	Exterior Finishing & Inspection
13	Drywall, Painting & Inspection
14	Bathroom & Kitchen Installation, Flooring, Millwork & Inspection
15	Final Inspection
16	Interior Design & Finishing
17	Hydro, Power & Water Hook Up
18	Final Walk Through
19	Move In
20	Warrantee Inspection

As a general rule of thumb, for both safety as well as logistical reasons, builders discourage homeowners from dropping in unannounced at the construction site. If the homeowner would like to pay a visit, it is advised by the Garden River First Nation Housing Department to arrange it in advance. Chances are the builder will conduct regular walkthroughs to bring the homeowner up to speed on the progress of the work.

Some general notes about safety during construction and recommendations from the Garden River First Nation Housing Department:

- It is important to keep neighbours informed of your building plans at all times
- The construction site must be kept safe for everyone entering the premise
- Protect neighbours' property, trees and plants
- Ensure that construction operations and trucks are kept away from nearby landscaping and put protective boarding or fencing around objects that require it
- Enclose the site with protective fencing to restrict access
- Do not leave building materials, equipment or vehicles unattended
- Do not burn construction waste
- Do not litter your neighbours' with waste, debris or leftover materials
- Insist that everyone on the premise wear proper safety equipment, such as approved hard hats and protective work boots

CHAPTER 1:
SITE INSPECTION - SOIL INVESTIGATION AND DETERMINING GROUND WATER ELEVATION

A home inspection can provide valuable insights into their property's construction, as well as the chance to prevent costly repairs on the home down the line. Inspections can help ensure that the homeowner receives a safe and hazard-free property, that a good investment is made, and that the homeowner will not have many repairs to make before or directly after move-in.

To navigate this from the beginning, the site inspection occurs as the earliest step in the home building process. An inspector will visit the property will review the site grade, complete a soil investigation and determine the ground water elevation. This includes locating test pits for water table verification. The inspector will evaluate the drain, waste and vent lines, water lines, trenches and soil, elevation, drainage and grading. The inspector will verify that there is adequate space on the lot for the house and septic system[67].

PROJECT LAYOUT – INSPECTOR'S DUTIES

A Building Inspector should assist with or verify the Contractor's initial layout of the project. This is more critical in communities where the lots are limited in size such that there is a potential for conflict with the location of several built features such as septic beds, wells, driveways, the house and the garage, if any. Participating in the layout of the house on the lot is also extremely important when it comes to establishing the appropriate grades around the house and the ground floor elevation, both of which reduce the risk of rain water negatively impacting the building[68].

[67] North Shore Tribal Council 'Section 95' Inspection Services & Requirements
[68] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 2:
EXCAVATION AND INSPECTION

Following the initial site inspection and prior to excavating the ground, it is essential to clear the building site. The inspector and build team will know which organics to remove prior to engaging in excavation through completing an evaluation of the land, soil and organics. This evaluation will ensure that it is safe to remove any unwanted trees, shrubs, tree stumps and all vegetation from site to at least one foot below grade. Rocks must be dug up and removed from the site. Remember that rocks could be used at that stages in the home build for landscaping. It is advised not to bury any trees, branches or debris near the home, as they will rot overtime, leaving sink holes throughout the property.

Next, the builder will stake out and survey the home site and the Garden River First Nation Lands and Resource Department will be included at the phase. In this stage, it is recommended to keep the direction of water flow in mind at all times at the excavation site. This will aid the homeowner and builder to understand where the water (from heavy rain and melting snow) will flow from and run off to. Staking out the site means laying out the building site by marking the outline of the house in the exact dimensions. To ensure accuracy, measure the exact length and width of the perimeter.

Once complete, review the building permits, signatory forms and plans. Ensure to check the location of all nearby buildings, driveways, drain fields and septic systems. At this time, it is recommended to add any additional pieces to the plan, including (but not limited to): patios, playgrounds, steps, walkways, landscaping, etc.

The site will now be prepared for excavation of the area within the markers that has been staked out. The excavator must dig down at least one foot to remove all vegetation to ensure proper drainage. If the builder chooses to place footers around the slab, the homeowner must plan to dig a trench the width of your forms, down to below the frost line.

Laying Materials for Slab Support and Drainage[69]:

- Once site has been excavated, lay material for slab support and drainage
- Begin by laying gravel down
  - If there is evidence of good drainage, then the area can be filled with enough gravel to raise the building site by one foot at the lowest point
  - If the drainage is poor or potential flooding has been identified, then add a layer of crushed rocks before the gravel
- Place drainage pipes on top of the rocks and fill again with another layer of crushed rocks
- Fill with gravel until the lowest corner of the building site is at least 12 inches above grade
- It is important to pack the gravel down as you work using a bulldozer
- After the building site has been leveled, the builder should backfill the area around the site to create a smooth slope
- Build a retaining wall with rocks uncovered during the excavation

EXCAVATION INSPECTION

A Building Inspector should inspect the excavation to ensure that excess material is properly stored on site (away from watercourses), that silt fencing is provided and maintained, that the founding soil for the house, garage and septic beds are adequate, and that the excavation walls themselves are not too steep and are shored if required, to prevent collapse of the excavation and potentially injuring a worker[70]. Excavation stock phots here

[69] http://dirtexcavating.ca/index.php/2017/05/01/understanding-excavation-building-new-house/, accessed May 2019

[70] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 3:
FOOTINGS AND INSPECTION

After the ground is excavated, forms will be built with framing lumber and the concrete will be poured into each section. Footings, structures where the house interfaces with the earth that supports it, are installed. A footings inspection, or 'pre-pour inspection' will now occur. This ensures that the site has been excavated and graded properly, that anchors and footing are adequately spaced and in place, and that the stage is set for a strong and long-lasting home. Some additional things that an inspector will look at in this phase includes: drain, waste and vent lines; water lines; plumbing and piping; trenches and soil; elevation, drainage and grading[71]. The building excavation must be complete and all footings and formwork for footings must be complete and provide an access for the inspector to the bottom of the excavation. No concrete is permitted to be placed until this inspection has been passed[72]. In the event the inspector finds issues at this stage, it allows the builder to make adjustments before pouring the foundation.

FOOTINGS INSPECTION

The footings of any structure are critical in ensuring a solid foundation and preventing damaging settlement which can allow water to enter into a house. The Building Inspector should inspect the founding spoil below the footings to ensure they are adequate for the loads intended and that all loose material has been removed. Random measurement checks should be completed to ensure that the footings are in the correct location and that they are the size required in the construction drawings. Prior to the concrete pour, the inspector should also review the forms for the footings and the placement of any required reinforcement bars. Finally, the size, location and depth of any building services that past below the footings should be reviewed to ensure they conform to the applicable regulations[73].

[71] https://www.thebalance.com/how-important-are-new-construction-home-inspections-4588387, accessed June 2019
[72] North Shore Tribal Council 'Section 95' Inspection Services & Requirements
[73] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 4:
WALLS, FOUNDATION AND WELL

The foundation of your home is a critical element in the building process because it is what holds the entire structure. It must be done correctly to prevent future problems that can affect the home's safety and efficiency[74]. At this point, the homeowner will need to decide what type of foundation they desire – basement, slab or crawlspace. If the home will have a basement, it will be dug at this point. Following this, the footings are formed and poured, and the foundation walls are formed and poured. If the builder is using slab-on-grade (a structural engineering practice where the concrete slab that is to serve as the foundation for the home is formed in a mold set into the ground and poured with concrete, leaving no space between the ground and the structure), the area between the footings are leveled and fitted with utility runs (e.g. plumbing drains and electrical chases. Once the concrete is poured into the holes and trenches, it will need time to settle and cure and there is no activity on the site for the time being[75].

Foundations are the only structural component that bears directly on soil – which means they are subject to unique loading and moisture conditions due to contact with the soil. All foundations systems support superimposed structural loads but only foundation systems that also act as the walls and floor of a basement need to keep water out. There are various types of foundation systems is use in Canada at this time, falling under three principle building materials: wood, stone and concrete. Each has its' own challenges with water infiltration being one of the biggest concerns (the damp-proofing and waterproofing of basements is described in the next topic). Below is a description of the three basic types of foundations systems in use in Canada today, as stated in the First Nation Sustainable Development Standards[76].

WOOD FOUNDATIONS

Wood foundations include preserved-wood foundations (PWFs) and treated wood piles. Treated wood piles are rarely used today, but were once popular, especially where the soil was known to be wet and soft. **Preserved-Wood Foundations (PWF)** have been in use in the northern prairies since the 1950's. PWFs are a foundation system constructed completely of pressure-treated lumber. The technology gained popularity in the 1980's and 1990's as a replacement for concrete foundations, especially where the soil conditions consisted of clay-type soils prone to frost heave and which were

[74] Builders Ontario (2017): 10 Steps to Building a New Home
[75] https://www.newhomesource.com/guide/articles/a-step-by-step-guide-to-the-home-building-process, accessed June 2019
[76] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 583

often wet. Preserved wood foundations are ideal for wet sites because they can flex if subject to frost heave. And as long as the water is allowed to drain away, mold and mildew will not form. The wood in preserved wood foundations does not rot because it has been pressure-treated with a wood preservative such as CCA (chromated-copper-arsenate) which includes arsenic and copper.

CONCRETE FOUNDATIONS

Concrete foundations are the most common foundation system in use today and are available in three forms: cast-in-place concrete, concrete blocks and Insulated Concrete Forms (ICFs). Concrete foundation system are considered sustainable if the material and additives used in their construction are local and contain recycled content. Concrete is normally made up of three materials: water, aggregate (sand and/or stone) and Portland cement. Portland cement is considered a non-sustainable material because it requires a lot of energy to manufacture130. Substituting non-cementitious materials for Portland cement helps made concrete a more sustainable product. The two most common supplementary cementitious materials (SCMs) are fly ash and slag. Fly ash is the by-product of burning coal in a coal-fired power plant while slag is the by-product of smeltering operations in the steel industry. Fly ash is normally used to replace between 10-30% of Portland cement and in some cases as much as 50%. Slag can be used to replace from 70% to 90% of Portland cement in a concrete mix. If concrete is used in a project it almost always uses local water and local gravel for the mix, but the use of slag or fly ash as a substitute for Portland Cement is rarer as those products are produced in a few locations across the country. Nevertheless, most First Nation communities import Portland cement into the community, so importing slag or fly ash instead may not be so out of reach.

Once the foundations have been poured and the concrete has set, the foundation walls need to be built. The foundation walls can be built of concrete blocks, insulated wall form systems, cast-in-place concrete, pressure-treated lumber, concrete piers and/or piles, and sometimes stone. The building inspector should be familiar with the foundation system employed and should be qualified to assess whether it has been properly built. For concrete work, reinforcing bars are often specified so they should also be reviewed prior to the concrete pour. Many systems also require substantial bracing, so it should also be examined to ensure it is sufficient[77].

[77] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

WATERPROOFING AND DAMP-PROOFING BASEMENTS

The purpose of waterproofing and damp-proofing is to ensure that basements are not subject to water infiltration from the surrounding soils. It is important that water does not enter into and collect in a basement as it can lead to problems with indoor air quality and mold growth. Basements generally have a reputation as sources of mold because water has been allowed to infiltrate the space and because ventilation is often inadequate to allow the moisture to dissipate and evaporate[78].

Damp-proofing or Waterproofing Inspection

Once the foundation is in place, a Damp-proofing or waterproofing system should be installed and inspected both before and after it has been applied. Prior to being applied, the substrate for the damp-proofing or waterproofing system should be examined to ensure all holes and cavities have been properly filled, or that the concrete is smooth and dry, or in the case of a preserved wood foundation, that the plywood is the right kind and that there are no nails or screws protruding though the plywood. All perimeter and below-slab weeping tiles should also be reviewed for proper drainage and protection, such as filter fabrics and filter socks. The inspector should also confirm that protection for the damp-proofing or waterproofing system (in the form of a drainage membrane or Styrofoam) has been provided before backfill begins. Finally, depending on the type of foundation system, the Inspector should ensure that the floor joists have been installed and secured to the top of the foundation wall, or appropriate bracing is in place prior to the backfill of the foundation walls. Only clean granular material should be used as a backfill material unless otherwise specified in the construction drawings[79].

The superstructure of a building can vary from wood or light gauge steel framing, to ICFs, SIPs, brick or stone masonry. The Building Inspector should be qualified to inspect the structural system used, and should examine it to ensure that the right joists, trusses, beams and lintels have been installed, and that they are properly supported by load bearing walls and columns. Where required, blocking, bracing and strapping should be installed and their size and spans verified. Diagonal bracing in the form of wood braces, steel plates or exterior sheeting should also be inspected closely to ensure it is tight fitting and fastened correctly[80].

[78] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 586
[79] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940
[80] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 5:
FOUNDATION INSPECTION

The foundation inspection is integral before moving into other aspects of the home build. The procedure is performed by an inspector, where they look for foundation cracks, damaged walls and floors and other alarming signs. The homeowner should expect an interview from the inspector or engineer completing the inspection to determine timelines of damage; a floor elevation survey; visual observations of the home's interior, exterior and surrounding terrain; forensic analysis to look for poor grading or active soils that have dried; as well as conclusions and recommendations. Once the foundation inspection has been completed, the homeowner and building team are ready to engage in the subsequent steps of building the home.

CHAPTER 6:
FRAMING, SHEATHING, EAVESDROPS, SUBFLOOR AND INSPECTION

After the foundation has set (a process which takes approximately one week), the form boards are removed and the framing of the home begins. The floor systems, walls and roof systems (known as the shell of the house) are now installed. Begin with the first floor, then move to the second. Plywood (or a similar material) is applied to the exterior walls, roof and windows and the exterior doors are installed. House wrap (a protective barrier) covers the sheathing, preventing water from infiltrating the home, while allowing water vapour to escape. This greatly reduces the likelihood of mould occurrences during the building process[81]. While the framing for the front wall is still in progress, deliver the floor trusses. An open truss floor could be an option for the builder, because it creates a stiffer floor and allows for the rotation of plumbing and ventilation ducts without having to build bulkheads into the ceiling. The floor trusses always need to be supported by something and the builder may use a crane at this time. After the beams are installed, proceed with the installation of the floor trusses and finish the rim boards. Following the rim boards, the sub floor installation can begin[82]. Framing the second floor commences once the first floor is complete.

[81] https://www.newhomesource.com/guide/articles/a-step-by-step-guide-to-the-home-building-process, accessed May 2019

[82] https://www.newhomesource.com/guide/articles/a-step-by-step-guide-to-the-home-building-process, accessed May 2019

STRUCTURAL SYSTEMS

There are more than a dozen types of structural framing systems in use in Canada today, including contemporary building materials such as clay bricks, concrete blocks, light-gauge or structural steel framing, SIPs (Structural Insulated Panels), ICFs as well as the more traditional round and manufactured log houses and heavy timber frames, to the more organic straw bale, sod, rammed earth and stone wall houses. But light wood frame construction is the most commonly used and accounts for more than 90% of houses built in First Nation communities[83].

HEAVY TIMBER CONSTRUCTION

Heavy timber construction is one of the most dramatic architectural style that is typical in forested environments, primarily because the construction material can be sourced locally. The space between the timber columns of a timber framed house is usually filled with insulated light wood framing or Structurally Insulated Panels (SIPs). Both of those systems can be easily designed to meet the R-value required under energy efficiency regulations. While timber framing is generally used for aesthetic considerations it does have a few advantages over other construction methods. Timber frames are rapidly erected if prefabricated. The technology lends itself well to large open plan designs, modular construction and mass-production. The timbers themselves can be customized to include wood carvings and the timber frames can easily incorporate heirloom structural members from barns or other historic dwellings[84].

[83] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 590
[84] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 591

SHEATHING

The purpose of Panel-Type Sheathing is to provide a continuous surface or 'sheath' on the exterior faces of a building, both walls and roofs. The sheathing acts as diaphragm for the structural system thereby providing lateral support. If of the right thickness and strength, the sheathing can also be used to fasten exterior finishes. When it comes to roof, wall and floor sheathing the choices are numerous. Which material to use is often dictated by regional differences in construction methods and is subject to three major factors: strength, resistance to moisture, cost and availability[85].

For **roof sheathing** there are also only three recommended choices. OSB and plywood are typically used, with the latter used when extra strength is required. Lumber boards, once common are now the exception. Because of the extreme of temperatures and moisture content in roofs, ventilation is required to prevent moisture from accumulating. Unventilated attics can trap moisture in the roof space which will then be absorbed by panel-type roof sheathings. This might cause them to expand to the point of buckling, can encourage mold growth and can cause ice damming at the eaves[86].

AIR BARRIERS

Air barriers are a building's first line of defense from moisture infiltration and are designed and constructed to provide the principal plane of airtightness through the environmental separator. Air-barriers prevent exterior air and moisture from penetrating into wall assemblies by the force of wind or by differential pressure. Air barriers are designed to prevent water drops from passing through them while allowing water vapour trapped inside the wall to pass to the exterior. If moisture laden air were to enter the assembly, it would reduce the insulation value of the wall assembly and the moisture would encourage mold growth[87].

Always provide an approved air-barrier on the exterior side of your building sheathing, and ensure that it is properly fastened and sealed as recommended by the manufacturer.

[85] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 599
[86] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 599
[87] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 599

CHAPTER 7:
PLUMBING (UNDERGROUND ROUGH-IN) AND PLUMBING INSPECTION

Once the skeleton or 'shell' of the home is completed, the electricians and plumbers can begin running piping and wires through the interior walls, ceilings and floors. Additional items installed include: sewer lines and vents, water supply lines, bath tubs and shower units (at this time there is more space to guide large and heavy objects), ductwork for the Heating, Ventilation and Air Conditioning (HVAC) system and the HVAC vent pipes.

The Canadian Plumbing Code is prepared by the Advisory Committee on the National Building Code (ACNBC) and relates to the design, construction, extension, alternation, renewal or repair of plumbing systems[88]. The design and installation of water and waste disposal systems are regulated by the Garden River First Nation Housing Department. In Garden River, the layout and installation of these systems is directly aligned with the requirements of the National Building Code.

CHAPTER 8:
ELECTRICAL, HVAC ROUGH INS AND INSPECTION

The following information is echoed in the First Nation Sustainable Development Standards:

Plumbing and mechanical systems are inspected for compliance with building codes. These will likely be three different inspections. Electrical inspections are delivered by provincial power authorities and water/plumbing inspections are provided by either the North Shore Tribal Council's inspectors, Health Canada or provincial authorities. Environmental inspections are available through Health Canada.

While structural systems such as foundations, beams, joists and columns are designed for their intended loads, they are not generally designed for future additional loads that can occur in overcrowding situations or as a result of the construction of a second story. A house's heating and ventilation equipment should be sized to accommodate the ventilation needs of additional occupants. Similarly, waste water systems should be designed to service a larger occupant load than normal as a result of the potential for overcrowding[89].

[88] CMHC (1992) Guide and Technical Requirements for CMHC's Healthy Housing Design Competition.
[89] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 567

HVAC SYSTEMS

No matter what sustainable design features and construction materials are selected, energy conservation can and should be addressed through the selection and use of building services equipment. The selection of heating, cooling and air-handling equipment as well as the selection of a fuel type (if possible) and its' associated fuel-burning appliance, the quality of that appliance, the type of ventilation equipment and associated filters needed, and the type of humidity control all have an impact on the energy conservation in a house. These choices are complex because their synergies affect other aspects of the design. As well, it has been estimated that more than half of the energy used in a house is wasted by old appliances, leaky building assemblies and windows, and plugged in electronics not in use. There are proven and cost effective ways to conserve energy that are rarely used because of their initial costs[90].

HEATING

There are a number of factors that affect the selection of a heating system for a house. A heating system includes the heating fuel, as well as the method that the fuel is turned into heat – typically a furnace. The selecting of the most suitable and energy-efficient heating system is governed by a number of factors for both the heating fuel and the appliance[91]. The selection of heating fuel is governed by:

a) The availability of a specific type of fuel,

b) The cost of the fuel (includes considerations for delivery costs), and

c) Does the fuel burn 'cleanly'.

The selection of a heating appliance is governed by:

d) The efficiency of the appliance, and

e) How 'cleanly' the appliance burns the fuel.

Selecting the most energy-efficient heating fuel is dependent on where you live and what sources of energy are available in your community. Natural gas is currently the most cost effective heating fuel in almost all of Canada, except in the province of Quebec, where electricity is subsidized to the extent that it is more economical to heat a house electrically than by any other fuel source. Which fuel source your community selects is also dependent on a number of other factors. In many First Nation communities there is only one source of fuel, usually electricity or diesel. In many cases homeowners add a secondary heating system

[90] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 641
[91] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 655

such as a wood furnace to supplement their heating. There are a number of heating systems that can be used to heat a home[92]. They include:

a) Natural Gas and Propane: furnaces and boilers

b) Oil: furnaces and boilers

c) Wood-burning: fireplaces, stoves, boilers, and furnaces

d) Electric: space heaters and furnaces

e) Geothermal: heating and cooling

f) Drip oil furnaces

g) Hybrid heating systems

h) Communal heating systems

BUILDING SERVICES INSPECTION

Building services such as electrical, plumbing, HVAC (heating, ventilation and air-conditioning), gas lines, wood stoves and other energy and plumbing systems are often inspected by specialized Building Inspectors or Engineers. It is worth the cost to have these systems reviewed to ensure they have been installed properly and safely. It is also often advantageous to have many of these systems balanced, commissioned and tested to ensure that they are performing as they were designed to perform. This additional review often uncovers small problems that can easily be rectified and that can save energy and reduce the risk of premature failure of the equipment[93].

[92] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 655
[93] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 9:
FIRST OFFICIAL WALK-THROUGH

Once the framing is complete and an inspector has reviewed the plumbing, electrical and framework (as well as any other required inspections) and the home has passed all inspections, the homeowners will be allowed to have their first official walkthrough (or "pre-drywall walkthrough")[94]. At this time, the homeowner will be able to see the layout of all of the rooms, staircases and placement of outlets.

During this walkthrough it is important to understand that as the homeowner, you can ensure that everything is exactly the way you want it before the insulation and mechanical installation is added. It is recommended to ask a lot of questions to your builder or project manager at this time.

Communication: Although this guidebook is a good tool to aid the homeowner in their home building journey, the homeowner is not expected to understand every aspect of the home building process, and therefore they should maintain a strong working relationship with their project manager to ensure their needs are being met.

CHAPTER 10:
INSULATION, VAPOR BARRIER AND INSPECTION

Insulation is one of the most important aspects of planning and building the home, as it keeps the home cool in the summer months and warm in the winter. Insulation plays a key role in creating a more comfortable, consistent indoor climate while significantly improving a home's energy efficiency[95]. Selecting the right kind of insulation for each key area of the home (attic, floors, walls, basement, etc.) will also save on yearly energy costs. One of the most important qualities of insulation is its thermal performance (or R-Value), which indicates how well the material resists heat transfer. Common types of insulation used in new home builds include: fibreglass, cellulose, foam mineral wool, concrete blocks, foam board or rigid foam, insulating concrete foam, spray foam, and structural insulated panels.

In areas where the insulation will be left exposed, such as basement walls, insulation will have a special flame-resistant facing. The builder and project manager will be able to advise the homeowner on which insulation is most appropriate in each situation.

[94] Builders Ontario (2017): 10 Steps to Building a New Home.
[95] https://www.newhomesource.com/guide/articles/a-step-by-step-guide-to-the-home-building-process, accessed May 2019

INSULATION

There are several types of insulation commonly used in Canada. Fibreglass batt insulation is the most commonly used insulation in walls cavities while loose cellulose insulation (made of paper material) is the preferred insulation for roofs. Most basement and slabs-on-grades are insulated with polystyrene insulation. Spray-in-place insulations such as open or closed cell polyurethane foams are rapidly gaining a larger market share, primarily because of their increase R-value per inch148, and their ability to fill all cracks and voids completely. Polyisocyanurate foams have an even greater insulation value than polyurethane, but can only be purchased in board form, not in a spray form. Mineral wool insulation is widely used in the commercial market primarily because of its ability to resist exposure to UV rays and rain for long periods of time, and because of its excellent fire resistance characteristics. New entrants on the market include natural or sustainable insulations like hemp insulation, cotton insulation, soy-based insulations and insulation fabricated from recycled materials. Note that the manufacturer's stated R-value for each of the above noted insulations can drop over time, more so in some insulation than others[96].

VAPOUR BARRIER

One of the first goals in reducing energy consumption in new housing is to prevent indoor air and heat from escaping to the exterior. This is best achieved by ensuring that buildings have a consistent vapour barrier whenever possible. Vapour barriers ensure that moisture laden air from inside the house does not enter wall and roof assemblies and encourage mold growth. Vapour barriers are defined by their permeability. Vapour barriers must be installed on the warm side of the building assembly. For most projects, it is evident that that is the inside of walls and ceilings, but in the case of a walk-in refrigerators, or in heated versus unheated attached garages, the correct location for the vapour barrier is more complex and should be confirmed by a building envelop specialist[97].

AIR BARRIERS, INSULATION AND VAPOUR BARRIERS FINISHES INSPECTION

One of the most important tasks of a Building Inspector is to ensure that the air-barriers, insulation and vapour barriers have been properly installed, in the right locations, of the right thickness and properly sealed, taped and caulked as required. Uncontrolled air infiltration and moisture migration in exterior building assemblies is one of the most common failures of buildings in Canada and often results in mold growth inside the home. Building Inspectors must ensure that they complete a throughout review of these membranes and sealers before they are covered up by finishes[98].

[96] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 612
[97] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 618
[98] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 11:
ROOFING, WINDOWS AND DOORS

The roofing system and windows and doors will be installed at this stage. This is an exciting phase because each room is now defined. After the air barrier is on and the roof is stripped, the builder will install the roofing. After the roofing goes on, the house is considered “dried in” and all receptacles are installed – outlets, wires, switches and lighting.

WINDOWS & DOORS

There is a wide range of quality and prices when it comes to exterior windows and glazed doors. And too often the buyer is ill-informed on the subtle differences between windows types and selects the most economical, rather than the best window. The quality of the glass, the hardware, the frame material and the weather-stripping all have a substantial impact on the cost, the durability and the energy efficiency of the windows[99].

Exterior door frames, like window frames, come is a variety of materials, and are usually selected to match the windows. The doors themselves are either solid or laminated wood, MDF, Fibreglass or pre-finished insulated metal, the latter being the most popular, affordable and durable. Where extremes of weather warrant, provide an air-lock vestibule at the main entrance to a house, and consider the use of a second ‘storm’ door, which if it includes a removable or operable glazing panel, can also function as a screen door in the summer[100].

[99] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 606
[100] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 606

CHAPTER 12:
EXTERIOR FINISHING AND INSPECTION (SIDING, SOFFIT AND FASCIA)

At this time in the process, the exterior is ready for finishing, as well as any additional features like porches, columns and railings. Options for exterior will be discussed with the builder, according to the homeowner's preferences, budget and needs. Exterior options include: stone, stucco, brick, vinyl siding, or polymer (cedar) shakes and shingles. At this time, the scaffolding can be installed as well.

There are dozens of exterior building finishes on the market today, each with its own advantages and disadvantages. Most First Nation houses built today are finished with vinyl siding since it is the most economical and durable (but not vandal resistant) exterior wall finish. The second most popular siding systems are aluminum, wood and fibre cement siding and backer boards like Hardie Board, depending on the region the house is located. Few First Nation houses are finished with more durable exterior finishes like stone, brick or metal[101].

Generally, exterior driveways, walkways and patios are formed at this stage. Many builders prefer to wait until the end of the project before pouring the driveway because the heavy equipment needed for deliveries could damage the concrete. However, some builders prefer to pour the concrete as soon as the foundation is complete, so that the homeowner and workers avoid getting their shoes muddy when visiting and working on the site.

FINISHES INSPECTION

When it comes to building finishes, a Building Inspector's role is generally limited to ensuring that the finishes are in place. The FNSDS recommends that that role be expanded to include confirming that the finishes specified in the construction documents are installed (i.e. no substitutions with lower quality materials), that they are installed correctly (the right substrate, preparation, fastening, installation and curing temperatures, etc.) and that they are appropriately protected after they have been installed[102].

[101] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 601
[102] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 13:
DRYWALL, PAINTING AND INSPECTION

Once the exterior of the home has passed inspection, the drywall installation will commence. The walls and ceiling get covered with drywall, which is commonly called wallboard, plasterboard or sheetrock. Rather than plastering, which historically was used, drywall has become the standard finishing product for new home construction, as it is easy to install and relatively inexpensive. The builder will work with the homeowner in determining the thickness of drywall needed based on the building requirements (the National Building Code). The standard is roughly 0.5 inch thick. Drywall is hung and taped so the seams between the boards are not visible, and if required drywall texturing is completed. After taping is complete, a primer coat of paint is applied. Once the walls and ceilings are covered, the homeowner and builder can start to get creative with the wall coverings and millwork.

With regards to the interior of the home, interior partition walls will need to be installed, along with any additional interior fixtures, the electrical paneling and electrical rough-in. Additionally, heating will need to be installed, along with a water heater. By this time, the homeowner will have picked out the painted desired for each room, and the painters will begin by spraying a primer and two coast of flat ceiling paint onto smooth, non-textured ceilings. The primer and first coat of colour are sprayed prior to any installations to avoid contamination.

The painters will then spray and back roll a primer onto all the wall surfaces. Once the primer has dried, the walls should be inspected for any imperfections that may have been missed by the drywallers.

After the primer is complete, a light sanding is done to the overall wall surfaces before any other paint is applied to ensure a smooth finish. Two coats of the chosen paint will be applied to ensure full coverage and a proper finish. A final coat of paint will be applied once all of the millwork and fixtures have been installed. It is best if everything is completed by the other trades before the painters complete the final painting.

When it comes to liquid applied coatings such as sealers, varnishes, stains and paints, the best choice are those products that are low-VOC and water-based. Water-based paints are a good choice for almost all applications except in wet to very wet locations. In those cases, low-voc acrylic or oil based paints may need to be used. Note that a small segment of the population is allergic to latex, so other coatings will have to be used[103].

[103] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 621

CHAPTER 14:
BATHROOM & KITCHEN INSTALLATION, FLOORING, MILLWORK AND INSPECTION

Finally, the interior trim, baseboards, doors, window sills, mouldings, and other decorative trim are installed, along with cabinets, vanities and fireplace mantels, etc. The hard-surface flooring (ceramic, vinyl and wood flooring) and countertops are installed. Walls get a finished coat of painted and are wallpapered where applicable.

All of the mechanical trims are finished; light fixtures, outlets and switches will be installed and the electrical panel is completed. Additionally, the HVAC equipment is installed, followed by the final installation of all bathroom appliances (sinks, toilets and faucets). Once the bathroom is finalized and all of the millwork complete, the final touches begin. Any glass shower doors will be installed, mirrors are hung, carpet is installed where needed, and any last-minute touches on the home are completed.

Finally, exterior finish grading is completed to ensure that proper draining occurs away from the home. At this time, the homeowner or hired landscapers may also want to begin preparing the yard for landscaping. Trees, shrubs, gardens and grass can all be planted once the yard has been prepped.

FLOORING

There are several floor finishes on the market today, some more durable and sustainable than others. The FNSDS recommends First Nation communities specify floor finishes that are water resistant in kitchens, bathrooms, entryways and laundry rooms and that are otherwise durable and easily cleaned. Choices for floor finishes include vinyl tiles, cork floors, laminated hardwood, and porcelain tiles. Floor types to avoid include laminated wood floor with printed wood patterns or thin (less than 3mm) wood top ply, carpets (because they are difficult to clean and unhealthy), and ceramic tiles (since they are slippery and brittle)[104].

CHOOSING LOCAL AND SUSTAINABLE MATERIALS

This information is also repeated in the First Nation Sustainable Development Standards.

The goal of this topic is to describe the advantages and disadvantages of traditional, natural and local building materials and how they can be used in contemporary First Nation architecture. This will ensure that building materials used to construct houses reduce the cost, carbon footprint and embodied energy of a project. It will also help to restore pride in the architecture of the Community by employing local materials in a way that is appealing and reminiscent of traditional uses but that will perform as well as, or better than imported construction materials[105].

[104] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 622
[105] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 631

A major aspect of sustainable architecture includes selecting construction materials that are local or regional, in order to reduce the carbon footprint and embodied energy of a project, supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation. For many First Nations, importing construction materials from distant places is the norm rather than the exception. This is often the case because non-local construction materials are often more economical (since they are mass-produced), or because local people haven't learned how to build with the local materials. This happens even though many communities are surrounded by unique natural construction materials such as trees, stone, straw and sod and in some cases, industrial waste by-products such as slag and fly ash. If just one portion of a new project uses local materials in its construction, it would help to reduce costs and the project's carbon footprint and could help restore pride in the architecture of the community. Note that the First Nation Sustainable Development Standards are not advocating that First Nation employ the rudimentary construction techniques of the past. Rather, the FNSDS suggests that First Nation communities examine the materials that are around them and use them in a way that is appealing and reminiscent of the traditional uses, yet performs as well or better than imported construction materials. Using local materials may also have the benefit of helping to reinforce the culture of the local people. Only a few First Nations are located close to manufacturing areas of Canada, so only a few can easily access locally manufactured building materials such as windows and doors, plumbing fixtures, hardware, gypsum sheathing, paints, fasteners, flooring, etc[106].

[106] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 631

CHAPTER 15: FINAL INSPECTION

Following your final inspection, ensure that your permit is completely closed off by calling the Garden River First Nation Housing Department. It is the responsibility of the homeowner to ensure that all inspections are carried out, including the final inspection and the permit has been closed upon project completion. The permit is considered closed by the Garden River First Nation Housing Department when all necessary inspections have been completed and the work carried out is safe and meets the requirements of the National Building Code.

Final inspections generally take place over two or three visits. Often the Contractor will request a final inspection before the work is complete, in anticipation that the work will be completed by the time the Building Inspector arrives. After the initial final inspection, the Building Inspector should complete a deficiency list, identifying the value of each deficient item and indicating the party responsible for its rectification (the homeowner). This provides all involved with a detailed list of their responsibilities. Inspectors are often pressured into certifying that a project is complete when it isn't, either to allow the Contractor to be paid, funds to be released from funding agencies or the owner/tenant to move in. The First Nation Sustainable Development Standard strongly recommends that Building Inspectors not certify a project until it is ready for occupancy, a recommendation also supported by the Garden River First Nation Housing Department[107]. This may require the Building Inspector to revisit a site two or three times. Most provincial Building Code Acts define when a building can be certified as ready for occupancy and Garden River First Nation adheres to the Ontario Building Code for this matter.

[107] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 940

CHAPTER 16:
INTERIOR DESIGN AND FINISHING

At this time in the home build, the homeowner will be able to add their personal touch on the home by choosing furniture, light fixtures, decorations and appliances. Refer to Chapter 12 in Part 1 of this guide for detailed recommendations on interior design.

A WORD ABOUT ENERGY CONSERVATION

Aside from heating, ventilation and water heating systems, there are many other devices that use energy in a house. Kitchen and laundry appliances, electronic devices and their chargers and household lighting fixtures all consume electricity and natural gas. Reducing energy use should be the goal of all people including First Nations. In North America, electrical power is mostly created by the burning of non-renewable resources (fossil fuels) which produces large quantities of carbon dioxide, which harms the environment. The generation of power through wind energy or hydro-electricity can offset some of this negative effect, but those renewable forms of energy are not yet dominant due to their high construction cost, lack of flexibility and reduced reliability. Furthermore, over the next few decades the growth in the population combined with the increasing use of electronic devices will continue to put pressure on our energy production facilities. And with rising demand will come rising costs. Finding ways to reduce our energy consumption will continue to be a priority in the foreseeable future[108].

EFFICIENT LIGHTING

One of the best ways to reduce electrical energy consumption is to provide as much natural light as possible, keeping in mind that windows have poor R-values and waste heating energy. Finding the right balance is key to overall energy use reduction. Ask your house designers to ensure that each habitable room, including bathrooms and laundry rooms have at least one window. Install high-efficiency light bulbs in all permanent lighting fixtures in new houses and encourage homeowners to do the same in existing houses[109].

WATER CONSERVATION

If you leave the water running while brushing your teeth, or if you don't repair leaky taps, you waste as much water as a dual flush toilet can save. Similarly, operating the dishwasher or clothes washer when it is half full wastes water and energy.

[108] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 691
[109] A Path for Seven Generations: First Nation Sustainable Development Standards (2015), p. 692

CHAPTER 17:
HYDRO, POWER AND WATER HOOK UP

In order to get hydro, power and water to the home, it is the responsibility of the homeowner and the builder/contractor to call the Garden River First Nation Water Department and all relevant service providers (ex: Algoma Power) as soon as the building permits have been secured. An application will need to be submitted, accompanied by a $25 processing fee. Once the application has been reviewed by the Water Department, a site consult will be completed by a department representative. The water department will register the homeowner's address and will set up a payment account. Together with the water department, the contractor and the homeowner will develop a work plan for the installation to be completed. Upon the final installation of water, hydro and power lines, an inspection will be completed. Please see the following section highlighting key points to this process:

WATER INSTALLATION PROCESS: ORDER OF OPERATIONS

- Contractor to call water department
- Application form submitted + $25 processing fee
- Site consult by department representative completed
- Registering homeowner address & setting up payment account
- Developing a Work Plan
- Water inspection following installation

CHAPTER 18:
FINAL WALK THROUGH

The final walkthrough is the last critical step before the homeowner is able to move into their new home. The final walkthrough gives the homeowner a chance to inspect the premise, ask questions and follow up with any issues. The builder will accompany the homeowner through a tour of the home to acquaint them with the home's features. They will explain the operation of various systems and components and will explain the homeowner's responsibilities for maintenance and upkeep, as well as warranty coverage and procedures.

Tips: The homeowner should feel comfortable asking the builder and project manager any questions that come to mind. They should also physically check all appliances, lights, faucets, showers and HVAC themselves to ensure that everything works. It is important to flush the toilets and open/close all cabinets and windows to ensure that they function properly. This is also an opportunity for the homeowner to check to make sure that they are not any major defects in the home such as cracks, scratches and gaps in the flooring. It is also recommended to examine the surfaces, countertops and fixtures for possible damages. If any issues do occur, the homeowner should communicate with the builder and project manager to ensure that all issues are fixed before the homeowner moves in.

CHAPTER 19: MOVE IN

Once the long process of building the home is finally complete, the homeowner will finally be able to occupy the home and move all of their belongings in. The move-in process can be overwhelming in keeping track of all details, people and placement of furniture in the transition. Outlined here are some general last steps to support the homeowner in moving in:

○	**Make a simple checklist of tasks that need to be completed to streamline efforts**
○	**Notify the utility companies to transfer gas, water, electrical, trash and sewer into your name**
○	**You do not want to find out that there is no electricity when the sun goes down after a long day of unpacking boxes**
○	**Transition pets: Keep them in a separate quiet room of the house with fresh airflow, food and water available, along with their favourite beds, blankets and toys to minimize their stress levels. This also prevents them from bolting out the door as it opens and closes throughout the day with everyone coming and going**
○	**Plug in the refrigerator and any other appliances to ensure an optimal cooling environment after your first grocery trip**
○	**If the homeowner has not yet completed this, now is the time to change their mailing address with the Garden River First Nation Housing Department**
○	**Set up security**
○	**At the discretion of the homeowner, setting up some level of security (from putting in extra locks, to installing a home security system) could provide an extra level of safety, peace of mind and comfort**
○	**Establish internet and satellite connection**
○	**Hire an internet and cable/satellite company to wire and connect the home to these services**
○	**Determine sleeping arrangements**
○	**After the homeowner and their family have determined the sleeping arrangements, the beds are the first thing that should be set up as a comfortable place to retreat to after a long day's work**
○	**Some people even choose to pack a bag with key overnight toiletries they may need on hand (including a toothbrush, toothpaste, shampoo, medications, contact lenses, etc.)**
○	**Meet the neighbours**

CHAPTER 20:
WARRANTEE INSPECTION

Unfortunately, no project is ever built perfectly, therefore a review of the building approximately ten to eleven months after it has been deemed substantially complete should be completed. The Building Inspector, the Contractor, and the Owner should all be present during the warrantee review to ensure that all required repairs are identified and repaired before the expiration of the warrantee period. This is especially true if the required repair is significant and will require informing the Constructor's or other building insurance companies.

CONCLUSION

This Homeowner's Building Guide is a comprehensive guidebook to assist each homeowner in building their homes safely and successfully on Garden River First Nation land. By reading and following the information in this guide book, and keeping a close relationship with the Garden River First Nation Housing Department, the homeowner has managed to:

- ○ **Prepare plans;**
- ○ **Understand and organize workplace safety and insurance;**
- ○ **Submit the application;**
- ○ **Receive a building permit and all other approvals from the required GRFN department(s);**
- ○ **Understand how to select, contract and terminate contracts; paying subcontractors, tradespeople and suppliers;**
- ○ **Build the home, have it inspected (with the opportunity to be involved in reviewing, revising, approving and supervising work) while following these steps:**
  - ○ **Site Inspection**
  - ○ **Excavation & Inspection**
  - ○ **Footings & Inspection**
  - ○ **Walls, Foundation & Well**
  - ○ **Foundation Inspection**
  - ○ **Framing, Sheathing, Eavesdrops, Subfloor & Inspection**
  - ○ **Plumbing & Inspection (Pressure Test)**
  - ○ **Electrical, HVAC Rough-Ins & Inspection**
  - ○ **First Official Walk-Through**

○	Insulation, Vapor Barrier & Inspection
○	Roofing, Windows & Doors
○	Exterior Finishing & Inspection
○	Drywall, Painting & Inspection
○	Bathroom & Kitchen Installation, Flooring, Millwork & Inspection
○	Final Inspection
○	Interior Design & Finishing
○	Hydro, Power & Water Hook Up
○	Final Walk Through
○	Move In
○	Warrantee Inspection; and
○	Keep neighbours happy and informed

Should any questions or concerns arise during the stages of homebuilding, the Garden River First Nation Housing Department and Lands and Resource Departments are available for support and consultation. It is highly recommended to refer to the First Nations Sustainable Development Standard in conjunction with this guidebook when setting out to plan and build your home. The GRFN Housing Department wishes you all the best on your home-building journey!

PART 3

ADDITIONAL RESOURCES

The Ontario Home Builders' Association: www.chba.ca

The Ministry of Municipal Affairs and Housing (MMAH): www.mah.gov.on.ca

The Work Safety and Insurance Board (WSIB): www.wsib.on.ca

Builders Ontario: *https://buildersontario.com/prefab-homes-ontario*

Government of Ontario: *https://www.ontario.ca/page/your-rights-when-starting-home-renovations-or-repairs* HVAC Manuals, CMHC Handouts, Basic Home Maintenance Material

https://www.thebalance.com/getting-through-the-home-inspection-1797764

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A Step-By-Step Guide to the Home Building Process - *https://www.newhomesource.com/guide/articles/a-step-by-step-guide-to-the-home-building-process*

The Ontario Building Code: *www.obc.mah.gov.on.ca/scripts/index_.asp*

PART 4

APPENDIX

ENERGY EFFICIENCY DESIGN SUMMARY
(Building Code Part 9, Residential)

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code.

For use by Principal Authority	
Application No:	Model/Certification Number

A. Project Information

Building number, street name		Unit number	Lot/Con
Municipality	Postal code	Reg. Plan number / other description	

B. Compliance Option [indicate the building code compliance option being employed in this house design]

☐ *SB-12 Prescriptive (circle one)*: A B C D E F G H I J K L M **or** ☐ Table 2.1.1.10. *(Additions)*	
☐ prescriptive trade-offs used (*Specify 2.1.1.2. or 2.1.1.3. sentences being employed)*:	
☐ *SB-12 Performance** [SB-12 - 2.1.2.]	* Attach energy performance calculations using an approved software
☐ *Energy Star®** [SB-12 - 2.1.3.]	* Attach Builder Option Package [BOP] form
☐ *EnerGuide 80®* *	* House must be evaluated by NRCan advisor and meet a rating of 80

C. Project Design Conditions

Climatic Zone (SB-1):	**Heating Equipment Efficiency**	**Space Heating Fuel Source**		
□ Zone 1 (< 5000 degree days)	□ ≥ 90% AFUE	□ Gas	□ Propane	□ Solid Fuel
□ Zone 2 (≥ 5000 degree days)	□ ≥ 78% < 90% AFUE	□ Oil	□ Electric	□ Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area		**Other Building Conditions**		
Area of walls = m^2	W, S & G % = _____	□ ICF Basement	□ Walkout Basement	□ Log/Post&Beam
Area of W, S & G = m^2		□ ICF Above Grade	□ Slab-on-ground	

D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach *Energy Star* BOP form]

Building Component	RSI / R values	Building Component	Efficiency Ratings
Thermal Insulation		**Windows & Doors** Provide U-Value in $W/m^2.K$, or ER rating	
Ceiling with Attic Space		Windows/Sliding Glass Doors	
Ceiling without Attic Space		Skylights/Glazed Roofs	
Exposed Floor		**Mechanicals**	
Walls Above Grade		Heating Equip.(AFUE or condensing type)	
Basement Walls		HRV Efficiency (SRE% at 0° C)	
Slab (all >600mm below grade)		DHW Heater (EF)	
Slab (edge only ≤600mm below grade)		DWHR (CSA B55.1 Efficiency)	
Slab (all ≤600mm below grade, or heated)			

E. Performance Design Verification [complete applicable sections if *SB-12 Performance*, *Energy Star* or *EnerGuide80* options used]

SB-12 Performance:
The annual energy consumption using Subsection 2.1.1. SB-12 Package_____is_____Gj (1 Gj =1000Mj)
The annual energy consumption of this house as designed is_____Gj
The software used to simulate the annual energy use of the building is:_____
The building is being designed using an air leakage of_____air changes per hour @50Pa.

Energy Star: Submit the BOP form with Energy Advisor's certification on completion.

Energy Efficiency Design Summary ***(Building Code Part 9, Residential)*** *– continued*

***Energy Star* and *EnerGuide80*:**	
Evaluator/Advisor/Rater Name:	Evaluator/Advisor/Rater Licence #:

F. House Designer [name & BCIN, if applicable, of person providing information herein to substantiate that design meets the building code]

Name	BCIN	Signature

Form authorized by OHBA, OBOA, LMCBO. Revised November 27, 2013

GUIDE TO THE ENERGY EFFICIENCY DESIGN SUMMARY FORM

This form must accurately reflect the information contained on the drawings and specifications being submitted. Refer to Supplementary Standard SB-12 for details about building code compliance requirements. Further information about energy efficiency requirements for new buildings is available from the provincial building code website or the municipal building department.

The building code permits a house designer to use one of four energy efficiency compliance options:

1. Comply with the *SB-12 Prescriptive* design tables,
2. Use the *SB-12 Performance* compliance method, and model the design against the prescriptive standards,
3. Design to *Energy Star* standards, or
4. Evaluate the design according to *EnerGuide* technical procedures and achieve a rating of 80 or more.

COMPLETING THE FORM

B. Compliance Options

INDICATE THE COMPLIANCE OPTION BEING USED.

- *SB-12 Prescriptive* requires that the building conforms to a package of thermal insulation, window and mechanical system efficiency requirements set out in Subsection 2.1.1. of SB-12. Energy efficiency design modeling and testing of the building is not required under this option. Certain trade-off options are permitted.
- *SB-12 Performance* refers to the method of compliance in Subsection 2.1.2. of SB-12. Using this approach the designer must use recognized energy simulation software (such as HOT2000 V9.34c1.2 or newer), and submit documents which show that the annual energy use of the building is equal to a prescriptive package.
- *Energy Star* houses must be designed to *Energy Star* requirements and verified on completion by a licensed energy evaluator and/or service organization. The *Energy Star* BOP form must be submitted with the permit documents.
- *EnerGuide80* houses are validated by NRCan authorized energy advisors and must achieve a rating of 80 or more when evaluated in accordance with EnerGuide administrative and technical procedures.

C. Project Design Conditions

Climatic Zone: The number of degree days for Ontario cities is contained in Supplementary Standard SB-1 *Windows, Skylights and Glass Doors:* If the ratio of the total gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the total gross area of walls is more than 17%, higher efficiency glazing is required. If the ratio is more than 22% the *SB-12 Prescriptive* option may not be used. The total area is the sum of all the structural rough openings. Some exceptions apply. Refer to 2.1.1.1. of SB-12 for further details.

Fuel Source and Heating Equipment Efficiency: The fuel source and efficiency of the proposed heating equipment must be specified in order to determine which *SB-12 Prescriptive* compliance package table applies. *Other Building Conditions:* These construction conditions affect *SB-12 Prescriptive* compliance requirements.

D. Building Specifications

***Thermal Insulation*:** Indicate the RSI or R-value being proposed where they apply to the house design. Under the *SB-12 Prescriptive* option, RSI 3.52 wall insulation is permitted in certain conditions where other design elements meet higher standards. Refer to SB-12 for further details.

E. Performance Design Summary

This section is not required to be completed if the *SB-12 Prescriptive* option is being used.

F. House Designer

The building code requires designers providing information about whether a building complies with the building code to have a BCIN. Exemptions apply to architects, engineers and owners designing their own house.

BUILDING CODE REQUIREMENTS FOR AIRTIGHTNESS IN NEW HOUSES
All houses must comply with increased air barrier requirements in the building code. Notice of air barrier completion must be provided and an inspection conducted prior to it being covered. The building code requires that a blower door test be conducted to verify the air tightness of the house during construction if the *SB-12 Performance* option is used and an air tightness of less than 2.5 ACH @ 50 Pa in the case of detached houses, or 3.0 ACH @ 50 Pa in the case of attached houses is necessary to meet the required energy efficiency standard. A blower door test must also be conducted if the *EnerGuide 80* option is used.

ENERGY EFFICIENCY LABELING FOR NEW HOUSES
Energy Star and ***EnerGuide*** may issue labels for new homes constructed under their energy efficiency programs. The building code does not currently regulate or require new home labelling.

NEW OCCUPANCY REQUIREMENTS FOR HOUSES COME INTO EFFECT JANUARY 2012

Commencing on January 1st, 2012 residential houses[1] must meet more stringent completion requirements before occupancy of the house can be permitted. These new requirements found in Article 1.3.3.4. of Division C of the Ontario Building Code will culminate in the issuance of an Occupancy Permit.

Builders of such houses will need to be diligent to ensure they can meet their scheduled closing dates.

Here's a summary of the current and future criteria for allowing the occupancy of a newly constructed house.

	Building Components Required for Occupancy of a House[1]	Applications Received Jan. 1, 2012	
		Before	After
A	Structure substantially completed and ready to be used for its intended purpose		X
B	Building envelope substantially completed (cladding, roofing, windows, doors, assemblies requiring a fire resistance rating, closures, insulation, vapour barriers and air barriers)		X
C	Insulation and vapour barrier protected from mechanical damage where required		X
D	Site grading is substantially completed		X
E	Required electrical supply is provided		X
F	Required fire fighting access routes have been provided and are accessible		X
G	(i) Required exits, floor access and egress systems, handrails, guards, smoke alarms, carbon monoxide detectors, fire separations and fire stopping components and systems are completed and operational	X	X
	(ii) Required exhaust fume barriers and self-closing devices on doors between attached or built-in garage and the dwelling unit are completed and operational	X	X
H	The water system, building drain, building sewer, drainage system and venting system are completed, operational and tested	X	X
I	Required plumbing fixtures are substantially completed and operational		X
J	Radon venting requirements for designated municipalities	X	X

Note 1: *Houses are residential dwelling units in a detached, semi-detached or townhouse form where no unit is above another unit, and each unit has its own exit facility.*

A house cannot be occupied without an Occupancy Permit being issued, and no Occupancy Permit will be issued unless all of the above requirements have been satisfied.

RESIDENTIAL OCCUPANCY PERMIT CHECKLIST

OBC, ARTICLE 1.3.3.4, DIVISION C

General Requirements	Y	N	Comments
Structure of the building or part, is substantially complete • structural members for dwelling unit: footings, foundations, framing (including exterior decks, porches, balconies)			
Building envelope with respect to dwelling unit is substantially complete • Cladding required on all sides • Assemblies requiring fire resistance rating; required closures installed • Roofing (including flashing) • Doors and windows • Blower - door test			
Insulation, vapour barriers and air barriers substantially complete • Insulation (locations, RSI Value) • Air barriers (locations, continuity) • Vapour barriers (locations, materials)			
Walls enclosing dwelling unit to conform to s.9.25.2.3 (7), Division B of the OBC (insulation and vapour barrier to be protected from mechanical damage)			
Grading substantially complete • Site graded so water will not accumulate near the building • No adverse affect to adjacent properties			
Required electrical supply provided for the dwelling unit • Where services available, electrical facilities shall be provided			
Required fire fighting access routes provided and accessible • Access to be provided to building by street, private roadway or yard			
Exits complete and operational for dwelling unit • One exit required (sliding door permitted; Exit through garage acceptable if man door to the exterior provided)			
Floor access and egress systems complete and operational for dwelling unit • Clear path required from any point in the dwelling unit to an exit • Stairs (width, run, rise, tread depth, headroom)			

Residence Occupancy Permit Checklist – *continued*

General Requirements	Y	N	Comments
Handrails and Guards complete and operational for dwelling unit • Substitute guards must comply with OBC requirements			
Fire Separations Complete • Fire separation between units • Required fire stopping			
Exhaust fume barrier complete and operational between attached garage and dwelling unit • Including self closing device, weather stripping, caulking, etc			
Water supply and sewage disposal complete and operational • Connection to a municipal drinking-water system or to a drinking-water system • Connection to a public sanitary sewer, combined sewer or a private sewage disposal system			
Lighting system complete and operational • Exterior lights at entrances with switches in dwelling unit • Lighting outlets with fixture controlled by a wall switch required for kitchens, bedrooms, living rooms, utility & storage rooms, laundry rooms, dining rooms, bathrooms, water closet rooms, vestibules, hallways, stairways and garages			
Heating system complete and operational • ensure fuel supply • ensure appliance is sized sufficiently			
Water system, building drain & building sewer and drainage & venting system complete, operational and tested • Hot and cold water • Water test (at rough-in); Air test (at rough-in); Ball test; Final test optional (requires every fixture in place)			
Required plumbing fixtures substantially complete and operational • Kitchen sink, lavatory, bath tub or shower & water closet shall be provided • Laundry facilities or a space for laundry facilities provided • Floor drain to be installed in basement			
Radon Protection required			

RESIDENTIAL OCCUPANCY PERMIT CHECKLIST: DEFINITIONS AND OBC REFERENCES & NOTES

DEFINITIONS

Dwelling Unit means a suite operated as a housekeeping unit, used or intended to be used as a domicile by one or more persons and usually containing cooking, eating, living sleeping and sanitary facilities

Substantially Complete means when construction is sufficiently complete in general conformance with the approved plans so that the building can be occupied for the use for which it is intended.

OBC REFERENCES AND NOTES

Structure of the building or part: 9.15.; 9.17.; 9.20.; 9.23.; 9.24.;

Building envelope: 9.27.9.; 9.28.; 9.20. or Part 5; 9.10.14.; 9.26.; 9.6.; 9.7.; 9.9.6.7.; 9.10.13.; Part 12

Insulation, vapour barriers and air barriers: 9.25.2.; 9.25.3.; 9.25.4.; 9.10.17.10.; 9.25.2.3(7).; 9.25.2.3.(8); Part 12

Grading: 9.14.6.1.(1)

Electrical supply: 9.34.1.2.

Fire fighting access: 9.10.20.3.(1).

Exits: 9.9.9.; 9.9.6.4.(2); 9.9.7.5.; 9.6.4.1.

Floor access and egress systems: 9.9.9.1.; 9.8.1. - 9.8.6.

Handrails and Guards: 9.8.7.; 9.8.8.

Smoke alarms and carbon monoxide detectors: 9.10.19.; 9.33.4.

Fire Separations: 9.10.9.; 9.10.9.14.; 9.10.16.

Fire stopping: 9.10.16

Exhaust fume barrier between attached garage and dwelling unit: 9.10.13.15.

Water supply and sewage disposal: 7.1.5.3.; 7.1.5.1.

Lighting system: 9.34.2.1.(1); 9.34.2.2.(1).; 9.34.2.2.(2).; 9.34.2.3.(2).&(3)

Heating system: 9.32.3.2.(1); 9.32.3.3.(1)

Water System: 7.6.

Building drain and building sewer: 7.4.;

Drainage system and venting system: 7.4; 7.5; 7.3.6.1.(5); 7.3.6.2. - 7.3.6.7.

Required plumbing fixtures: 9.31.4.1.; 9.31.4.2.; 9.31.4.4.

Radon Protection: 9.1.1.7.(a).,(b).& (c)

OCCUPANCY PERMIT

OCCUPANCY PERMIT NO:	
BUILDING PERMIT NO:	11.1523
PROPERTY ADDRESS:	31 VIVIAN DRIVE, COURTICE
LEGAL DESCRIPTION:	PLAN: 40M-2419 LOT:24

OWNER:	H & H BUILDING CORP
APPLICANT:	H & H BUILDING CORP
TO CONSTRUCT:	SINGLE DETACHED DWELLING

An occupancy inspection(s) of the dwelling unit were completed on_____

At the time of the inspection(s), the dwelling unit met the minimum requirements for residential occupancy set out in Division C, Sentence 1.3.3.4. (5) of the Building Code.

Any incomplete item(s) that do not prevent occupancy, but require further inspection(s) subject to additional notices in accordance to the municipal Building By-law, are identified in the box below.

COMMENTS:

OUTSTANDING ORDER TO COMPLY ☐ YES (See Attached) ☐ NO

Occupancy Permit – *continued*

PERMISSION TO OCCUPY IS HEREBY GRANTED.

Print Name _____

Signature _____

Date _____

NOTE: Other approvals and inspections may be necessary from Utility Companies and/or other Agencies or Departments.

Issued by: The Chief Building Official, CBO
or a person designated by the CBO

ALGOMA POWER CONNECTION APPLICATION

This application is required for Algoma Power Inc. to provide an Offer to Connect for a new service, to reconnect a service that has been disconnected at the pole (meter removed), or for any modification to an existing service (increase service size, relocate service etc). **If this is a new service or service relocation, a Property or Subdivision plan must also be submitted with this application before a site visit will be scheduled.**

Note: API must be contacted at least 24 hours in advance if you are unable to be present for the site visit. A fee will be charged for additional site visits due to changes requested by the customer/contractor or if items below are not satisfied.

1. **The following MUST be located and marked prior to the site visit. Please check below and initial to indicate this has been completed:**
   - Property bars, building, driveway and pole locations: ☐ Initials _____

2. **The customer or a representative MUST be present for the site visit. Please indicate below who should be contacted to schedule the site visit.**

   ☐ Customer ☐ Contractor/Representative

3. **If disconnection of an existing service is required to complete the work requested below, I understand that a Reconnection Charge of $185.00+HST will be billed to my account after the work has been completed. This charge WILL NOT be included on the Estimate included with the Offer to Connect.**

   Initials _____

Algoma Power Connection Application – *continued*

CUSTOMER INFORMATION (Customer information must match API account information for existing customers)			
Surname or company name	First name		Middle Initial(s)
Mailing address-number & street	City	Prov/State	Postal/Zip Code
Telephone ( )	Mobile phone ( )	Fax ( )	
Email	Please indicate below how you would like to receive your completed Offer to Connect: Canada Post ☐ Fax ☐ Email ☐ Pick up ☐		
Authorization: The contractor named on this application is authorized to receive account information and act on my behalf: Customer Name: _____ Signature: _____			

CONTRACTOR/REPRESENTATIVE INFORMATION		
Contractor name	Email	
Telephone ( )	Mobile phone ( )	Fax ( )

SERVICE INFORMATION			
☐ New Service	Name and/or address of closest site with power (New services only)		
☐ Service Upgrade ☐ Service Relocation	API Meter Number	API Account Number	
Service address-number & street	Municipality/Township	Lot	Concession
Planned Service size: 60A____ 100A____ 200A____ Other_____ General Service Application required for services over 200A	1 phase _____ Voltage _____ 3 phase _____ Voltage _____	Overhead: _____ Underground: _____ Primary: _____ Secondary: _____	
API USE ONLY: Residential ☐ Seasonal ☐ General ☐ Site Visit Appointment: Date: Time: Initials:			

Please provide a brief description of your service plan: _____

_____

_____