

## Before You Start a New Addition

A new addition may be just what it takes to accommodate a changing family or special needs. You can expand a kitchen, add a bath or change your existing home into the house of your dreams.

As with any renovation, the construction of an addition requires careful planning. Before you decide to go ahead with the project, it is important to clearly identify the features you want. Just as important is a thorough inspection of the current structure so that any existing problems can be corrected.

### HEALTHY HOUSING™

Renovating is an ideal time to make your house healthier for you, the community and the environment. When designing an addition to your home, be sure to consider:

- **Occupant health**—moisture control strategies to prevent mold growth, low emission materials and products.

- **Energy efficiency**—effective air and moisture barriers and insulation, energy efficient mechanical systems, lighting, fixtures and appliances.
- **Resource efficiency**—water conserving appliances and fixtures.
- **Environmental responsibility**—durable materials that will last longer and minimize future waste in landfill sites. Recycle fixtures to reduce construction waste.
- **Affordability**—energy- and water-efficient fixtures to reduce ongoing operating costs, durable products to reduce future repair and replacement expenses.

### COMMON SITUATIONS

Many homeowners are happy with their present location. When extra space is needed, an addition is often a more desirable alternative than moving to a different house. The size and scope of additions vary widely. A simple project may involve a larger entry area or adding a small

bay onto a kitchen or living room, while larger additions can substantially increase the size of your home.

As you plan your addition, here are some important things to consider:

- **Size and design**—Before deciding on a new addition, evaluate whether rearranging the existing space might give you the changes you want. It is important to determine what size the addition needs to be and how it will integrate with the rest of the house. Homeowners often underestimate how much space that items like stairways require. The addition will be more appealing if the style complements the design and architectural details of your house and neighbourhood.
- **Fixtures**—Since the addition is essentially new construction, new fixtures may be required.
- **Structural problems**—The addition will often involve structural changes to the existing house, which may involve foundation

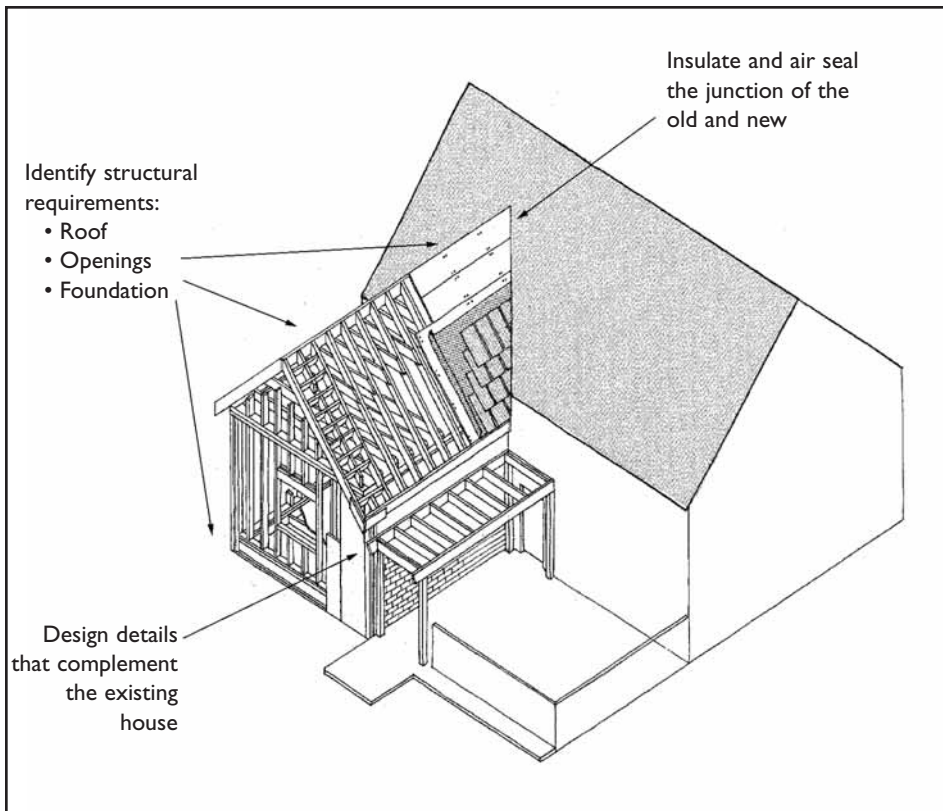


Figure 1

considerations, roof details or the construction of openings in the existing building. As part of the work, any problems found in the existing building and foundation will have to be repaired.

- **Moisture**—The cause of any moisture problems in the existing house will need to be diagnosed and remedied as part of the renovation work. Existing problems can affect new areas of the building.
- **Plumbing and electrical**—The increased plumbing and electrical needs may exceed your existing services, requiring significant upgrades. Remember to run cables for telephone and computer connections, cable TV and security or home entertainment systems.
- **Heating and ventilation**—Existing heating and ventilation systems may not have adequate capacity to handle the increased demand.
- **Finishes**—Always pick finishes that match or complement existing finishes and are durable enough to take the wear and tear of daily use.
- **Zoning and regulations**—New work will have to comply with provincial building codes as well as local bylaws and zoning requirements.

## HOUSE AS A SYSTEM

A house is much more than just four walls and a roof—it's an interactive system made up of many components including the basic structure, heating, ventilating and air conditioning (HVAC) equipment, the external environment and the occupants. Each component influences the performance of the entire system. A renovation provides an opportunity to improve how your house performs.

An addition gives you the chance to use up-to-date, energy-efficient construction practices. These projects often require changes to HVAC equipment that can improve moisture management and air quality in the house. Some equipment such as a large volume exhaust fan can cause combustion heating appliances to backdraft. Structural changes may give you a chance to improve airtightness and insulation, resulting in increased occupant comfort and house durability.

## AVOID SURPRISES

Once you start work on an addition, changes become costly or difficult and can lead to delays in the completion of the project.

Thorough planning at the beginning will help you to develop a realistic understanding of the work to be done and the costs involved. Here are some of the likely situations that people encounter. However, it's always wise to consider hiring a qualified professional such as an engineer, architect or professional renovator to assess the structural issues.

## ASK YOURSELF . . .

**Size and design**

- How will the addition meet the needs of everyone in the household, including anyone with special needs, extended family and guests? What size will it have to be to meet current and future needs?
- How will the addition affect spaces in the existing house, especially traffic patterns, access to outdoors and natural lighting?
- What style will complement the design of the existing house? Does it fit into the neighborhood?
- Will there need to be changes in landscaping, or driveway and walkway locations?

CONSIDER YOUR  
OPTIONS . . .

- Plan thoroughly before you start so that space, traffic flow and styling meet your current and future needs.
- Consider using an architect or professional designer. They can help you work through the problem areas and create a flexible, properly sized design that meets your current and future needs and complements the style, layout and site of your house.
- Have complete scale drawings made to determine how the addition will connect to the existing house. These will be required for the building permit and will help you to visualize the project better. Furniture layouts can also be a great help in your planning.

## . . . AND IF YOU DON'T

- If you compromise on your needs you will have to live with the results.
- Good design and working drawings are important for maximizing the space and minimizing problems. Insufficient planning can lead to poor results and costly mistakes. If you don't solve the problems during the planning stage, it may force you into crisis problem solving as the project progresses.

**Fixtures**

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>■ Will new fixtures and appliances be needed? What types are suitable? How much space will they use?</li> <li>■ How much and what type of lighting is needed?</li> </ul> | <ul style="list-style-type: none"> <li>■ Get measurements for fixtures and appliances from suppliers.</li> <li>■ Familiarize yourself with available products and options.</li> <li>■ Use a professional designer to help plan your fixture and lighting layout.</li> <li>■ Choose lighting and appliances that are energy-efficient.</li> </ul> | <ul style="list-style-type: none"> <li>■ Larger than expected fixtures or appliances can lead to costly modifications or restrictions on the useable space in your new addition.</li> <li>■ Poor lighting will detract from the look, feel and usability of the new space.</li> <li>■ Inefficient appliances and light fixtures waste energy and will mean higher annual energy costs.</li> </ul> |
|---|--|---|

### ASK YOURSELF . . .

#### Structural problems

- Are there any structural deficiencies in the existing house that will affect the addition?
- Does the addition design maintain a roof profile to provide water drainage and proper structural details? Will the entire roof have to be refinished at the time the addition is built?
- What type of foundation will the new addition need and how will it be tied in to the existing structure?
- Are there unusual loads that will have to be supported?
- Can the existing foundation drainage system be used? Will a new foundation drain system be needed?
- Will structural walls or lintels need to be removed or upgraded?
- How will the need for stairways affect the structure or design of the living space?
- What insulating and air sealing can be done to provide a comfortable, energy-efficient space?

### CONSIDER YOUR OPTIONS . . .

- Identify any structural deficiencies before you start. Consult with a structural engineer or architect.
- Repair and renovate structural components so that they are adequate to carry the new loads.
- Plan for good drainage, particularly for intersecting roofs.
- Use accepted foundation construction practices, suitable for local soil and water conditions to ensure a well insulated, dry foundation that will carry the loads placed on it by the new structure.
- Hire a professional renovator who will ensure that the addition will meet all applicable building code requirements.
- Choose contractors who are familiar with the type of work you are planning and who use energy-efficient and Healthy Housing™ construction practices.

### . . . AND IF YOU DON'T

- Unforeseen problems will lead to unexpected costs and delays during construction.
- Structural deficiencies can lead to cracked finishes, floor vibration, bowed or displaced walls, floors or roof structures and possible structural failure.
- Foundation deficiencies can lead to a damp basement or cracks caused by settling or from the pressures of wet or frozen soil.
- Failure to meet building code requirements may lead to unsafe conditions in the building.
- Poor insulation and air sealing will result in higher than necessary energy costs, possible condensation problems and an uncomfortable living space.

### REWARDS

- A warm, comfortable addition that meets your space requirements, has good lighting, and is a well-designed living space, is the result of thorough planning and good choices.
- A well thought out and executed addition will increase the value of your house.
- Repairing structural problems, leaks and upgrading services will prolong the life of your house and make the addition look and work better.
- By using low odour and easy-to-clean finishes, you will improve the IAQ of your home.
- A well-insulated addition will provide warmer interior surfaces that will help to prevent condensation and mold growth.

ASK YOURSELF . . .

**Moisture**

- Is there any evidence of moisture problems with the existing building including finishes damaged by moisture, water stains or visible mold growth on any surfaces, blistering or peeling paint, cracked or missing caulking or condensation on windows, walls or ceiling surfaces?

CONSIDER YOUR OPTIONS . . .

- Determine, then eliminate the source of the moisture that is causing the problems. It may be from rain, plumbing leaks or condensation of vapour on cold surfaces.
- Clean up visible mold growth according to CMHC guidelines.
- Insulate and air seal exterior walls and ceilings. Use energy-efficient windows to provide warmer inside surface temperatures.
- Repair or replace all deteriorated finishes or structural components.
- Provide ventilation and eliminate sources of moisture to control high humidity.
- Maintain caulking, grout and flashings to prevent water access to the building structure.

. . . AND IF YOU DON'T

- Unresolved water damage problems will continue and lead to further deterioration of the building or newly renovated areas.
- Mold growth caused by excess moisture can be a serious source of indoor air quality (IAQ) problems.
- Superficial cleanup or hiding moisture damage behind new finishes will allow deterioration to continue.
- Poor insulation can lead to cold surfaces that are prone to condensation.
- Uncontrolled humidity can lead to condensation, mold growth and deterioration.
- Poorly maintained caulking and flashing can lead to water leaks.

SKILLS TO DO THE JOB

A homeowner with good construction skills may be able to do some of the renovation work such as:

- Demolition, including the removal of fixtures, finishes and non-load bearing walls
- Caulking or repairing of roof and window leaks

- Installing insulation and air sealing of the building
  - Painting
- Consider a professional renovator to manage the project and for structural and finish work. If you are doing it yourself, you will still need to hire subcontractors to do the electrical, plumbing, heating and ventilation work. You may also want to hire other tradespeople to

do roofing, window, door, cabinet and flooring installation, or paint and drywall finishing. Remember to obtain all necessary permits, get written contracts that describe all aspects of the job, including lien protection. Ensure that workers use safe working practices, are covered by workers' compensation and have their licences where required. Protect yourself, your family and your home.



### ASK YOURSELF . . .

#### Plumbing and electrical

- Does the existing plumbing service provide adequate water pressure and drains that flow quickly? Will the addition increase demands on the existing plumbing?
- Is the existing electrical service adequate for the increased number of outlets and circuits that will be needed?
- What are the needs for current and future telephone and computer connections, cable TV, security, home entertainment systems or smart house features?
- What plumbing and electrical code requirements apply to the new addition?

### CONSIDER YOUR OPTIONS . . .

- Repair any plumbing leaks and upgrade the existing service as required.
- Upgrade and repair electrical service and wiring as required.
- Equip outlets near sinks with ground fault circuit interrupters to prevent danger from shock.
- Assess your current and future needs for wiring and connections. Consider upgrades that will improve the resale value by addressing trends in home offices, home entertainment and smart controls for appliances and mechanical systems.
- Consult with a professional to determine that plumbing and electrical code requirements are addressed in your plans.

### . . . AND IF YOU DON'T

- Inadequate or substandard plumbing will be the cause of ongoing inconvenience and may be a health hazard.
- An undersized electrical service can lead to circuit overloads that are a fire hazard.
- Wiring and controls will have to be installed later limiting the choice of location. Surface mounting of cables can detract from the finished appearance of the job.
- Not meeting codes can cause costly changes during construction and delay completion of your project.

#### Heating and ventilation

- Does the existing heating system have the capacity to handle the increased demand of the addition?
- Does the house have a ventilation system and will it handle the increased demand of the addition?
- Is this an opportunity to install a more energy-efficient heating system?
- What energy-efficient practices can be used to minimize the additional heating requirements?
- What heating devices are appropriate for the new space? Will any new heating devices that use wood, oil or gas be subject to backdrafting? Will a new, large exhaust fan cause backdrafting of existing or new combustion appliances?
- Upgrade or replace equipment as required to ensure adequate heating, cooling and ventilation for the existing and new areas. Choose energy-efficient equipment.
- Consider installing a whole-house ventilation system. Choose one that includes heat recovery.
- Build a well-insulated and air-sealed addition to minimize heating requirements.
- Use a qualified, licensed installer for heating and ventilation work.
- Test for backdraft potential. Avoid the use of large volume exhaust fans that can pull smoke and combustion gases in through a flue. A trained technician can remedy or avoid this health and safety problem.
- An undersized or poorly installed heating system will make the addition difficult to heat in cold and windy weather conditions.
- Improper ventilation can lead to poor indoor air quality, lingering odours and excess humidity.
- Backdrafting of combustion equipment such as fuel burning fireplaces, furnaces, wood stoves and water heaters that use oil, natural gas or propane is a safety hazard and can also lead to smoke damage of your house.

## ASK YOURSELF . . .

**Finishes**

- What types of finishes are needed and preferred for the new addition? How will the finishes blend with the rest of the house?
- What finishes for items such as countertops, floors and walls are durable enough for the intended use?
- What floor finishes are compatible with the floor system?
- What skills are needed to properly install these finishes?
- What finishes and materials will minimize the impact on IAQ?

CONSIDER YOUR  
OPTIONS . . .

- Do your research. There are many new and different products on the market. Select finishes that complement the rest of the house.
- Choose the product that is appropriate for the location and best meets the need whether it is for water resistance, durability or cleaning.
- Determine the preparation requirements for each type of finish.
- Use a trained or licensed installer.
- Choose finishes that are low emission and environmentally friendly such as paints that carry the EcoLogo symbol or water-based adhesives.

## . . . AND IF YOU DON'T

- Selecting finishes that don't match the rest of the house or intended use will yield poor results. For example, carpeting would not be appropriate to install in a moist basement where it would be damp and support mold growth.
- Improper installation of finishes will void the warranty.
- Ceramic tile or grout can crack because of inadequate subfloor construction. Hardwood flooring can shrink or swell if it is not allowed time to condition to the humidity of the space before installation or if it is installed on basement floors or floors with radiant heat.
- Solvent-based finishes will off-gas and may cause IAQ problems.

**Zoning and regulations**

- What are the local land use restrictions?
- What permits are required?
- Does current liability insurance cover accidents due to the construction work?
- Does existing fire insurance cover the new work during construction?
- Does the mortgage lender need to approve any major addition?
- Check with your local building inspection department for information on permits, inspections, zoning and any other applicable bylaws. These issues may determine the feasibility of your proposed addition.
- Check with your insurance agent and ensure that you have adequate coverage during and after the renovation. Upgrade as needed.
- Secure approval, if needed, from your mortgage lender.
- Building officials may stop your project for non-compliance with codes and regulations. Penalties or fines may be imposed. The work may be delayed or have to be redesigned.
- Lack of or inadequate insurance could lead to financial liability. Even homeowners doing their own work may need to have workers' compensation coverage (if using any casual labour).
- Your mortgage may be foreclosed if a required approval was not given.

### COSTING YOUR PROJECT

The cost of the renovation work will depend on the condition of the existing structure, local labour and material costs and the extent of the work to be done. Costs of finishes and fixtures vary widely. A good budget checklist will help you to

develop a realistic cost for the project before you start.

If the addition is substantial, provide a comfortable budget contingency to allow for unforeseen work that may need to be done.

The size of contingency will depend on the nature of the project, but may need to be 20 per cent or more of the initial budget. This applies, regardless of how the project contracting is going to be handled.



Use the New Addition Assessment Worksheet to consider the existing structure, elements for the new addition and to do the preliminary costing.

| New Addition Assessment Worksheet       |                    |                  |      |
|---|--------------------|------------------|------|
|   | Key considerations | Proposed changes | Cost |
| <b>Assessment of existing structure</b> |                    |                  |      |
| Roof and walls of existing building     |                    |                  |      |
| Foundation                              |                    |                  |      |
| Landscaping                             |                    |                  |      |
| <b>New addition</b>                     |                    |                  |      |
| Design and permit                       |                    |                  |      |
| Excavation, backfill and compaction     |                    |                  |      |
| Foundation work                         |                    |                  |      |
| Carpentry labour                        |                    |                  |      |
| Building supplies                       |                    |                  |      |
| Drywall installation and finish         |                    |                  |      |
| Electrical                              |                    |                  |      |
| Plumbing                                |                    |                  |      |
| Heating                                 |                    |                  |      |
| Ventilation                             |                    |                  |      |
| Windows and doors                       |                    |                  |      |
| Exterior finishes                       |                    |                  |      |
| Painting                                |                    |                  |      |
| Cabinets or shop work                   |                    |                  |      |
| Flooring                                |                    |                  |      |
| Lighting                                |                    |                  |      |
| Furnishings                             |                    |                  |      |
| Waste disposal                          |                    |                  |      |
| Other                                   |                    |                  |      |

## About Your House

Before You Start a New Addition

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### Priced Publications

|  |                 |
|--|-----------------|
| <i>Building Materials for the Environmentally Hypersensitive</i>                         | Order No. 61089 |
| <i>Canadian Wood-Frame House Construction</i>  | Order No. 61010 |
| <i>Healthy Housing Renovation Planner</i>  | Order No. 60957 |
| <i>Homeowner's Inspection Checklist</i>  | Order No. 62114 |
| <i>Homeowner's Manual</i>  | Order No. 61841 |
| <i>Renovator's Technical Guide</i>   | Order No. 61946 |
| <i>The Clean Air Guide: How to Identify and Correct Indoor Air Problems in Your Home</i> | Order No. 61082 |

### Free Publications

#### **About Your House** fact sheets:

|   |                 |
|---|-----------------|
| <i>Measuring Humidity in Your Home</i>                                    | Order No. 62027 |
| <i>Combustion Gases in Your Home</i>                                      | Order No. 62028 |
| <i>Your Furnace Filter</i>  | Order No. 62041 |
| <i>Hiring a Contractor</i>  | Order No. 62277 |
| <i>Assessing the Comfort and Safety of Your Home's Mechanical Systems</i> | Order No. 62266 |

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