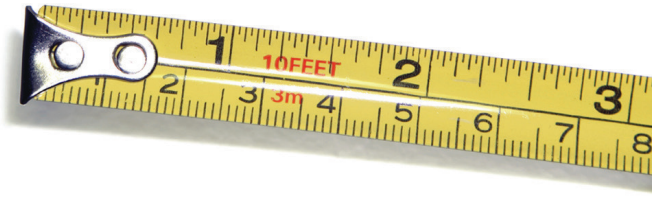
Guide to the

Care and Maintenance of Your New Home



The Alberta New Home Warranty Program

The Alberta New Home Warranty Program's

Guide to the

Care and Maintenance of Your New Home

PROTECT YOUR INVESTMENT

New homes represent large investments – the largest investment many people ever make. As all investments require safekeeping and protection, The Alberta New Home Warranty Program developed this Maintenance Guide to help you do just that. We encourage you to take an active part in protecting your investment, and in some cases, to safeguard your warranty, by following the advice in this guide.

Maintenance is a part of home ownership. A home is really no different than a vehicle, which on occasion, requires your attention to keep it in good working order. Just like vehicle maintenance, homeowners have the option to do some maintenance themselves and hire professionals for more involved work.

Homes have always reflected the technology of the day. Manufacturers and builders are constantly striving for product improvements. Tried and true materials and systems often change slowly, but there are always custom materials and new systems coming on the market. These require a different maintenance regime than a generation earlier. When new products do prove to be more robust we tend to take them for granted, but they too may require maintenance.

It's common practice to take care of minor maintenance problems as they arise, but it is also a good idea to exercise preventative maintenance. There are many easy things that a homeowner can do that will prevent something small from becoming an expensive repair. In the appendix, a number of suggested maintenance tasks are included for each month of the year – whether or not they are an immediate problem.

Product warranties often stipulate that maintenance is required to ensure warranty protection. Products should be used for the role that was intended and serviced accordingly.

The warranty protection The Alberta New Home Warranty provides is detailed in the Warranty Certificate provided to you with your new home documents.

Throughout this Maintenance Guide the term 'home' is used. While single-family homes may immediately come to mind, 'home' is also intended to mean multiplexes, townhouses and units in multi-family buildings.

Guide Limitations

This guide deals with common maintenance requirements and highlights potential solutions. It does not include all situations or all potential solutions. You must assess your own capabilities to successfully complete the repair before attempting the maintenance or repairs suggested in the guide.

Acknowledgements

This guide was initiated and organized by The Alberta New Home Warranty Program, but could not have been written without the substantial contributions from suppliers, manufacturers and industry partners.

Workmanship & Material Reference Guide

A companion document to the Maintenance Guide is The Alberta New Home Warranty Program publication "Workmanship & Material Reference Guide". This guide identifies common workmanship and material issues which have been raised by builders and homeowners over the years through the Program's conciliation process.

The Program's Workmanship & Material Reference Guide, can be found on-line at **www.albertanewhomewwarranty.com** Click on "Homebuyer", and then "Key Publications and Documents" and then "Workmanship & Material Reference Guide."

Contents

1

Chapter 1- Exterior Elements and Site Work

Survey Plans and Pins

A survey plan establishes legal boundaries and defines the extent of a person's ownership or other rights in land. Survey plans also include information about rights-of-way for utilities such as gas lines. An Alberta Land Surveyor will mark each lot in a new subdivision with an iron pin. These pins, or boundary markers, define where your property ends and where your neighbour's, or the municipality's, begins. Pins provide the legal boundaries of a property and measurements for future improvements such as garages, house additions or fences.

Homeowners Beware - don't throw away the marker!

Unsuspecting landowners may find a pin and thinking it just a piece of metal left over from construction - dig it out and throw it away. It is illegal to remove or tamper with an official boundary marker. If the survey pin is just where that fence post should be - build around it. The cost of replacing a survey marker could be as much as the cost of the fence, driveway or landscaping in the first place.

Years later you may want to consider an addition or a new fence. Since the first question will concern itself with placement of that project, you should have high confidence as to where the property lines are. In addition to the difficulty of finding pins, there is often more than one in an area or none at all. Some pins may not relate to the homeowner's property boundary at all, but to roads, rights-of-way or other land related measurements. Some pins are destroyed during construction or may have been moved from their original position. It is recommended that as a homeowner, you ask an Alberta Land Surveyor to identify the correct boundaries so that mistakes are not made.

People frequently assume that certain improvements (such as a fence or a shed) or physical features of the property are evidence of boundaries. This includes swales (depressions in the terrain that are a function of the drainage system and can be shared between properties) and power or telephone kiosks (junction boxes that are placed within an easement reserved for this purpose). These physical features are not evidence of boundary lines.

For more information about survey issues see the Alberta Land Surveyors' Association website at **http://www.alsa.ab.ca**

Easements and Utility Corridors

An easement provides another party access to a defined section of your property. For example, access is granted to service water and drainage systems, power or telephone cable routes, or even a driveway route to an adjacent property. Easements deal with land itself, not the landowners, so when land is bought or sold, the easements which relate to that land "go with the land". The locations of easements are noted on the Real Property Report or on the Certificate of Title.

Contact the Local Planning Department

If considering work next to an easement such as a power box, a drainage swale, roadway or property line, contact the planning department in your jurisdiction regarding buffer zones and what you can and cannot do to and around a utility pole, an electrical box, or meter that may reside on your property.

Call Before You Dig

If you are considering digging anything from a new flowerbed to a deck pile, you are advised to familiarize yourself with the locations of all underground services. Utility services on your property (within Alberta) will be located for you **FREE of CHARGE.** For an appointment call the "Call Before You Dig" service at 1-800-242-3447 or schedule an appointment on their website at **http://www.alberta1call.com**

Other Site Service Considerations

- If you are considering paving or placing concrete on your driveway, check for a survey pin or metal cover that denotes a water shut off valve (sometimes called a "cc valve") within that area. Access to that valve must be maintained by bringing it up to the top of the driveway. Do **not** cover the valve with concrete or asphalt.
- Avoid watering electrical boxes in the course of watering lawns.
- Gas meters are not to be surrounded by enclosures. Such enclosures could concentrate gas that would normally be vented.

1

Drainage

Your lot has been graded for drainage during normal rainfall. In most areas of Alberta individual lots are graded according to a municipally-approved grading plan. Grading is carried out near the end of construction to slope the clay sub-soil away from the house and to direct water that falls on the lot to the street. A second grading may take place just prior to application of top soil to fine tune the grade before spreading the topsoil. In some jurisdictions, the homeowner is responsible for the second (final) grading of the lot. Contact your municipal government office and the department that deals with building permits.

The lot may have drainage systems such as swales (shallow valleys), catch basins (depressions to collect water) or holding ponds designed to control and assist in overall surface drainage.

The following are examples of lot grading requirements in communities in Alberta:

City of Calgary, Lot Grading - **www.calgary.ca** and enter "Lot Grading" into the search area.

City of Edmonton, Residential Lot Grading - **www.edmonton.ca** and click on "Infrastructure and Planning", then "Water and Sewer Developments", then "Residential Lot Grading".

Strathcona County – **www.strathcona.ab** and enter "Lot Grading" in the search area

Water Ponding On Site

Standing water near a house foundation can find its way into the basement. For this reason, it is very important that water which ponds or pools be drained away as soon as possible. It is the responsibility of the homeowner to maintain water drainage away from the house and away from the neighbour's property. This can be accomplished by filling areas of settlement.

Your lot has been graded for drainage during normal rainfall. Heavy or prolonged rains may result in some standing water. Areas that were excavated during construction (utility trenches or basement areas) may settle, forming areas where water can collect.

Depressions should be filled by removing the topsoil and filling the depression with compacted clay. Do not use topsoil as fill as it absorbs water like a sponge, drains water through it and will still collect in the hollow when it reaches the clay layer located just below the topsoil.

Other Drainage Considerations:

- Do not alter the general drainage pattern of your lot without consulting the municipal authority.
- Diverting water from your property onto the neighbour's property is not an acceptable practice.
- Some window wells feature a drain to direct water down to the weeping tile. Window wells should be kept free of leaves and debris that could hamper drainage.
- Flowers should not occupy window wells.
- Some settling of soil next to basement walls is to be expected. Depressions should be filled with clay to provide a positive slope away from the wall.
- Clear ice and snow accumulations away from drains each spring to provide a drainage pathway away from the home for melting water.
- When landscaping and building planting beds near the house foundation, it is important to maintain a 10% slope of the clay subsoil away from the house.

Further information can be found at:

The Alberta New Home Warranty Program's brochure "Surface Water Management" online at **www.albertanewhomewarranty.com** Click on "Homebuyer", then "Living in Your New Home" along the top of the page, then "Surface Water Management".

1

Eavestroughs and Downspouts

Eavestroughs allow water to move to the downspouts and away from your home. During a heavy rainstorm, they can move hundreds of gallons of water in a single day. It is important that eavestroughs are sloped towards the downspouts and are clear of leaves, soil and debris.

The Connection Between Roof Drainage and Basement Leaks

A strong correlation exists between how water is managed coming off the roof and a problem-free, dry basement. Surface drainage is far more efficient than weeping tile at keeping water away from your basement. Weeping tile is a piping system placed around the footing of the home to collect and channel water away from the house foundation. Rainwater should be directed away from the perimeter of the home to reduce the opportunity for water to enter along basement walls.

- Downspouts that end on sod usually feature an extension along the ground to move bulk water away from the perimeter of the home along the surface. The extensions must be in place and in their lowered position to move water away from the foundation. Always return downspout extensions to their lowered positions after cutting lawns.
- Keep eavestroughs and downspouts free of obstructions such as leaves and paper. Surface particles from asphalt shingles, washed down by rains, often settle in gutters and reduce their efficiency. Gutters should be cleaned at least once a year.

Further information can be found at:

The Alberta New Home Warranty Program's Workmanship & Material Reference Guide, Section 1.11, **www.albertanewhomewwarranty.com** Click on "Homebuyer", then "Key Publications and Documents", then "Workmanship & Material Reference Guide".

The Alberta New Home Warranty Program's brochure "Surface Water Management" online at **www.albertanewhomewwarranty.com** Click on "Homebuyer", then "Living in Your New Home" along the top of the page, then "Surface Water Management".

Landscaping

Landscaping is often outside of the contractual agreement between the builder and the homeowner. Landscape elements placed after completion of the home can have consequences upon the home years later.

Landscaping Impacts Drainage

Consider the drainage plan for your lot as you consider the overall development for your yard. A 40' x 100' lot in Alberta receives on average 14" of rain which equates to 31,900 gallons or 144,800 litres of water. Grassed areas generally require steeper drainage slopes compared to hard surfaces such as concrete or asphalt. Be certain that planting beds are graded away from and not towards your foundation wall. Some species of trees (such as poplar) can have invasive root systems that enter utility corridors and weeping tiles. Tree roots have been known to rupture water and sewer lines and can exert sufficient force to crack concrete basement walls. Plant trees away from the perimeter of the house. An established lawn prevents soil erosion. Consider establishing a lawn or your landscape design as soon as possible after taking possession of the home and the rough and final grades have been completed.

Maintaining Lawn, Shrubs and Trees

Newly planted trees, shrubs or lawn require special care and attention in the first few years to ensure proper root establishment.

Sod

The first two weeks are the most critical in establishing new sod. It is important that the sod be saturated as soon as it is laid, and kept moist for the first few days after. Reduce watering to every other day in the second week. Once the grass has "taken", a weekly watering may be adequate. Water evenly and slowly so that the water penetrates the soil without running off. Your lawn needs about 25 millimetres (I inch) of water a week - including rain - when it is actively growing in the summer. You can track this with a rain gauge. Shallow watering results in a shallow root system and makes the lawn susceptible to damage. Deep watering establishes a strong healthy root system. Hot sunny areas, may need more water and shady areas may need less. Avoid over watering. Saturated soil prevents air from reaching the root zone, where it is needed. Avoid walking on newly laid wet sod.

Proper mowing keeps grass healthy. Grass cut too short is subject to damage by the sun. Mow to a height of approximately 50 mm (2 inches). Never remove more than 3 cm (1.18 inches) of the grass blade height at one time. Keep the mower blades sharp

to avoid ragged, brown tips on the grass. If you mow frequently, fine clippings will decompose and help maintain the lawn. Heavy clippings must be removed.

Fertilizing for weed control is also suggested for successful sod performance. Consult your garden centre for products and application.

In early spring when snow begins to melt, do not allow snow or ice to remain on a shaded area as this could cause "winter kill". Distribute snow over other areas to aid the melting process.

Grass may do better in one area than in another depending on exposure to sun, wind, rain and such factors as drainage, soil type, care and attention.

Trees and Shrubs

Building and repairing root systems and ensuring plants have adequate water is the most important aspect of establishing newly transplanted trees and shrubs.

Trees and shrubs should be watered immediately after transplanting with quality drinking water including a root starter fertilizer. Do not use water that is high in sodium such as water from water softeners or poor quality slough water. Use well water with caution as some well water has high salt content.

Water at least once weekly for the first year. In the first year, fertilize with a root grow fertilizer each time you water between May 15 to June 30. Utilize a balanced fertilizer with each watering from July 01 to August 01. Do not fertilize trees and shrubs after August 01. The new tender growth that results will not have a chance to "harden off" and may die. Contact your local garden centre for advice on suitable fertilizers. Water trees thoroughly in October to ensure your tree has adequate moisture at the root zone for the winter. Evergreens may require watering in late winter or early spring in areas with chinooks to keep the root ball frozen.

Trees and shrubs require about 1 gallon of water per foot of growth at each watering (including rain). If 12.7 mm (half an inch) of rain falls in a week you may not need to water. However, maintain the fertilizing schedule and ensure you use some water at the time of fertilizing. Water slowly all around the plant from the centre to the outer circle of the leaves. For evergreens, during hot weather, spray the leaves or needles in the morning and the evening.

Water all trees and shrubs thoroughly in late fall before freeze-up. Evergreens exposed to wind need extra protection in the winter to avoid drying and browning of the leaves. Contact your garden centre for advice on how to best protect your plants in the winter.

A tree that will be exposed to high winds before it can become established should be staked. Contact your garden centre on the correct stakes and ties to use with your type of tree.

When you plant a tree consider its size fifteen or twenty years in the future. The full grown tree may block windows, impede upon the walkways or encroach upon a deck. Mature evergreens can create so much shade that lawn will not grow beneath them. Any plant in the wrong place and unwanted is simply a weed.

Outside Hose Connections

Most water valves located on the exterior of homes today are "frost-free" types. The valve is connected by a shaft that may be 12-inches or more in length to the shut-off valve located inside a wall toward the warm interior of the home. When the handle of the tap is turned to the off position, it closes the valve in the wall. Any water contained in the shaft between the valve and tap will drain out upon closing, which will result in a small stream of water.

Older types of values have a shut off valve and drainage port inside the home, which must be utilized to protect the system from freezing.

If a hose is attached to the outside tap, the tap may not be able to drain down. Water that freezes can split the pipe extending into the house, resulting in a leak in the wall each time the tap is turned on. It is important to disconnect the hose from the tap for the winter and if temperatures are expected to dip below freezing at night.

Irrigation Systems

These can be a great labour and time-saver, but caution is required when installing, using, and maintaining them.

- They should **not** be located in a way that directs water toward the home foundation.
- They must be checked regularly for leakage to prevent accumulation of unnecessary water underground.
- Use a soil moisture sensing system to deliver only the amount of water needed. Over-watering plants and grass shortens their life and wastes our precious water resource.

1

Fencing

There are three areas to consider when contemplating a new fence - Personal Safety, Location, and Design.

Personal Safety

Utility services on your property (within Alberta) will be located for you **FREE of CHARGE**. For an appointment call the "Call Before You Dig" service at 1-800-242-3447 or schedule an appointment on their website at **http://www.alberta1call.com**

Location

The survey line denotes the edge of your property line – not a fence centerline. Make certain that every portion of your fence resides on your property including the concrete that may be anchoring the posts.

Check with your municipality regarding where you can and cannot place a fence. Usually a homeowner is not allowed to build a fence that would encroach upon an easement or utility corridor. Fences are also subject to height and location restrictions.

Design

In some areas architectural standards are in place to create a theme for the neighbourhood. The neighbourhood developer can tell you if such architectural guidelines are in place for your community. The guideline may define the range of fence styles and possibly even the colour of the fence.

If you have a neighbour on the other side of the property line, talking over the details of the fence is always a good idea. Often neighbours will agree to share the construction costs.

Wood Decking & Handrails

Sundecks, verandas and raised patios are subjected to unrelenting sun, rain and snow. Decks that are installed by homeowners are outside the coverage of new home warranties. Even with seasonal care, a conventional wood deck will not match the lifespan of the home and will ultimately need replacement. On an annual basis check the integrity of all stairs, handrails and platforms. Repair or replace any components that are not firmly fastened or fixed.

Location

Check with your municipality regarding where you can and cannot place a deck. Usually a homeowner is not allowed to build a deck that would encroach upon an easement or utility corridor.

Design

Before you build a deck ensure you understand all local and Alberta Building Code rules regarding deck construction. New requirements in the 2007 Alberta Building Code will affect foundation depth, required bracing, anchorage to the foundation and the type of fasteners used. Wood I joists can only be used in interior applications that are protected from rain or moisture and cannot be used for exposed decks.

Railings are required on decks more than 2 feet above grade. In Alberta, handrails are required on exterior steps with more than three risers.

Alternative decking material to wood, such as vinyl or wood/plastic composites, is available on the market. Although they are more expensive, they require less maintenance and may have a longer lifespan than wood. Maintenance of these materials should follow the manufacturers' instructions.

Slivers in Exterior Wood Surfaces

Wood is a natural material and as such will react to changes in the weather. Horizontal surfaces subject to traffic and handling such as deck surfaces and handrails will form wood slivers more readily than vertical surfaces. Wood slivers form when the surface of a piece of wood has been repeatedly through a wet/dry cycle and the wood fibres bend and twist. The fibres want to return to their natural shape and in trying to do so, may rise up above the surface of the rest of the wood. When these raised fibres or bunches of fibres begin to separate from the main wood along the length of the fibres, a sliver is formed. Sliver formation is a type of "weathering" of the wood.

1

The occurrence and severity of slivers is dependant on:

- **The growth rate of the wood -** Mature wood shrinks only about 0.1–0.2% as it changes moisture content from green to oven dry. Young wood can shrink as much as 2% and is more subject to raised fibres.
- **The wood species -** Dense wood species (like oak) are more prone to weathering than more open grained species (such as hemlock or fir).
- **The manufacturing process:** Rough sawing exposes more of the ends of the fibres than smooth sawing. The angle of the cut affects the orientation of the grain. Both affect the amount of moisture that penetrates into the wood and the susceptibility to sliver formation.
- **Number and severity of wet/dry cycles -** Reoccurring wetting/drying cycles and severe heat, sun and wind increase the raising of the grain.

Slivers cannot be eliminated but can be minimized by applying protective coatings such as paints, stains, or water repellents that minimize water penetration into the wood and protect against the effects of the sun.

If the wood has been exposed to the weather for more than 2 weeks, sand it with 50 to 80-grit sandpaper. Sanding removes weathered fibres and allows better coating adhesion.

The wood can be cleaned with detergent and water or a commercial cleanser prior to sanding. However, use care in selecting a cleaner because alkali detergents and cleansers could leave residues in the wood that may affect the life of the finish.

Don't forget to maintain your finish as different finishes have different life-spans.

Fading and Weathering of Deck Stain

Deck finishes fade due to exposure to the elements and traffic use. Horizontal areas such as deck surfaces and handrails wear much faster than vertical deck members such as spindles. A maintenance schedule should be created that will maintain the appearance and help preserve the wood. The frequency of this schedule should be based on the exposure of the deck and its amount of use.

A wood stain is used to protect and colour exterior wood surfaces. There are two types of stains – film forming (solid stains) or penetrating stains (transparent and semi-transparent). It is more difficult to achieve a uniform colour with these coatings than with paints. Variations in stain colour occur due to variations in the characteristics of wood and how the wood is treated prior to staining. Characteristics such as density and grain vary from tree to tree and even from boards cut from the same tree. A portion of board that is dense will not accept stain as well as a portion of a board that has a more open grain. Wood that is rough sawn, unprimed or very dry may absorb stain more quickly than wood that is smooth cut, damp and treated with a sealer.

Before wood is re-coated it should be repaired, sanded and cleaned to ensure the new stain fully penetrates the surface for maximum durability of the finish.

After the wood is prepared, the new stain can be applied. A coating should protect the wood from the degradation by sunlight. Paints can block sunlight completely, but they can trap moisture and encourage decay. Semi-transparent stains are the next most effective followed by water repellent preservatives which contain ultra violet light inhibitors.

It is important to use the correct type of applicator and the correct application techniques to ensure the coating is evenly distributed and provides maximum protection for the wood. For example, on deck surfaces, roller applied stain must be worked into the wood with a brush by brushing the stain back and forth. This helps ensure a more uniform colour and stain penetration into the wood.

Most manufacturers of stains provide detailed brochures that discuss stain product options, equipment needed, proper preparation of the surface and application techniques.

1

Additional Resources:

The U.S Department of Agriculture, Forestry Products Laboratory series of technical advice papers called "The Finish Line". Go to **http://www.fpl.fs.fed.us/** and enter "The Finish Line" in the "Search FPL" box.

Fine Homebuilding July 1997 – Why Exterior Finishes Fail
http://www.taunton.com/finehomebuilding/ click on "article archive" and enter the name of the article

Behr Wood Finishes **http://www.behr.com/behrx/act/woodsmart**

U.S. Forest Products Laboratory **http://www.fpl.fs.fed.us/**

Sikkens Wood Finishes **http://www.nam.sikkens.com/faq-category.cfm?category=exterior**

The Western Red Cedar Lumber Association **http://www.wrcla.org/installation_and_finishing/finishing_cedar_decks/default.htm**

Wolman Wood Treatments **http://www.wolman.com/woodcarebasics.asp**

The Journal of Light Construction **http://www.jlconline.com/cgi-bin/jlconline.storefront/44c7e2fe0010710527177f00000105a3/UserTemplate/44**

Chapter 2 – Concrete

Walks and Driveways

Seasonal temperature and precipitation variations may cause cracks in walks and driveways. Frost penetration may cause heaving or settlement changing the direction of surface drainage. Affected areas usually return to their original position in warm weather. These issues are beyond the builder's and homeowners control in most instances.

Your driveway was designed and constructed for use by passenger cars or light delivery vehicles and not for heavy trucks. Do not permit heavy moving vans on your driveway.

Sealing concrete yearly is recommended to maintain its longevity.

Concrete Surface Damage

Concrete is a mixture of stone and sand called "aggregates" which are combined with water and cementing materials. As concrete is placed and finished, the aggregate settles into the paste slightly and a thin layer of paste rises above the aggregate.

The paste layer can separate from the main body of the concrete. When the fine top layer of the paste peels away, the concrete is said to be "mortar flaking". When the separation occurs as circular or oval pieces across several pieces of aggregate, it is called "spalling". When the separation occurs as small holes above a piece of aggregate, it is called "pitting".

The most common causes of flaking, spalling and pitting are impacts, weathering, and freeze/thaw cycles. Salts and de-icers applied intentionally for ice melting or unintentionally from road slush can stress concrete surfaces and initiate spalling and pitting. In some cases improperly cured concrete and corrosion of steel can also cause separation. In rare cases contamination of the aggregates by expansive material such as coal, ironstone or organic matter can lead to pitting and areas where the expansive stone has popped out.

Most of the measures to reduce surface defects are related to good mix design, proper placement and proper curing and are in the hands of the builder. These measures include the use of air-entrained concrete mixes with a low water to cementing materials ratio; delaying finishing until the water sheen on the surface is gone; edging the concrete near forms, and the use of isolation joints and construction joints. Concrete subject to freeze-thaw and de-icing chemicals should not be power trowelled.

Reducing the Effect of De-icing Salts

Homeowners can reduce the effect of de-icing and road salt by the application of breathable surface sealers. The two most common are silane and siloxane, compounds which are derived from the silicone family. These sealers penetrate the concrete as deep as 3 mm but allow the concrete to breath, preventing a build-up of vapour pressure between the concrete and sealer that can occur with some film-forming materials. Because the sealer is embedded within the concrete, it is more durable to abrasive forces and ultraviolet deterioration. It can provide longer lasting protection than film-forming sealers.

Treatment and re-treatment should be carried out according to the manufacturer's directions, but certain general guidelines apply to all. Application of any sealer should only be done on concrete that is clean and allowed to dry for at least 24 hours at temperatures above 16°C. At least 28 days should be allowed to elapse before applying sealers to new concrete. Penetrating sealers cannot fill surface voids if they are filled with water. Some surface preparation may be necessary if the concrete is old and dirty. Concrete placed in the late fall should not be sealed until spring because the sealer may cause the concrete to retain water that may aggravate freeze-thaw damage.

Basements

Basement walls are subjected to many stresses. The base of the wall, being well below grade, maintains a fairly uniform temperature whereas the portion above grade is subject to a wide range of seasonal temperature variations.

Water Penetration Through Concrete Foundation Walls or Floors

Moisture is always present in the soil. The amount of moisture may temporarily increase during the spring snow melts and during heavy or prolonged rains. Builders take measures to ensure water at the surface and in the soil does not accumulate against the foundation walls or under the basement slab. The most effective measures are to direct water collected by the roof, as well as that which flows along the ground, away from the house. These include:

- Ensuring the foundation backfill surface is graded so that water will flow away from the foundation;
- Providing downspouts with extensions to direct rain collected by the roof away from the foundation;
- Shaping the sub-grade of the lot so that water flows toward depressions called “swales” and is carried away from the house;
- Installing window wells to keep the ground away from windows near grade.

Water present in or below the surface of the ground is dealt with by:

- Protecting the walls below ground from the migration of moisture through the natural pores in the concrete. This can be achieved by coating the walls with materials such as a spray applied bitumen and/or specialized drainage mats that resist the movement of water through the wall exterior.
- Draining water that comes in contact with the outside of the wall below grade. The water is collected at the level of the footings and drained. The water is usually collected in a weeping tile system and sent to a storm sewer or to a sump pit.

Unless there is an unusual amount of water accumulating against the wall (such as in a severe rainstorm or if the grade around the house is sloping toward the house) water should not move into the basement.

Check the sump pit and the pump in the spring and the fall to ensure the pump is operational. Check to ensure the power cord is in good shape, the pipes are connected and the pump turns on when the float is lifted.

However, concrete is a porous material and the coatings are not continuous under the footing that the wall rests on. Small amounts of water may be transferred through the concrete and show up as dampness on the inside of the concrete wall.

As a homeowner, you must ensure that the systems the builder puts in place are maintained and working as intended.

- Ensure the clay layer beneath the topsoil maintains a slope away from the house. Fill areas that have settled with clay, not topsoil;
- Ensure the down spout extensions are down and clear of debris;
- Ensure the downspouts direct water away from the house;
- Keep downspouts extended year round;
- Ensure window wells are free of leaves and debris. Ensure they extend above the grade;
- Maintain a positive grade around the window wells to direct water away from the foundation;
- Ensure the sump pump is in good repair and working;
- Install a discharge hose during spring and summer to move the water collected by the sump further away from the house;

Further information can be found in the pamphlet "Surface Water Management." found on The Alberta New Home Warranty Program website at **www.albertanewhomewarranty.com/key.html**

Damp Basement Floors

Concrete basement floors sometimes feel damp to the touch. This usually results because of two issues.

The first issue is the amount of water present in new concrete. In the first year after the basement concrete has been poured, it contains an amount of water that will evaporate to the inside of the basement and may create a damp floor. Avoid placing materials such as carpet or boxes directly on the floor for this first year.

The second issue is a result of small voids in the concrete that act like tiny straws and draw small amounts of water from the soil into the basement slab. The rate of this movement depends on the amount of moisture under the slab, the relative humidity of the basement, and the porosity of the concrete. If the basement is very dry and the ground very wet, the movement is quicker.

This movement can be stopped by breaking the connection between the source of moisture under the slab and the slab itself. Builders use measures such as granular fill, polyethylene membrane or foam insulation underneath the basement floor slab to create this break.

If the dampness persists ensure water collected on the lot and on the roof is being directed away from the house by:

- Ensuring downspouts from the eavestroughs are in place, the extensions are down and water is being directed away from the foundation;
- Ensuring the earth around the home has not settled. If there is a depression near the house, remove the topsoil over the depression and fill this area with clay, not topsoil, so there is at least a 10% slope away from the house;
- Ensuring your window wells are not accumulating water;
- Utilizing a de-humidifier or increasing the amount of ventilation to the affected area;
- Ensuring the sump pump in the basement is working.

Before you apply any finish over a concrete floor (paint, carpet, solid flooring), be certain that the concrete is dry.

Floor Drains

Floor drains are usually located next to furnaces in most new homes. They provide a drainage path for water spilled on the basement floor and in some cases for the drainage of water that condenses from the chimney with a high efficiency furnace. They are also designed with a trap that prevents sewer gas from entering the basement.

Floor drains are used infrequently. Water in the trap creates a seal against sewer gas. It is possible for the water in a basement floor drain trap to evaporate. This can result in sewer odours in the house. To test for water in the trap, pour a little water from a glass into the drain and listen. You should be able to distinguish whether water is present from the sound the poured water makes as it hits either the water or the bottom of the trap. Once every few months, or if you smell sewer gas, pour a bucket of water down the drain to re-establish the water seal.

Garage Floors

For most homes, a garage serves a practical function of protecting a vehicle and perhaps some light storage. Some cracking in a garage slab is common. Contractors may cut contraction joints to control the floor cracking. Hairline cracks on garage floor slabs do not impede the floor slab from performing its function.

Once the garage floor has fully cured, treat it with a concrete sealer to help protect the concrete and prevent staining. Concrete paints and stains are also available made specifically for concrete surfaces. A reliable paint dealer can recommend suitable products. A painted or stained finish will be somewhat slipperier under foot, so consider this in your decision.

Caution: Heat from warm tires can lift the paint over time.

Chapter 3 – Carpentry – Framing

The House Frame

When your home is constructed, the lumber contains up to 19% moisture. During the first heating season, shrinkage caused by natural drying will occur. The results may appear in a variety of forms:

a) thin cracks appear in exposed wood structural members (e.g. joists and beams)
b) small gaps appear between counter tops, cabinets, vanities and the wall
c) minor joints open in door and window trim, baseboards, walls, etc.
d) fireplace mantels may shrink slightly and separate from the wall or at joints
e) wood flooring opens between individual pieces or settles from the baseboards at wall or under door jambs and trim
f) squeaks develop in floor underlay, wood flooring and stair treads
g) small gaps show between stairs or stair mouldings and the wall.

Wood expands and shrinks with changes in humidity. Minor shrinkage is inherent to wood construction and does not impede the structural integrity of your home. In many cases gaps from shrinkage can be attributed to temperature extremes between sides of exterior walls in winter months. These gaps and cracks may become less noticeable when more temperate weather returns.

Main Support Beams and Telepost Adjustments

Adjustable steel jack posts or “teleposts” are used to support main beams in the basement and transfer loads to the foundation. The bearing plate at the top of the telepost should rest snugly beneath the beam.

Once a year, check that the supporting post is truly supporting the beam. Adjust the nut on the upper jack screw so no gap exists. Check the level of the beam with a 4 foot long level to ensure the level is maintained. Uneven pressure on a beam can cause further issues down the road.

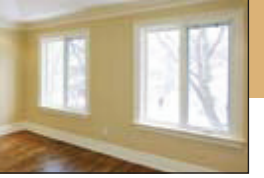
If you are finishing the basement on a brand new home, consider framing details that allow access to adjust the teleposts and for small movements of the beam above the telepost. Moisture beneath the concrete basement floor slab may cause swelling of the earth beneath the slab which can lift the telepost. When this occurs, a downward adjustment of the telepost is required to bring the beam back to level. Drying or settlement of the soil beneath the basement concrete slab would require an upward adjustment to bring the beam to level on equilibrium.

Drywall cracking or binding doors on the upper levels of the home may be signs that a telepost adjustment is required.

Careful detailing with allowances for expansion and contraction along the main support beam will reduce drywall cracking in the finished basement.

Windows

Windows today are typically composed of a vinyl frame or a wood frame covered by a metal skin on the exterior. The frames of vinyl windows and the exterior metal on a metal-clad window are virtually maintenance free. Interior wood finishes should be maintained as per the manufacturers’ instructions. Weatherstripping between the fixed and opening parts of a window should be checked regularly and replaced when necessary.



Window Weatherstripping

Weatherstripping provides a flexible seal around windows to prevent unwanted air from moving in or out of your home.

On windows that open outwards with a crank (casement or awning windows) the weather stripping is usually a compressible, moulded strip of foam or rubber set against the frame towards the outside. The opening part of the window rests against the weatherstripping when the door or window is closed, forming an air and water seal.

On sliding windows, the weather stripping is usually a flexible v-strip or a brush/bristle type. It is placed between the track and the moveable window and at the point where the fixed and the sliding window meet. Some windows have a felt-type weather stripping that can gather at one edge creating an air gap at the other. Weather strips that have lost their resiliency are not providing effective seals and should be replaced. Check your windows each fall and reposition or replace this strip as required.

Weatherstripping should not be painted or it will lose its flexibility.

Window Water Leakage

Water movement from the outside of the home to the inside through the windows can occur if the window is not properly closed or if the weatherstripping around the window opening is damaged or worn. Windows can also leak if the drain ports provided to allow water to drain out from an opening portion of a window are plugged. Water leakage can move water into the house where it pools on the interior casings and sills which left unattended, will cause staining or rot.

Some opening and sliding windows provide a small drain opening on the outside face of the bottom sill of the window. This round or oblong opening is often capped and allows water that may find its way behind the weather stripping or around the window/frame seal to drain to the outside. This must be kept clear of things such as fluff and insect webs so water can flow.

The seal between the window glass and the window frame is designed to withstand a certain level of wind driven rain. Should a major storm occur, it may produce leakage in windows that normally would not leak.

Water leakage should not be confused with condensation. Condensation occurs when water vapour in the air condenses on a cold interior window surface. In some cases enough water vapour condenses to form ice. When this ice melts, it will flow onto the sill, where over time a stain or damage to the finish can occur.

Condensation

Condensation of moisture on windows on the inside of the house occurs naturally when interior air with sufficient moisture comes into contact with a window surface that is sufficiently cold.

Condensation and Frosting on Window Glass

Air can only hold a limited amount of water vapour at any given temperature. As warm room air comes in contact with a cool window surface, the air cools, and loses the ability to hold water. If the amount of water in the air is high enough or if the surface of the glass is cool enough, the water in the air will deposit on the glass surface. This is condensation. At what point condensation appears on the window depends on the amount of water vapour in the air (the humidity) and the temperature of the interior pane of the window glass. Condensation typically appears on windows before any other surface because the window is typically the component of the exterior wall with the least insulation value and reacts the quickest to changes in outdoor temperature.

Condensation can be reduced by reducing the amount of moisture (the humidity) in the indoor air as the outdoor temperature drops and the window surface cools.

Moisture is added to indoor air by routine activities such as cooking, showering and laundry. Other items such as, plants, fish tanks and humidifiers can also contribute moisture to the indoor air.

Moisture Sources	**Litres Added per Week to the Air**
Occupants (4)	30-40
Showers (8/week)	18-29
Drying Clothes	12
Cooking (Steam)	9
Gas Cook stove	9
Refrigerator	9
Dishwashing	3
Large Plant	3
Bathing (8/week)	3
Laundry	2

Reducing Condensation

Reduce moisture by venting moisture laden air outdoors and bringing in fresh dry air from the outside. Ventilation can be accomplished in many ways. Exhaust fans placed near high sources of moistures such as bathroom fans and kitchen range hood fans can be used to remove high localized sources of moisture. Some new homes may also have dedicated, balanced whole house ventilations systems. In their simplest form, this system consists of a central exhaust fan and a fresh air intake connected to the heating system. The system may be operated by a timer or by a switch located in a central location in the house. In their more advanced form advanced ventilation systems recapture heat being lost in the ventilated air and have dedicated ventilation ducts in various locations throughout the house.

Covering windows with drapes during cold weather can restrict air movement near the window and result in a cooler glass surface and an increase in condensation. Ensure your window drapes or blinds are left at least partially open during cold weather.

Heat outlets that are placed near windows to wash the window surface with warm air. This increases the temperature of the window surface and reduces the potential for condensation. Do not cover these outlets with rugs or furniture or deflect the movement of air away from the window.

During periods of extreme cold, keep the furnace fan running to help maintain more even heat in the home.

Manufacturers of wood flooring products may recommend that a certain level of humidity be maintained to prevent warping, cracking and separating of the wood flooring components. However this need for the floor must be balanced against the condensation that may appear on the window surfaces.

Condensation Between Factory Sealed Window Panes

Heat will move through a dense material such as glass very easily and quickly. But heat does not easily move through a still air space. By separating the pieces of glass (or panes) in a window frame by an air space, the transfer of heat from the interior to the exterior through a window can be reduced. To be effective, this separation must be airtight.

Window glass spacers are made from materials such as silicone foam, butyl rubber, metal or combinations of these materials. The spacer is bonded to the glass to form an airtight seal. This is achieved with adhesives, and in some cases, an additional layer of sealant by a factory that specializes in the manufacture of these units. The spacer will contain a small amount of a material (desiccant) that will absorb any moisture contained in the air trapped when the unit is sealed. The seal will also keep insulating gases such as argon gas between the window panes.

The panes of glass experience expansion and contraction as they are exposed to changing temperatures and amounts of sunlight. This occurs on a daily basis. Windows experience high temperatures when the sun shines through them in the day and cool at night. The temperature of the inside and outside panes of glass is rarely the same. These continuous changes in temperatures place stress on the bonds of the adhesive between the edge spacer and the glass panes. Over time, the seal between the spacer and the window glass will let go. When this happens, fresh air containing moisture will enter between the window panes. The desiccant will not be able to absorb very much moisture, so as the air and the window surfaces cool, the moisture in the air will condense on one of the glass surfaces above the edge spacer (fog between the glass). When this occurs, the sealed unit is said to have "failed".

When the seals fail, the glass unit in the frame needs to be replaced as the window will continue to show condensation and will have lost its insulating ability.

Contact the window manufacturer or companies that specialize in window repair and replacement can be found in the telephone book in the Yellow pages.

Further Resources:

The City of Edmonton publishes a series of Home$avers booklets which includes a booklet entitled "Condensation Concerns" that is available by downloading from the web at **http://www.co2re.ca/publications/default.htm**

Attic Ventilation

Attic ventilation serves two important purposes. The first purpose is to remove moisture that may find its way into the attic from the living space through penetrations in the ceiling. These could be gaps around plumbing stacks, bathroom fans and attic hatches. Attic ventilation also removes heat that can reduce the life of roof shingles. Attic ventilation is separate from ventilation for the living space of the house provided by fans such as a bathroom exhaust fans.

Natural air flow (passive air flow) is most often used to provide attic ventilation. With this method, air flows into the roof space at the eaves through perforated soffits and exits out through passive (non-powered) vents located near the peak of the roof. Most often the vents are flat metal or plastic vents situated on the roof near the peak. In some cases the roof vent may be a continuous strip vent located along the peak or "ridge" of the roof (ridge vent). In some cases the vent may have a rotating top section on a round vent (rotating vent). In some cases the vent may be on the wall that enclosed the attic at the end of the trusses (gable end vent). The number and distribution of the vents is determined through the Building Code.

Passive roof vents perform their function in all seasons and are generally maintenance-free. However they should not be blocked during the winter season. In some cases, where attic spaces have complex roof designs, powered fan units may be used. These units will require occasional motor maintenance.

Leaks Due To Snow or Rain

Under unusually high wind conditions, even properly installed roof vents may allow the passage of some moisture into the attic space. In most situations, the moisture will evaporate and be carried to the outside without any staining or leakage to the interior of the home. If leakage or staining is seen, the location of the roof vent may need to be altered to move.

Chapter 4 – Finish Carpentry

Countertops

Today's countertops are made from a variety of materials such as laminate, ceramic tiles, natural stone, engineered stone, concrete and metal. With proper care, all countertops are durable. They are however, not indestructible, and require a certain level of care.

Laminate Countertops

Laminate is made from many different materials which are combined with resin. In laminates the colour is a thin layer at the surface. Sheets of laminate are bonded to a wood substrate and can be moulded around curves such as the edges of countertops. It is available in a wide variety of colours and in granular, low-sheen or glossy finishes.

Everyday cleaning can be accomplished with a damp, soapy cloth. Do not use cleaners that contain strong acids such as those for ceramic stove tops or toilet bowls. Do not use cleaners with grit or abrasives in them. For stubborn stains or spills such as nail polish, contact the manufacturer of the laminate for special instructions.

Wood Edges on Laminate Countertops

A wood edge on a laminate countertop is a common way of finishing countertops. These wood edges do require some maintenance. Every couple of years or when wear is visible these edges require sanding and re-finishing. Refinishing can be done with spray lacquer or brush on urethanes. These products are available at your corner hardware store or contact the cabinet manufacturer.

Bubbles

Prolonged or extreme heat from hot pans or operating electrical appliances can cause the contact cement used to bond the laminate to the substrate to soften and release. This could result in the formation of a bubble in the laminate surface. A trivet should be used under all heated appliances such as electric fry pans, coffee pots etc. Rest hot pots from the stove on trivets as well. It may be possible to re-establish the bond by applying localized pressure to the area of the bubble. In other cases additional adhesive must be applied to permanently re-establish the bond. A professional should be called to repair a bubble.

Swelling Due to Water Egress

Laminates are bonded to a substrate made of wood products. When water gets under the laminate, it is absorbed by the wood and the wood swells. When the wood dries, it will have permanently expanded to some degree, and will not lie as flat as it was in its original condition. For this reason, it is important to ensure that countertops are kept free of standing water at joints and where the counter joins the back splash. It is very important to mend a chipped or broken laminate countertop edge before water seeps into the particleboard base and loosens even more laminate.

Delamination

Delamination, or lifting of the laminate from the wood substrate it is bonded to, can occur from a lack of adhesive during construction, the application of heat or the intrusion of water. Delaminations due to lack of adhesive usually occur on vertical edges, near the corners. These can be reattached by applying additional adhesive. If the detached piece has been broken, the procedure is much more complex. Tape the loose edges in place to avoid further delamination or fracturing of the laminate until a repair can be completed.

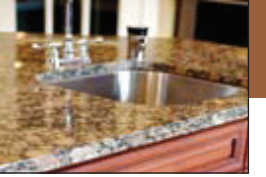
Scratches and Chips

In general gloss finishes show scratches and chips more readily than granular or low-sheen finishes. But no matter what the type of finish, do not use your countertop as a cutting board. Scratches can be caused by cutting tools and even abrasive cleaners or steel wool.

There is no way to completely remove scratches from plastic laminates, even on coloured through laminate but it may be possible to hide small scratches using a seam filler, available from plastic laminate distributors. Deep gouges or chips cannot be repaired and a replacement would likely be required.

Tile Countertops

Tiles can be made from ceramic, porcelain or natural stone. Ceramic tiles are made from pressed clay. They come in matte, metallic or glazed finishes. Glazed finishes are more susceptible to scratches. Porcelain tiles, also made from clay, are baked at very high temperatures. Their colour goes through the full thickness of the tile, rather than simply coating the surface, and they show scratches and chips less. Occasional application of grout sealer is part of regular homeowner maintenance to reduce staining.



Natural Stone Countertops

Stone countertops require at least the same degree of care as laminate countertops. Natural quarry stone may be as hard as granite or relatively soft and porous like marble. Slate, travertine and limestone can also be used for countertops. They each have varying degrees of porosity and resistance to scratching and chipping. Granite is highly resistant to chips and scratches, but is porous and should be treated every six months with a sealer to prevent staining. Marble is softer and more porous than granite and requires more frequently applied sealer. Slate is durable, heat-resistant and does not stain easily. Extra protection can also be applied if desired in the form of a sealer. Limestone is not recommended for busy cooks, as it stains easily. Acid from citrus fruits can etch some natural stone surfaces and may require professional services to restore. Clean with a soft cloth and mild soap. Avoid abrasive cleaners. Consult the manufacturer for specific care instructions for the type of stone your counters are made with.

Quartz Surfaces and Other Engineered Stones

Engineered stones are composed of natural minerals, such as granite, marble and quartz. Particles of stone aggregate are combined with resin and colour pigments. They do not have the veining or cracks that appear in natural stone, making them more robust. Engineered stone counters vary in their resistance to scratches and stains. For most counters, a sealer is required. Cleaning should be with a mild soap or as per manufacturer's directions.

Concrete Countertops

Concrete contains natural materials - stone, silica-based cement, and water. It requires care similar to a softer stone countertop. Left in its natural state, unsealed, concrete is porous and will stain. Concrete countertops have sealers applied for water and stain resistance. Staining can occur if the sealer is compromised by hot pans, cutting or attack by acidic fruits, vinegars or alcohol. Consult the manufacturer for advice on when sealers need to be re-applied.

Protect the finish by cleaning with a soft cloth and a mild soap. Avoid corrosive or abrasive cleansers, or cleaners that contain ammonia.

Metal Countertops

Stainless steel is an iron, chrome and nickel alloy. It is susceptible to damage from scratching, but nicks or scratches are less visible on low-sheen or sanded surfaces. Stainless countertops can be polished with a damp cloth and baking soda.

Copper takes on a golden-brown colour with age. It is a soft, very smooth metal making it more susceptible to scratching. Copper is best maintained with a sealer of beeswax or butcher's wax.

Cabinets

Cabinetry is now considered to be stationary furniture and should be treated with the same care as you would any piece of fine furniture. Most cabinet bodies are made from medium density fiberboard (MDF) or melamine particle board. The doors are often made of fine woods such as birch, cherry, oak, maple, alder, and mahogany. Cabinet door panels float inside a perimeter frame to reduce stress and diminish the possibility of the panel cracking. These floating panels can shrink and expand due to changing environmental factors that are common in Alberta. This shrinking and expanding is normal.

- Follow manufacturers' recommendations for cleaning and maintenance products designed for the type of wood and finish used. That information typically includes suggestions for restoration products. Most manufacturers of fine wood cabinetry do not recommend wax-based furniture polishes as they tend to build up on the surface. Ammonia-based cleaning products should also not be used as they will prematurely yellow the finish on the wood.

- Modern drawer and door hardware now incorporate nylon wear components and do not require lubrication.

- Most fine cabinetry uses melamine on shelves and internal surfaces. Care for melamine is similar to the procedures used for laminate surfaces. Melamine surfaces can be cleaned as outlined in the section of laminate countertops.

- With use, cabinet and drawer handles, knobs and hardware become loose and will need tightening. This is considered normal maintenance.

Cabinets Doors Do Not Line-up With Each Other

Cabinet doors can move out of alignment with normal use. This can result in doors binding or rubbing. The builder is responsible for a one-time warranty adjustment within the first year, and then the adjustment becomes the homeowner's maintenance responsibility. Most new hardware used to hang the doors or drawer slides are fully adjustable.

Warped Cabinet Doors

Woods such as oak, birch and mahogany are sensitive to extreme changes in the moisture content of the air. They can deform and warp if the air in the house is very dry or if water or steam comes into contact with the face. In cold weather, a humidifier should be used to maintain some moisture in the air. Water spills and kitchen splatters should be cleaned quickly. Warping due to environmental conditions in the house would not be considered a warranty issue.

Chapter 5 – Doors

Exterior Entry Doors

Most entry doors are made of steel or fiberglass with an injected or glued foam core. They are a great improvement over older, exterior wood doors that were prone to seasonal warping, drafts, and always seemed to require painting.

Exterior Door Assembly is Not Providing a Seal Against the Outdoor Elements

Weather stripping provides a flexible seal around doors to prevent unwanted air from moving in or out of your home.

Doors generally have two types of weatherstripping. The first is a compressible, moulded strip of foam or rubber set against the frame towards the outside. The opening part of the door rests against the weatherstripping when the door is closed, forming an air and water seal. The second type is located at the bottom of the door, and is called a “sweep” or a “threshold”. It is typically a metal or vinyl piece that holds a flexible fin or a row of thin fins that sweep across the door sill as the door is closed. Door sweeps can be purchased in a variety of types and depths.

Weather stripping does wear out with time, so each Fall, weatherstripping and sweeps around the perimeter of the entry door should be checked for wear and replaced if necessary. Exterior door sills usually feature a series of adjustment screws so the level of the sill can be raised to the door sweep and provide an effective seal.

The door between the garage and the house should be carefully weather-stripped to prevent garage fumes from entering the house.

Exterior Hinged Screened Doors

Exterior storm doors have traditionally been used to protect wood doors from the elements. In most new homes exterior doors are steel clad with an insulated foam core, eliminating the need for an aluminium storm door.

Storm doors can still be installed over insulated steel doors to provide owners with increased ventilation during warm summer days.

Most screen doors are anodized or enamelled aluminium or steel and require only an occasional cleaning and lubrication of hinges and sliding components.

Exterior Sliding Screened Doors

Normal wear can cause rollers or slides to wear. This can result in latches that no longer align. Dirt in the bottom or threshold track can also interfere with the smooth operation of a sliding door.

Sliding Screen Door Will Not Stay On the Track or Slide Smoothly

To keep a sliding door on-track and working well, the tracks and hardware may require cleaning and lubrication from time to time. If a screen door is loose on the track, check to see if it has been warped by impact. If so, the screen door will likely need to be adjusted or replaced. If the door slides on wheels there may be an adjustment screw in the top or the side of the bottom rail that can be adjusted.

Interior Passage Doors

Wood and wood composite doors are made of natural wood fiber veneers or wood composite panels over a frame and are not as durable as exterior doors. Interior doors do not have or require weatherstripping. There is usually a generous gap below each interior door to facilitate air movement from room to room when the door is closed. Remember to re-establish this gap should you decide to install a thicker floor finishg. Consider hiring a carpenter for such a renovation.

Veneer Wood Door Panel Has Split

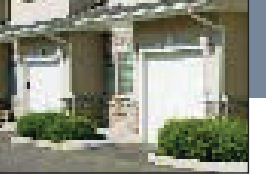
Interior doors can be affected by changes in indoor relative humidity. A house with a very low or very high humidity may cause the veneer on an interior door to shrink or expand causing the veneer to delaminate from the supporting frame or shrink and split. Once this has happened the door is difficult to repair. It is essential to control the humidity levels in the home to prevent this from occurring.

Bifold Doors

Bifold doors are anchored by a pin that fits into a bracket attached to the closet frame at the floor. They also have a bracket at the top that moves in a track. As the sliding bracket wears, it can cause the door to stick and bind. Catching a coat sleeve between the doors as they close, or merely bumping the doors, can loosen the top bracket or move the anchor pin in the bottom bracket. The top brackets contain a set screw that can be loosened so that the bracket can be adjusted. If the bracket's slide or pin wears out, it can be replaced.

Bifold and Sliding Doors Come Off of Tracks

If the door height is not properly adjusted to raise the door firmly into the top track, the door may come off of the track. Using a pair of pliers, unscrew the pin in the bottom bracket to push the door up and firmly anchor it into the track. The bottom pin can also be adjusted back and forth or up and down to re-align the door gap.



Garage Doors

Most garage doors are made with a polyurethane foam core wrapped with a textured, painted, steel or aluminum skin. These door surfaces require only a light cleaning to maintain them.

Overhead Garage Doors Do Not Operate Properly

Once, every few years, the hinges on the garage door should be lubricated. Perimeter weather stripping should also be examined each fall and replaced if necessary.

Most overhead garage doors feature automatic door openers. These units require periodic maintenance specific to the model and make. You should be familiar with the functional and safety features of the unit. In the event of a power outage it is particularly important that you know how to disconnect the overhead door from the track. On most models a red handle on a short rope will dislodge a pin and allow manual opening and closing of the overhead door. Your service manual will detail exactly how to re-establish the connection. It is a good idea to review this procedure before a power outage actually happens.

Overhead garage doors often use weight compensation springs to offset the weight of the door. These springs store considerable force and can easily inflict critical injuries. Homeowners are strongly cautioned NOT to adjust the weight compensation springs.

If your have personal access to your home from the garage, the door is a fire rated steel door and has an automatic closer. Do not replace that door with a conventional wood door and do not disable the automatic door closer, as this would constitute a contravention of fire regulations.

Chapter 6 – Exterior & Interior Finishes

Vinyl Siding

Vinyl siding is generally a maintenance-free exterior finish which can be washed occasionally with a mild detergent and a garden hose to remove dust. Do no use a power-washer as you can force water behind the siding and cause water to leak into the wall.

Masonry

Masonry refers to a construction of traditional units such as clay bricks, concrete bricks, natural stone, or one of the many types of manufactured stone units available on the market. Masonry veneer is constructed from these units laid in a mortar bed, and anchored by metal ties to the wood frame of the home.

The masonry limits the inward movement of moisture. An air space located behind the masonry prevents further absorption of moisture inward and allows air circulation for drying. Any moisture which does pass through the veneer is drained downward in the air space to the wall base where it is redirected back to the exterior. Snow should not be allowed to accumulate against a masonry surface; Sprinklers, especially automatic sprinkler systems, should never be directed against the wall surface. The volume of water projected against the wall by a sprinkler in a very short time period can be many times larger than the most severe of rainstorms.

You may notice empty vertical joints, without mortar, between adjacent bricks or stone units along the bottom row of masonry at the wall base. These are not builder oversights, but rather “weep holes” which are intentionally placed during the construction of the masonry. They allow drainage of moisture from behind the masonry veneer back to the exterior, and air circulation in the air space for drying. Do not fill or block them. Planting beds should not be built up to cover masonry weep holes.

Hairline cracks between bricks or stones and mortar are usually not a concern as they have little effect on the wall’s ability to manage water. However, loose bricks or stones and missing mortar should be replaced.

Efflorescence on Masonry

Efflorescence is a mineral salt deposit, usually white in colour, which may develop on the surface of masonry. All masonry materials are susceptible to efflorescence. As water moves through the body of these materials, it will dissolve any available mineral salts. As the moisture evaporates at the surface, it will deposit these salts. The degree of efflorescence varies with the age of the finished surface, the type and colour of the cement materials, weather condition, and the availability of water and salt sources.

There are several potential sources of mineral salts. The most common source is the salt naturally present in cement-based construction materials, not yet bonded by chemical reaction with the cement particles. The water used to mix cement-based materials may also contain some salt. Tap water is usually low in dissolved salts, but well-water can contain high concentrations. Where masonry is in contact with horizontal surfaces such as a driveway or sidewalk, avoid the use of de-icing salts adjacent to the masonry. They provide the source of salt, and melting snow and ice provide the water source. Planting beds should not be built up to cover masonry. The soil provides a continuous supply of moisture and salts for absorption by the masonry.

Efflorescence is usually temporary because the salt source is very limited, and will usually occur only during the first year or two after construction. It tends to lessen with the passage of time as the materials “purge” themselves of salts unless there is a source such as soil or de-icing salts present.

Wood or Composite Wood Sidings and Trims

Wood siding and wood composite sidings and trims may require new primer and paint every few years. In Alberta, house walls that face to the south and west will experience the most weathering. Where wood siding pieces join or where they butt up against a trim (such as at a window) there may be sealant. Once a year, exterior sealant should be examined for voids and shrinkage that could permit the entry of wind driven moisture into the wall cavity. Remove any defective caulking and replace it with a bead of a high quality sealant. Some silicone blends will accept paint and that feature is usually noted on the tube. Read sealant tube labels carefully and follow directions.

Check for Moisture Migration

As you consider repainting wood siding or trim, examine the old paint for any patterns or discolouration that could indicate an underlying problem that should be investigated prior to painting. Exterior bathroom walls are particularly susceptible to blistering of the paint and may indicate that moisture is traveling through the wall and condensing on the back of the siding. Any underlying problems should be corrected before applying new paint. Follow the advice of a reputable paint store for preparing and refinishing the siding or trim.

Brilliant and dark colours may fade more rapidly than lighter colours.

When watering lawns, it is a good idea to avoid excessive overspray on any type of exterior cladding.

Cement Board Siding

Cement board sidings are made from a mixture of cement and wood fibers. These sidings come in planks, shingles and panels. They have a painted finish, and as such, will require re-painting over time. The length of time depends on the colour chosen, exposure to sun, driving wind and rain. Consult the manufacturer when you are ready to re-paint.

Stucco

If the exterior of your new home is finished with stucco, hairline cracks may appear in the finish coat, some of which is to be expected. Minor cracking (hairline cracking) is normal. Hairline cracking will be most noticeable on smooth finish coats.

Do not wash your stucco with a high pressure spray or let your lawn sprinkler saturate the wall, especially within the first year of when the home was built. Stucco is a porous material and water will eventually make its way behind the material where it can accumulate and leak into the wall.

Water that falls on a stucco wall in the first year may bring out salts contained in the stucco that have not yet had a chance to bond in the material. These salts appear as white streaks or spots on the wall. The name for these deposits is “efflorescence”. The salts can usually be removed with a brush.

See Chapter 6, “Efflorescence on Masonry”, for additional explanation on efflorescence.

Paint

Paint surfaces get scuffed, marked and chipped through normal use. Paint colours and sheen can dull with exposure to cleaners, dirt and strong light. Painted walls can be cleaned with a mild soap and water. Abrasive scrub pads used to remove scuff marks will dull or scratch the surface.

Clear Finishes

The use of inappropriate household cleaners, abrasives, soaps and wood conditioners may contribute to discolouration and premature deterioration of a clear finish.

Virtually all applied finishes will fade when exposed to sunlight over time. Areas of intense, direct sunlight exposure can be affected more than other more shaded areas.

Clear finishes on fine woods are influenced by the wood substrate and the moisture balance in the wood. Humidity levels that are too low or too high, or fluctuate often between the two, can cause a fine network of cracks called checks or wider cracks in clear finishes as the wood expands and contracts.

Interior Sealants

Sealant is usually a clear, white or light coloured flexible material placed where two hard surfaces come together. It is often seen at the joint between a countertop and a backsplash, or where a tile wall meets the top of a bathtub. The purpose of this "bead" of sealant is to help prevent water from finding its way behind water resistant materials and damaging the less resistant materials behind the joint. To protect the water susceptible materials, this bead of sealant should be applied in a continuous, unbroken line.

Over time, with cleaning, or through natural expansion and contraction of the materials, the sealant bead may crack or separate from one or both sides of a joint. The condition of sealant joints should be reviewed on a regular basis, and if damage is detected, repaired as soon as possible. After the warranty period, the maintenance and repair of the sealant is the responsibility of the homeowner.

Water Has Penetrated Behind a Bead of Sealant

If water has penetrated behind the sealant joint:

1. Check for damage of the materials underneath the joint. This could be a discolouration or a softness. Look for damage from the source of the penetration to the floor as water often runs behind cabinets or down drywall toward the floor;
2. Replace or dry and repair the damaged area;
3. Remove all or part of the old sealant bead and clean and dry the area;
4. Re-apply an appropriate type of sealant for the application. Various types of sealants are specially formulated for kitchens, bathrooms and other applications.

   The tubes of sealant will provide information on the properties of the sealant and suggestions on application.

Water Has Penetrated Behind Ceramic Tile Bathtub or Shower Enclosures

Grout joints or caulk joints between ceramic tiles and adjacent surfaces may deteriorate over time under normal use and should be inspected routinely. If a water leak is allowed to develop behind a tub or shower, the leak can soften or swell the substrate that the tiles are attached to, causing the tiles to break loose. This provides further areas for water to penetrate. Small amounts of water may run behind the tub or shower soaking wood components and creating the conditions for mould growth and rot.

If the grout is cracked, repair it and then re-seal it. If the caulking is failing, remove, clean the substrate and replace the caulking bead. If there is no apparent break in the grout or the caulk, clean the tiles and the grout lines and re-apply a sealer. Also check for leaks from the water pipes or the drains.

Wall Coverings

Wall Covering is Peeling

The glue used to adhere wall coverings to the wall is softened with moisture. If the wall covering is installed in a room with high humidity, such as a bathroom, the high level of moisture in the air can soften the glue holding the covering to the wall and cause the covering to begin to peel back. Proper ventilation, especially in kitchens and bathrooms can help prevent this situation.

In some cases, wall coverings will peel at the corners. In this situation, it is likely that the corner was insufficiently wetted to activate the glue adhered to the paper. Try wetting the corner and applying pressure for a few minutes.

In some cases, the paper has curled back and the glue underneath has dried. In this case a seam sealer can be applied. Seam sealers are available through paint and wallpaper retailers.

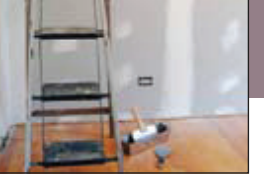
Grout

Grout is a thin mortar used to fill the joints between wall or floor tiles. The grout is a mixture of fine sand and cement and may contain a pigment for colour. Manufacturers can also add other ingredients designed to impart other characteristics. These are the “modified” or “enhanced” grouts. All grout is porous and can stain. Sealing grout and maintaining that seal can greatly reduce discolouration.

The first step in choosing a sealer is to know the type of tile you have. Different materials will have different absorption characteristics which will affect the look and the cleaning of the tiles after the sealer is applied. A sealer can affect the appearance of the grout by bringing the natural colours to life and minimizing minor issues. Sealers also impart varying degrees of resistance to stains by the grout. Contact the original supplier of the tile or a reputable tile dealer to help with identification of the tile, grout and recommendations for the type of sealer and its proper application.

Grout is Not Uniform in Colour

Grout can be easily discoloured (especially lighter shades) by routine activities. Even something as simple as washing a tile floor can cause grout to discolour over time. There are a variety of cleaners and sealers available on the market to restore and maintain grout.



Chapter 7 – Gypsum Wallboard

A wood-framed two story home can shrink vertically. This results in substantial forces on virtually any rigid building component, including gypsum wallboard (drywall). A minor drywall crack can easily be remedied with filler and primer when a room is scheduled for repainting.

Drywall screws are used today and maintain their final positions much better than drywall nails of yesteryear. Nails are still used to initially hold the wall board in place until it can be screwed down. "Nail pops" are caused when wood shrinks and expands, forcing nails holding the gypsum to work their way through the wall board. This results in a bump in the drywall as the nail forces its way through the drywall. These nail pops typically appear at the upper edge of a wall or at a truss line on a ceiling.

Nail pops can be repaired by cutting away the wallboard over the nail head that has bulged, pulling the nail with a pair of needle-nosed pliers, or nailing it in further with a punch or replacing it with a screw. Fill the hole with joint compound, prime and re-paint.

Chapter 8 – Flooring

Flooring - Resilient

Resilient flooring refers to a family of plastic flooring that offers a measure of impact absorption that makes floors more comfortable to walk upon. It is commonly available in sheet format as well as 12″ x 12″ flexible tiles.

Cleaning and Maintenance

Vinyl flooring can be scratched by sand and abrasives so it should only be cleaned by damp mopping with lukewarm water and a mild detergent. Harsh cleaners can cause fading, discolouration and in some cases, make such materials hard and brittle. Stubborn scuff marks can usually be removed with a damp cloth and some effort.

On resilient tile floors, use water sparingly. Excessive water may seep between tiles, flooring joints and where the flooring meets baseboards and other trim. Any uplifted edge or corner should be repaired immediately to prevent water intrusion and growth of the uplift. The repair may require contact cement and the application of pressure to reset the flooring.

Although some resilient flooring may present itself as “No Wax” you may find the best way to restore a high lustre is with some type of wax or acrylic product recommended by the manufacturer. Waxes containing solvents, varnish, shellac or any plastic finishing material should not be used as the solvents may cause material breakdown or buckling.

Ridges or Depressions

By its resilient nature, heavy furniture can impart dents in the flooring. Usually the impressions will restore themselves when the pressure point has been lifted. The occurrence of dents can be reduced by a leg coaster that distributes weight over a larger area.

Occasionally a piece of material can become trapped beneath the floor during installation and can cause a “ridge” to rise up in the surface of the flooring. The visibility of ridges is dependant on a number of factors including texture, pattern, colour, type of resilient material and lighting. Repair of these issues may require cutting and removal of a section of the floor, which may be more obvious than the original ridge and should only be undertaken by a professional.

Fading and Discolouration

Resilient flooring is subject to the same fading as any other flooring subjected to constant and direct sunlight. Window coverings will reduce this effect.

An incompatible material in contact with the floor can react with resilient flooring and cause a yellow discolouration. Items such as latex-backed carpets (kitchen or bath), oven cleaners, hair sprays, and foods such as mustards and vegetable dyes can cause this discolouration. This discolouration cannot be removed by cleansers and some bleached based chemicals can actually aggravate the situation. Sometimes the discolouration will fade with time.

Flooring – Hardwood

Hardwood flooring is a term used to describe flooring products made from wood harvested from broadleaf trees as opposed to softwoods harvested from trees with needle-like leaves or "evergreens". The term hardwood does not necessarily relate to the impact resistance of the wood. New materials such as bamboo are also included in this category of flooring. The wood is typically solid wood, applied linearly or in a parquet pattern. Most hardwoods are applied directly to the floor, however, "engineered" hardwoods often use a 1/8-inch thick hardwood on top of a plywood substrate. The plywood substrate adds dimensional stability and resistance to shrinkage. Both types of hardwood floors use real wood on the cosmetic surface of the floor.

It is important to remember that each piece of wood in a hardwood floor is unique. Grain structure, knots, dark patches and light patches are points of character that add to the warmth and charm of hardwood flooring. Even in Choice and Select grades of hardwood these variations will exist.

Wood and Moisture

Hardwood flooring is highly susceptible to changes in indoor relative humidity. The first two years are especially critical for fine woods, while the wood normalizes to climatic conditions. Hardwood floor manufacturers suggest relative humidity settings of 40-50% year-round to minimize cupping and crowning. This is unrealistic in the winter in a cold northern climate without experiencing condensation on exterior components of the home, most likely the windows. The amount of humidity maintained in your home must be balanced to provide human comfort, minimize condensation as well as maintain your wood floor. Excess humidity must be controlled through reduction and ventilation and excessively dry conditions must be addressed by humidification.

Cracks are Developing Between Strips of Hardwood

Cracks can develop between strips of hardwood if the wood loses moisture due to a very low relative humidity in the home. Adjust your humidity, especially in the winter.

Areas around heat registers and areas exposed to concentrated sunlight may be more susceptible to shrinkage. Broader strips of hardwood are more prone to cupping and cracking than narrower hardwood strips. Quartered vertical grain product is more stable than plain/flat-sawn material. Darker coloured hardwood floors with low gloss finishes and complex grain patterns are more visually forgiving.

Wood flooring applied over a floor with radiant heating underneath it is also more susceptible to cracks developing between the strips of wood. Radiant heating systems should be engineered for wood flooring with correct heat source temperatures and thermostatic controls. An engineered wood floor, where the hardwood is attached to wooden sleepers, is a better choice over radiant heated floors than direct applied products

Cupping, Crowning and Shrinkage

When wood absorbs moisture in the air or gives up moisture to the air, the wood fibres stretch and shrink. This shrinking and stretching happens faster at the edges than in the middle of a piece of wood. This can cause separation between the pieces of wood, or “cupping” where the long edges of the wood units are higher than the center, or “crowning”, where the edges shrink, causing the middle of a piece of wood to rise.

Cupping usually occurs when excess moisture comes in contact with the unfinished side of the wood. This water could come from a leak or drip or from water which originates from a previously wet area such as the sub floor, a crawl space, or a freshly poured basement floor slab.

If excessive moisture is causing cupping, identify the source, remedy the problem, and then allow the flooring to reacclimatize to the new drier environment (this may take a heating season). After drying to normal conditions, the flooring should flatten.

Cupping can also be caused by the flooring acclimating to an area which has higher moisture content than the moisture content of the wood at installation. This cupping is generally permanent and changes little with the seasons.

In some cases, a slight cupping or crown can be a seasonal occurrence and the issue will diminish over time. If it is a constant aggravation, a particular piece of wood can be replaced.

When cupping has not changed noticeably in 12 months, sanding the floor flat is the most common option, followed by refinishing. After finishing, the floor should remain flat as long as the environment does not change from the previous norm. For the permanently cupped floor which shows a small difference in the cupping with the seasons (i.e. cups more during the humid season) sanding at mid-season (spring, fall) mediates the expected change.

Crowning occurs when wood flooring loses some excess moisture, shrinks on the underside and flattens, leaving the edges of strips lower than the centers. This most often happens when a floor is sanded when it is slightly cupped. The upturned outer edges are sanded off and become slightly thinner than the middle of the boards. If these boards later dry and flatten to their original position, the thin edges recede, leaving the top of boards convex (edges lower than the centers) and the back again flat against the sub floor.

Pops and Other Sounds

Parquet or laminated wood block flooring may make noises resembling a “cracks” or “pops” as it expands and contracts. These noises are usually infrequent and should not be cause for alarm. Often times, exotic woods with extreme hardness and stability will pop and crack as they adjust to their new environment as well.

Durability Considerations

Most hardwood flooring installed today is pre-finished with aluminium oxide, UV-cured urethane. These coatings are extremely hard and long wearing but that does not mean that wood beneath the coating cannot be dented. A one hundred pound lady wearing high heels can exert over 400 pounds per square inch at the heel of her shoe. In some instances, this is sufficient to impart a dent in hardwood. High heeled shoes should not be worn on hardwood floors.

To a great degree, the durability of a wood floor finish is a function of how well it has been protected from the abrasive effects of dirt and especially sand. A protective runner in hallways, in front of kitchen sinks, and along well trodden paths, can alleviate wear patterns. If you are renovating, consider installing an alternate material at entry points to reduce the opportunity for abrasives to come in contact with hardwood flooring.

Hardwood floors can be vacuumed using a soft head attachment specifically designed for this purpose. A power head (beater bar) should not be used on hardwood floors. No amount of standing water should be left on the surface of a hardwood floor.

Hardwood Floor Finish Seems Dull from Cleaners

Corrosive solutions, chlorine cleaners or abrasives will, over time, dull the finish of a hardwood floor. Use **only** cleaners recommended by the manufacturer of the hardwood floor. Commonly available cleaners, soaps, oils, waxes or polishes can adversely affect the finish of the floor. Damages that may occur from using an "off-the-shelf" cleaner is typically limited to a return of the product purchase price and not to damage that may result to the floor or finish. The Program is not aware of any hardwood floor cleaners that are universally recommended by all hardwood manufacturers.

Direct sunlight can fade hardwood floor colouring just as it can fade carpeting. Closing curtains and filtering the light reduces fading.

For further information on hardwood flooring see the National Wood Flooring Association at: **http://www.woodfloors.org/consumer/**

Carpet and Area Rugs

The performance of carpet is determined by the height of the cut, the density of the construction, the backing and the type of fibre. Carpet fibres are made from nylon, olefin, and wool.

Carpeting fibres today are very durable. Dirt and sand are the major causes of carpet wear. With each compression of the carpet, a particle of sand is given another opportunity to cut at the carpet fibre. A clean carpet will last years longer than a dirty carpet. Use a vacuum with a beater bar. You will not wear out your carpets by vacuuming them.

Cleaning Considerations

Remove spots and spills immediately to prevent them from setting. Routine food spills can typically be removed with water. Pretest any spot removal agent or cleanser in an inconspicuous area to make certain the solution will not damage the fiber or the dye. Apply a small amount of the selected cleaning solution to a white cloth and blot. Do not scrub! Blot, absorbing as much as possible, and repeat, if necessary. Work from the edges of the spill to the centre to prevent the spill from spreading. Rinse the affected area thoroughly with clear water after the spill has been removed. Blot with a dry cloth until all of the solution has been removed.

For oil-based stains such as ink, grease, nail polish, tar or wax consult a cleaning professional. Never use bleach on a carpet stain. If it does remove the stain it may also remove the carpet colour.

Seasonal carpet cleaning will remove oils and imbedded dirt and renew your carpets. Professional carpet cleaners have powerful “steam” and vacuum systems that you may wish to consider.

Carpet cleaning products are available that contain anti-allergens. These products may be considered if members of the household are particularly sensitive, or if you have pets.

Fine area carpets should be professionally cleaned and can be damaged by water and conventional carpet care products. Consult a professional for the best cleaning option available to suit your particular type of carpet.

For Further Information on carpet see:

- ***The Canadian Carpet Institute website: http://www.canadiancarpet.org/owner.html***
- ***The Carpet and Rug Institute website: http://www.carpet-rug.com/***

Carpet Is Loose or Stretching Has Occurred

Carpet can stretch due to high heat or humidity and may lift along a room perimeter if the tack strip holding the carpet is no longer holding the carpet backing adequately. In most cases, the carpet can be re-stretched and re-attached. A ripple in the middle of the carpet can occur after heavy furniture has been moved across the carpet that was still wet from carpet cleaning. In either of these situations, a professional carpet installer should be utilized to correct the issue.

Carpet Has Dark Stains Around the Perimeter of Rooms and at Heating Registers

Filtration soiling may appear as dark or grayish lines on carpet along walls or stairways, around vents, and under doors. It is caused by airflow over and through the carpet that allows fine, airborne particles to settle on the carpet surface. This type of soiling, while sometimes permanent, requires special treatments for effective removal. Contact a carpet cleaning professional for assistance.

Homeowner activities such as candle burning, fireplace smoke or vehicle emissions from an attached garage can contribute considerable particles to air within the house. These dark particles can contribute to carpet staining as they settle onto the carpet surface or are circulated around the house by the heating.

Flooring – Laminate

Laminate flooring provides another hard surface option for homeowners in locations where solid hardwood would not be recommended. Laminate flooring evolved out of products created in Scandinavia in the 1980's and moved into the North American market in the 1990's.

Laminate is composed of a wear layer, a pattern layer and one or two very dense, rigid layers that provide impact resistance and connection for the flooring system. These layers are an engineered wood product, and as such, are susceptible to moisture swelling. However, laminate flooring is dimensionally more stable than solid hardwood. Most new laminates include some type of moisture sealant to protect against moisture penetration of this layer. Although it is often designed to look like hardwood flooring, it is also available in finishes that resemble ceramic tile or patterned to look like resilient flooring.

Laminate flooring generally does have a very hard wearing surface but it can be chipped. It cannot be sanded and refinished like solid hardwood flooring.

Laminate floors are designed to be relatively maintenance free. Do not use abrasive or harsh cleaners or scouring pads. It is not recommended to wax, polish, sand, or lacquer a laminate floor. Sweep, vacuum or damp mop with water and a cleaner approved for the specific floor. Contact the manufacturer for stains caused by such things as paint, adhesive, asphalt, oil, etc. Never use a steam cleaner on a laminate floor.

Laminate Flooring Sections are Swelled

Water should never be allowed to stand on laminate flooring as one of the layers of the material is a manufactured wood product. Wood in any form is always subject to movement when exposed to air borne moisture or water.

If the laminate has swelled due to water, contact the supplier and arrange for a professional repair, or follow the manufacturer's recommendations for cleaning.

Chapter 9 – Roofing

The roof of your house should give you many years of service. Asphalt shingles are the most common type of roofing materials, but alternatives such as tile, concrete, wood, rubber and metal are gaining market share.

It is good practice to check for loose, broken or missing shingles following heavy windstorms. Storm-related damage is not a builder responsibility, therefore maintenance repairs should be made as soon as possible after such occurrences to prevent leakage that can cause damage to the interior of your home.

Roofs are can be damaged by the installation of things such as TV aerials. Care must be taken during their set-up not only to avoid damaging the shingles but to also assure that hold-down devices (e.g. screws) are properly sealed to prevent leaks.

Slight differences in colour shades are inherent to the manufacturing process even within the same factory run. Shading of asphalt roofing is normal and unavoidable, and does not affect durability.

Asphalt shingles are soft on warm days and the top surface containing protective granules can readily be damaged by people walking over them. If someone must walk on the roof, it is best to do so in early morning while the shingles are still cool to the touch. Exercise great personal care when performing maintenance.

Asphalt Shingle Edges are Curled or Cupped

As shingles age, they will shrink and curl slightly, but in new shingles, curling or cupping is often related to cool temperatures. When frost forms on the top surface of a shingle, the surface of the shingle is cooled. At the same time, the underside of the shingle in contact with the deck receives a certain amount of passive heat from the attic. As a result, the underside of the shingle is slightly warmer relative to the top and the shingle lifts or curls up slightly.

This effect is noticeable to a greater or lesser degree with all shingles depending on shingle age, attic ventilation, shingle type, roof pitch, humidity, climate, colour, etc. This does not affect the performance of the shingles as they need not be completely flat to fulfill their water deflection function.

Eavestroughs and Downspouts

Information can be found in Chapter 1, just below "Drainage"

Roof or Flashing Leaks

Occasionally an ice dam occurs near a chimney or roof vent due to the design of the roof and/or an accumulation of heavy snow at that point. This may cause water to move under the flashing. Special care should be taken to ensure snow does not accumulate near flashed areas and roof eaves.

Eavestroughs Overflow During Normal Rain

The volume of rain an eavestrough can accept is affected by the amount of debris in the trough. Material that gets lodged in downspouts can affect the ability of the downspout to drain. Dented or bent downspouts can slow down the flow of water. Keep eavestroughs and downspouts free of obstructions such as leaves and paper. Surface particles from asphalt shingles, washed down by rains, often settle in eavestroughs and reduce their efficiency. Eavestroughs should be cleaned each Spring.

Ice Damming on the Roof

Ice dams can happen anywhere in Canada where freezing weather occurs but are especially prone to form when weather cycles include snow, above freezing temperatures during the day, and below freezing temperatures during the night. An ice dam is formed when snow on a roof melts and runs down the roof toward a portion of the roof that projects beyond the wall (the eaves). The melt can be caused by heat in the attic or sun on a south or west facing roof. The eave of the roof is cooler than the upper areas of the roof and the water will freeze at the edge. As the area of ice grows it acts as a dam and stops water from flowing into the eavestrough or off the roof. As water and ice accumulate it will begin to back-up under the shingles. In excess this can cause water to enter into the attic and possibly the room beneath.

Where ice dams occur, temporary relief can be obtained by clearing the snow off the roof, particularly at the eaves, attic roof vents, bathroom vents and kitchen vents. Remove ice formations from the eaves and at the end of the valley that is formed where two roofs join. Take care not to damage the roofing and use safe work practices when on the roof.

Chronic ice damming may indicate that the insulation in the attic has moved from the area near the wall. The escaping heat from the room below can increase snow melt upon the roof. The insulation should be checked, and if displaced, returned to its proper position. Insulation should be positioned up to the exterior perimeter of the wall but not to interfere with the exchange of air in the attic and the free flow of air to the soffits. A cardboard batten is usually installed to maintain the necessary 2-inch space between the top of the insulation and the underside of the roof sheathing.

If you are considering adding insulation to the attic, do not block air circulation to the soffits. Attics require circulation to properly expel moisture, heat and to prevent condensation problems.

Chapter 10 – Fireplaces

Fireplaces generally operate on either natural gas or solid fuel (wood, manufactured logs, pellets, etc.).

Curing or "Burning In" of New Fireplaces

Materials found on the external surfaces of a new wood or gas fireplace, such as paint, sealants, lubricating oils and gasket adhesives, can produce odours and small amounts of carbon monoxide for the first few times that the fireplace is used. This is called "curing" or burning in. If your home has a carbon monoxide detector installed, it may detect the carbon monoxide and sound an alarm. It may take as much as 24 hours of run time before the fireplace is cured. The fireplace should be burned for periods of no less than 5 to 6 hours at a time with a high flame. If the fireplace system is equipped with a fan, do not run it during the curing period. The fan cools the surfaces and inhibits the curing process. Ensure you provide good ventilation in the house during the curing period.

Natural Gas or Propane Fireplaces

Natural gas fireplaces have eclipsed the popularity of solid fuel burning appliances in most municipalities. Generally, gas fireplaces operate in much the same manner as natural gas furnaces and should command an equal amount of caution and operational awareness. Read your owners manual. Fireplaces and other open flame appliances should never be left unattended when in operation.

Most natural gas fireplaces pull combustion air from the outside through an inlet vent. These vents should never be obstructed. Since conventional gas fireplaces have their own air intake and exhaust paths, there is no damper to open and close as there is in wood burning fireplaces.

After several years, it is not uncommon for a sensor (called a thermocouple) to fail. When the sensor fails, the fireplace mysteriously shuts down, extinguishing the pilot light as well. If this problem persists you will most likely require a new sensor. The thermopile can be serviced without invading the natural gas line so the repair can be done by the homeowner if he or she has that degree of mechanical aptitude. Most homeowners simply call a service technician.

Solid Fuel Burning Appliances

The efficiency of solid fuel burning appliances has increased greatly since the late 1990's. Most are equipped with positive closures on their doors, eliminating the drafts that can move down the chimney and cool the room with an open front design. Better models bring air directly from the outside to the firebox to ensure the appliance does not draw air from the home.

When wood burning appliances are operating, the hot gases coming off the fire rise and move out of the chimney. This in turn causes the draw of cooler air into the firebox. In a cold fireplace, a blanket of denser, cold air sits in the chimney flue. This cold air needs to be warmed to begin the cycle of rise and draw (the draft) that is needed to operate a wood burning system. To prevent the generation of a large amount of smoke when you initially start a fire, ensure the chimney flue is open, and preheat the chimney to begin the rise and draw cycle. This can be done by building a small hot fire using paper and small slivers of wood, or by preheating the chimney with heat from a hair dryer. You may want to ensure a window is slightly open to provide replacement air to the room before lighting the fire.

As gas or solid fuel burns, it releases heat, moisture, and combustion gases. These gases contain a component (carbon monoxide) that is dangerous and can result in asphyxiation. Be aware that when smouldering embers are not generating enough heat to maintain the chimney draft the gases accumulate in the firebox. They are heavier than air and can "flow" out of the firebox. **Do not** leave the doors to the appliance open. **Do not** close the chimney damper until all ashes are cold to the touch. If any smoke or gas is being emitted, a closed damper could tragically divert those gases into the living spaces of the home. A carbon monoxide alarm should be placed near the wood burning appliance in accordance with the manufacturer's recommendations.

Carbon Monoxide Detectors

Carbon monoxide (CO) is a colourless and odourless gas. You can't see, taste or smell it. Carbon monoxide is a common by-product of the burning of natural gas, gasoline, and solid fuels (wood, pellets). If properly installed, maintained, and operated, appliances produce little CO. However, if anything disrupts the venting process (such as a bird's nest in a chimney) or restricts the oxygen to a gas burner, CO production can quickly rise.

Gasoline engines produce carbon monoxide and produce the most CO during the start-up of a cold engine. A buildup of CO can occur if you start and then idle your car or gas mower in the garage. The fumes that contain CO can enter a home through connecting walls or doorways and can quickly rise to dangerous levels. Check doors that lead from the garage to the home to ensure they are properly sealed.

Carbon monoxide detectors will be required in the 2007 Alberta Building Code in a room that shares a floor wall or ceiling with a garage and in rooms with solid fuel burning appliances. They are different than a smoke detector in that carbon monoxide detectors detect abnormally high levels of carbon monoxide gas that is invisible and practically odourless.

Owners should read their owner's manual and understand what level of CO their particular model is capable of sensing, and what to do in the event that it sounds an alarm. Further information on this topic can be found at:
http://www.epa.gov/iaq/co.html

Installation Considerations

10

- Read the manufacturer's instructions carefully before installing a CO detector.
- Do not place the detector within five feet of household chemicals.
- Avoid placing your detector directly on top of, or directly across from, fuel-burning appliances. These appliances will emit some CO when initially turned on.

Maintenance Considerations:

- If your detector is wired directly into your home's electrical system, you should test it monthly.
- If your unit operates off of a battery, test the detector regularly. Battery operated units should have their batteries changed each spring (along with smoke detectors), or more often, as prescribed by the manufacturer.

Smoke and Fire Detectors

Smoke detectors are required by code. They are available as 120 volt wired-in models and as 9 volt battery types. It is a good idea to have both power types in your home. The 120 volt types do not need a battery and the battery types still serve your family in the event of a power outage.

Maintenance Considerations

- Test your smoke detectors each month by depressing the "Test" button. National tests conducted in the U.S. found home smoke alarms, when they fail, tend to fail totally, as opposed to creeping failure, such as a loss of sensitivity. Regular testing will help discover alarm failure as well as a dead or missing battery.
- Replace the batteries in your smoke alarm, or as soon as the alarm "chirps" warning that the battery is low. Hint: schedule battery replacements for the same day you change your clocks from daylight savings time to standard time in the fall.
- Never "borrow" a battery from a smoke alarm. Smoke alarms can't warn you of fire if their batteries are missing or have been disconnected.
- Don't disable smoke alarms even temporarily. If your smoke alarm is sounding "nuisance alarms," try relocating it farther from kitchens or bathrooms, where cooking fumes and steam can cause the alarm to sound.
- Regularly vacuuming or dusting your smoke alarms, following the manufacturer's instructions, can keep them working properly.
- Consider installing smoke alarms with "long-life" batteries.
- Do not paint a smoke detector.
- Smoke detectors are a sensory devises that have a lifespan. Each year, smoke detectors get more efficient and cost less. Consider replacing the smoke detector every ten years or less.

Chapter 11 – Plumbing

The plumbing system in a home consists of plastic drain piping, copper or plastic water delivery piping and the fixtures (such as toilets, tubs, showers, sinks or faucets) that connect to these piping systems.

If you are finishing a basement, take note of the plumbing routes and accommodate access to meters, valves, drains and cleanouts.

Private Sewage Treatment Systems

Outside of municipalities, the drainage system of the home may carry sewage to an on-site private sewage treatment system. If you have a private sewage treatment system, it is very important that you fully understand the workings of your particular system. There are a variety of systems used and maintenance procedures are unique to these systems. In Alberta, the "Private Sewage Systems Standard of Practice" requires that the installer provide the owner of the system with an **operations and maintenance manual.** Ensure your builder has transferred this manual to you and you are familiar with its contents. The system must be correctly and regularly maintained to ensure that it operates properly. Faulty systems create health hazards and contaminate the environment. A private sewage treatment system may require regular service by a professional.

Most systems are located some distance from the home and may have restrictions on what is placed or grown above or around them. Also keep heavy construction equipment away from the septic tank and disposal system and keep all traffic off the system during the winter months. Certain chemicals and products can alter the balance of bacteria and microbes that breakdown waste.

Plumbing Drains

Virtually all draining plumbing fixtures feature a water filled "P" trap. The trap holds a few cups of water that prevent sewer gases from entering the home. If any sinks, bath tubs and floor drains have not been used over an extended period of time it is possible that the water seal has evaporated. The seal can be easily re-established by pouring a few cups of water down the drain.

The most common problem homeowners encounter is blockage of a drain which can lead to a sewer back-up. If you experience a sewage back-up from the main sewer line in the basement during a heavy rain, contact your builder, your insurer and the municipality. The issue may involve the municipal sewage system which may be beyond the builders' control.

Sewers, Drains or Fixtures are Blocked

You can avoid the majority of drain blockage problems by not disposing of fats, oils, waxes, greases or any type of sediments in the plumbing system of your home. Never dispose of flammable, noxious or dangerous materials through the plumbing system.

Generally, traps become blocked and they can be removed to facilitate cleaning or locate a cleanout to utilize a proper cleaning tool. Note: Extreme caution should be used if acid or corrosive drain cleaners are used. Always inform a plumber if you have utilized any chemical drain cleaners. These types of cleaners can cause chemical burns to exposed skin.

Plumbing Supply Lines

Water Pipes Are Leaking or Have Frozen and Burst

If a leak is detected in a water supply line, the water supply to the house or to the area affected should be turned off immediately and the builder and the insurer be contacted. Water that is allowed to leak can find paths that could create an electrical safety hazard or travel to areas where it will pool and promote hidden structural damage or mould. Clean up water from a leak as soon as possible to minimize damage to finishes and materials.

When colder weather approaches, disconnect exterior hoses, shut off exterior valves and allow the line to the exterior hose bibs to drain down. "Frost free" lines will not protect outside water supply lines from freezing if the exterior hoses have not been disconnected from the threaded connection, as the automatic drain down function of these valves cannot work with a hose connected.

Condensation Appears on Water Supply Lines and Toilets

Condensation happens when pipes or toilet tanks are cooled by the movement of cold water into or through them and there is sufficient humidity in the surrounding air to condense on the cold surface of the piping or toilet tank. This is similar to the condensation that occurs on a cold water glass on a humid summer day. This typically occurs on the toilet tank or the toilet water line just after showers or baths and just after the toilet tank has filled. The best way to deal with this is to ventilate the area by opening a window or operating the room fan to remove excess humidity from the room or the house in general.

Tap Water Supply is Inadequate

There may be several reasons why a water supply to a toilet or sink seems inadequate. The shut off valves located on the water lines feeding sinks or a toilet may not be fully open. These valves are not designed to meter water flow and can affect the performance of fixtures and toilets if not fully open.

Within a city or town, water pressure is regulated by the municipality and is not usually adjustable. Variations may occur in municipal water supply pressure during peak periods of demand.

On private water systems, (wells, cisterns) on country homes, there is usually a pressure regulator valve located on the outlet of the pressure tank that should be set to between 40 and 80 pounds per square inch (psi) of water pressure.

Most water faucets in bathrooms have faucet aerators that may restrict the flow for water conservation. This is not a defect.

Toilets

Toilets typically use gravity or compressed air to move the water out of the toilet bowl. In either type, water flows into the tank through the fill valve.

Gravity Flow Toilets

For toilets that use gravity to flush, when the flush lever is pressed, water flows out through the flush valve and into the toilet bowl and through the trap taking waste with it. With a gravity flow toilet, when you press the handle, a lever connected to a chain or wire lifts a flapper or a tank ball that controls the flow of water from the tank to the bowl. The water moving into the toilet bowl from the tank starts a siphoning action, pulling waste and water from the bowl into the drain line.

Pressure Assisted Toilets

These use water coming into the tank to compress air in a chamber inside the tank. The flush releases this air, pushing the water into the trap which starts the siphoning action.

Toilet Takes More Than One Flush to Empty

Low-volume toilets, which make up most of the toilets in new homes today, use less water to flush waste away than older models, but are more sensitive to the amount of waste. A greater load, especially paper, may require more water delivered to the bowl for that flush.

Gravity flow toilets regulate the amount of water that is released from the tank by the operation of the flush handle. Simply holding the flush handle down may allow more water into the bowl from the tank. Ensure the tank has completely filled before flushing a second time. The length of the chain or location of the float on the wire connected to the flush valve, can often be adjusted to provide a longer period before the toilet flapper valve seats and allow more water to flow into the bowl at each flush.

With power-assisted toilets, avoid pushing the flush button before that tank has completely filled, as the tank may not refill with enough water for the next flush. If you suspect this is the cause, shut off the water supply to the toilet, drain the tank completely and turn the water back on.

Mineral deposits and bacteria deposits may also reduce the performance of a toilet over time. Regular use of a toilet cleaner or vinegar may improve this. Often a poorly draining toilet is due to a partial blockage in the drain and not the toilet.

The Toilet Runs Continuously

The most common complaint is a toilet that runs continuously. In a gravity flow toilet, this usually means that the flapper seal is no longer effective, is worn and requires replacement. New flapper seals are available at most plumbing or hardware stores. Ensure you choose the right one for your toilet.

If a pressure-assisted toilet is running between flushes it may mean that the flush-valve cartridge is being kept open by a poorly adjusted flush button. The button can be re-adjusted. In some cases, the pressure regulating valve may need replacement.

Sewer Gas Smell

A recurring sewer gas smell could indicate that the wax seal between the base of the drain and the underside of the toilet has failed. Wax seals are available at any hardware store but they do require some familiarity with plumbing to install.

If you are adding a heated floor to your bathroom do not run heating lines or cables within a foot distance of the wax seal. The heat could liquefy the wax seal and cause sewer gases to escape.

Faucets

The smooth and glossy surfaces on plumbing fixtures are beautiful and tough but they are not indestructible. Harsh, abrasive cleaners will, in time, wear through the surface, making the finish dull and porous. Steel pads and strong cleaners can also do irreparable damage. Use only mild, nonabrasive cleansers.

Most new faucets have replaced washers with cartridge assemblies. The cartridges utilize different mechanisms to reduce dripping faucets and eliminate routine maintenance. Repairs to these should only be attempted if you possess the tools, the mechanical inclination, and the patience to complete the job.

Faucet or Fixture is Leaking

Most faucets or showerheads can develop leaks over time from mineral deposits or wear of the components. If this occurs, contact the manufacturer to find out if the fixture can be cleaned or if a replacement part or cartridge exists for your particular brand and model of fixture.

Plumbing Fixtures and Trim Fittings are Defective

Faucets and toilets are mechanical devices and as such require periodic maintenance or replacement of parts.

Sinks, Lavatories Tubs And Showers

Sinks found in kitchens and lavatories found in bathrooms can be made from ceramic, glass, metal, enamelled metal, stone composites or real stone. Tubs and showers can be made from enamel over steel, moulded acrylic, fiberglass, or an acrylic base with tile on the surrounding walls. See Chapter 5, "Tile Countertops" for tile maintenance.

Cracks, Chips or Scratches Exist in Bathroom Fixtures

The resistance of each material to scratches, chips, stains and fading varies. Always follow the manufacturer's recommendations on maintaining these surfaces. Never use abrasive cleaners and recognize that a glass or ceramic container falling on the surface will likely chip or dent most materials.

Bathtub, Shower, or Enclosure Doors Leak

Sealants are used in many areas near a bathtub or shower. Sealant may be used between the tub and the tile, where the bathtub is installed surrounded by tile walls. It may be used to seal a door frame into an opening in a tub or a shower stall. Rubber or vinyl seals are used where swinging doors or sliding doors on tubs or showers come in contact with the door frame, usually at the bottom of the door and along the sides.

Over time, with cleaning and movement, seals and sealants can wear and will require replacing. Sealant replacement requires removal of the old sealant, cleaning of the substrate and replacement with a colour-matched or clear, mildew resistant sealant.

When it comes time to replace a door seal, contact a plumbing supply company who stocks tubs and showers by the same manufacturer. They can assist you in locating the correct type and size of seal for replacement.

11 Hot Water Tank

The most common type of appliance used to heat water for the house is a storage type gas-fired water heater. These typically have a burner at the base and a glass or metal-lined tank. Controls at the base allow for adjusting the temperature and for shutting down or starting up the tank. Most tanks have pilot lights (a small flame that burns continuously) that light the burner when the tank calls for heat. Some tanks have an electronic ignition of some type.

Each year, many children and elderly residents are scalded by hot tap water. Such incidents can be avoided. Even slightly lower hot water settings could prevent tragic burn accidents.

Choose the lowest temperature setting on the thermostat that still provides you with an adequate supply of hot water. Consider turning the tank thermostat down to its lowest setting before going on a vacation.

Most electric tanks have two elements, one top and one bottom. Usually the reset buttons and adjustable temperature settings can be found under the cover plates. Be careful, when making adjustments, not to contact adjacent wire ends on terminals located near the temperature setting screw. Should the tank cease to function (no hot water) check the fuse or breaker panel before calling a plumber or an electrician.

Sediment that accumulates at the bottom of the tank has an insulating effect, especially with immersion type elements, causing the heaters to operate longer than necessary with a consequent increase in cost and energy consumption. The tank should be flushed in accordance with manufacturer's directions.

Every hot water storage tank is equipped with a pressure relief valve at the top of the tank. This is a safety device designed to open and relieve pressure should the water pressure in the tank exceed its rated working pressure; it should not be tampered with.

General Gas Appliance Safety

- Inspect your home for uncapped gas lines. Occasionally, gas appliances are removed without the proper termination of old lines. Any steel line not connected to an appliance should end with a valve and a black steel cap.
- Only a qualified gasfitter should install, repair or remove natural gas appliances.
- Have all your gas appliances such as your furnace, water heater, stove, fireplace, etc. checked annually by a qualified professional.

Gas Odours

If you detect a gas odor:

- Immediately vacate the premises, leaving the door open behind you.
- Do not activate any electric switches.
- Once off the premises, immediately use a cell phone or off-site land line to call your local natural gas supplier for assistance.

Water Softeners

Water softeners improve the quality of water by removing excessive minerals (usually calcium and magnesium). Mineral laden water is often referred to as hard water and measured in grains. Anything over about 5 grains per gallon of water is considered hard.

Hardness Rating	Concentration of Calcium Carbonate (MG/L)	Concentration of Calcium Carbonate (Grains/US Gallon)
Soft	0 to <75	0 to <5.2
Medium hard	75 to <150	5.2 to <10.5
Hard	150 to <300	10.5 to <21
Very hard	300 and greater	21 and greater

Source: The City of Calgary, 2003 Water Quality Report

The most obvious effect of hard water is that soaps and detergents lose some effectiveness. Instead of dissolving completely, soap combines with the minerals to form a coagulated soap curd. Because less soap is dissolved, more soap is required. Hard water also has maintenance implications for hot water tanks, toilets, humidifiers, dishwashers, icemakers and virtually any devise or appliance that uses water. Mineral build-up can reduce efficiency and necessitate de-scaling regimes.

Your water softener has two tanks, a mineral tank - where the water softening actually takes place, and a brine or salt tank - that flushes and cleans the mineral tank. In some systems the two tanks are contained within one enclosure, but those two tanks are still there. Water softeners cycle or regenerate once every 3 or 4 days with a cycle of backwashing, recharging, and rinsing. The regeneration cycle can take several hours and homeowners usually schedule this to happen at night when water demands are low.

It is important to select the appropriate size of water softener determined by how hard your water is and your daily consumption in gallons. Too small a unit will not decrease the hardness enough, too large a unit (or unnecessary regeneration) will waste salt and water. Your owner's manual will provide you with suggested settings for optimal results.

Finally, consider the mineral type of unit to soften your water. You can use either sodium or potassium types. People who are on sodium restricted diets should consider a potassium-based system, and people who have renal dysfunction should consider sodium-based systems. There is a definite price differential to also consider with potassium being 3-4 times the price of sodium.

Chapter 12 – Electrical

Many advanced electrical features are included in your home and rarely will you have problems with them. A reliable electrical system is often taken for granted. The heart of your electrical system is the main electrical panel that contains an array of circuit breakers.

Normal circuit breakers protect the wiring in your house. Arc fault circuit interrupters prevent fires caused by loose or broken wires. Ground Fault Interrupters protect you personally.

Circuit Breakers

Circuit breakers are the modern day version of the fuse. Circuit breakers automatically turn off the flow of electricity at the electrical panel when too much current is being drawn through them. They operate either by reacting to excessive heat build-up via a bimetal strip, or by electromagnets that sense a dramatic surge in power that could infer a short circuit. In either case, once the electrical fault is remedied, the breaker can be reset and power restored. The circuit breaker shuts off electrical current that otherwise could have resulted in a fire.

It is a good idea to familiarize yourself with the electrical panel and know which breakers control what electrical areas of your home. Most electrical panels feature a chart where the electrician who installed the system records how each of the breakers have been assigned. A flashlight in close proximity to the electrical panel may prove useful one day.

Usually, electrical problems are the fault of an electrical appliance. The home's electrical system is responding to a potential electrical circuit overload by shutting off the electrical power. Frequent tripping of the circuit breakers may indicate that the circuit is overloaded, or the breaker is faulty. Some appliances have special power requirements and may be drawing more electricity than average. If the power outage is the result of a short circuit, as opposed to appliance overload, repairs should be made by an electrician. Many fires occur each year from misuse of electrical equipment. Avoid alterations to your wiring by amateurs – contact an electrician or recognized appliance service agent.

Arc Fault Circuit Interrupters

Traditional circuit breakers are designed to protect just the wires behind the walls and the switches and outlets they are connected to. They will trip when a constant massive amount of electricity passing through the circuit causes a heat build-up within the breaker.

Arc Fault Circuit Interrupters (AFCI's) are designed to detect electrical arcs caused by broken or cut wires. Arcs can occur in appliance electrical cords where the insulation becomes brittle or is cracked. Wires behind walls, nicked by nails or pinched by fasteners, can also be sources of arcing. Loose connections where wires are attached to switches and outlets can also cause arcs.

Research concluded that bedrooms are more susceptible to these types of electrical problems due to the use of more extension cords and patterns of activity. Due to this, the Alberta Electrical Code mandates the use of AFCI's in bedroom circuits. These breakers will replace the normal circuit breakers in your electrical panel on the circuits that provide power to the bedrooms.

If the AFCI breaker trips, check any extension cords first, then consult your builder and/or an electrician before resetting the AFCI breaker.

Ground Fault Interrupters

A GFI, or ground fault circuit interrupter, is an automatic device that offers personal protection against electrical shock.

GFI's are installed wherever there is the potential for contact between a person and an electrical appliance in or near moisture, water, or water pipes (a ground fault). They are typically located on outlets placed near swimming pools, saunas, hot tubs, kitchens sinks, laundry rooms, bathrooms, or exterior plugs.

A GFI protection circuit can also be integrated into a breaker at the main electrical panel. The GFI breaker will have a separate ground wire connection and the reset button sets it apart from the regular circuit breakers.

The circuit breaker GFI serves a dual purpose - not only will it shut off electricity in the event of a "ground-fault," but it will also trip when a short circuit or an overload occurs. Protection covers the wiring and each outlet, lighting fixture, heater, etc. served by the branch circuit protected by the GFI in the panel box.

A GFI can be recognized by the "Test" and "Reset" buttons located between the plug receptacles. One GFI can be wired to protect several electrical outlets on the same circuit.

A GFI should be tested once a month. Plug a light into the outlet with the light on. Depress the "Test" button. The power should be immediately cut and the "Reset" button will pop outward. To reset the circuit simply depress the "Reset" button. Power should be immediately restored.

Ground Fault Interrupter (GFI) Trips Frequently

A GFI circuit works by sensing the difference between current entering an appliance and current exiting the appliance. If the difference exceeds a very small margin (about 5 milliamperes) the GFI perceives it as a power "leak" from an appliance that is probably going through a person's body. It will shut down the flow of current in a fraction of a second. If you have lost power at a regular-looking outlet, it may be due to a tripped GFI further up the circuit line. Check for faulty light bulbs, electrical cords or electrical appliances plugged into a GFI outlet or on a circuit protected by a GFI circuit breaker.

If you have reoccurring electrical problems contact the electrical contractor that wired the home.

Ceiling Mounted Fan Vibrates and is Noisy

Ceiling fans should be installed so that they are operating smoothly. If they are vibrating, check for these potential issues:

- Ensure the blades have not come loose from the body of the fan. If they have, tighten the connection between the blades and the fan body.
- Ensure the blades are not bent or cracked. If a blade is bent, or damaged in any way, contact the manufacturer for a replacement.
- Ceiling fans that accumulate debris on the blades may become unbalanced over time. Keep the blades clean and free of debris.
- If the fan is not securely anchored it may begin to wobble and vibrate. Ensure the screws that secure the ceiling fan box to the ceiling are snug. To do this you, may have to remove the trim around the electrical box. CAUTION: ENSURE THE ELECTRICAL BREAKER THAT SUPPLIES POWER TO THE CIRCUIT WITH THE FAN IS TURNED OFF BEFORE THE TRIM IS REMOVED.

Appliances

Before you move in, the Builder checks that all appliances included with the house are in working order. Electrical appliances come with instruction books or warranty papers. Examine these carefully, and observe the operating procedures recommended by the manufacturer. File warranty cards with the respective appliance manufacturers to register your purchase and inform you of any recalls surrounding that appliance. Local service agents exist to help you should you encounter any operational problems or have questions regarding your appliance.

All operational manuals should be gathered in a binder for your common reference and as an information resource for a prospective buyer should you ever sell your home.

Chapter 13 – Interior Climate Control

Interior climate control refers to the heating, cooling, ventilation and humidity that are required to keep a house at a comfortable level for the occupants.

Heating/Cooling

Heating and cooling systems in houses today are the reliable, durable hearts of the house that work with very little maintenance required by the homeowner. Most heating systems are "forced air" systems, meaning that air is heated and distributed by a furnace and a ducting system attached to the furnace. In some cases, the heating system may be a "hydronic" system, meaning that water is heated and circulated to either a radiator set into forced air ducting, to radiators located on walls, or through water piping placed in or under floors. Cooling systems use a system similar to a refrigerator. Liquid is circulated through piping where part of the liquid is cooled. Air is blown across the cooled areas of the piping system and the cool air is then distributed through the house. It is usually distributed through the same ducting as supplies the heat.

Heating or Cooling System is Inadequate

When the heating/cooling system of your home was selected, the rated capacity was checked to ensure that the house could be heated or cooled to a comfortable temperature, taking into account climatic conditions particular to your area. It is rare that the system is not sized correctly for the house. More common causes of inadequate heat or cooling are: an obstruction in the vent or an imbalance of the heat flow from the heat registers throughout the house. To check for obstructions, lift the register off the floor and look down the throat of the duct with a flashlight. Remove anything that could be obstructing the air flow. CAUTION: sheet metal screws may be protruding from the joints in the ductwork – USE GLOVES when reaching into the duct!

Each heat register located in a room has a damper. If an area of the house is too cool, or too warm, ensure the heat ducts are fully open to adjust the dampers to limit or increase the airflow to various areas, especially those where the thermostat is located. This is known as balancing your system.

A dirty or plugged air filter can also limit the air flow from the furnace to the ducts. Inspect and clean, or replace the furnace air filter, at the beginning of the heating season and on a regular basis through the winter.

The efficiency of the cooling system can be affected by dirt or debris on the heat exchanger for the cooling unit. Consult your owners' manual for the cooling system for directions on cleaning the unit.

There is a Difference in Heating or Cooling from One Room to the Next

It is a challenge to uniformly heat or cool a house on every day of the year due to the great variation in day, night and seasonal temperatures the home is exposed to. The balance of heat in a home can be affected by the number or size of windows in a room, the amount of sunlight that comes through the windows and the number of walls in the room that are exposed to the weather. Rooms with floors situated over unheated areas such as a garage or an exterior cantilever can be cooler. In most cases, a central furnace heats the house with a shared set of ductwork and relies on one thermostat, centrally located in the house, to sense when heat is needed. This may be too much or not enough for an individual room. Windows and services create openings through the walls and ceiling of the house which create paths for air movement between the inside and the outside of the house. Drapes and furnishing can also influence the heat balance in a room.

Condensate Line is Blocked

Some furnaces have the air conditioning coil placed in the same cabinet as the furnace. When an air conditioning unit is operating, water present in the air condenses on the coils and runs off. This water is collected and sent to a floor drain near the unit through a small diameter metal or plastic drain line. This drain can become plugged with dirt and dust and occasionally ice crystals. Inspect and clean this on a regular basis.

Air Leakage

Weatherstripping and Gaskets

Weatherstripping provides a flexible seal around doors, windows and openings to prevent unwanted air from moving in or out of your home. Doors also have weatherstripping along the top and sides as well as a "sweep" along the bottom edge. Sweeps can be adjusted to narrow the clearances and eliminate drafts from the bottoms of doors.

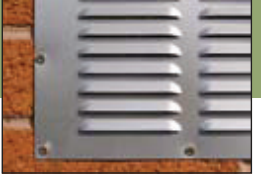
Drafts emanating from electrical boxes on exterior walls can be reduced with a foam, pre-cut gasket material placed beneath the switch or outlet cover. Weatherstripping should not be painted. Drafts around pipes and flues can be reduced with the use of caulks or expanding foams.

Air is Infiltrating at Windows and Exterior Doors

Under average wind and weather conditions, if a window or door is properly closed, it is rare that air leakage will be the source of a draft. However, each year before the onset of cold weather, it is a good idea to check that all opening windows are functioning with ease and can be fully closed. Debris in a window track can prevent a window from fully closing, causing a major source of air leakage.

Weatherstripping will become worn over time with use. Check it in the fall. If it is worn, permanently compressed or creased, replace it.

Windows that are properly fitted, glazed and sealed will still lose heat. A double-glazed window typically exhibits only 10% of the R value (insulation value) of the same size section of insulated wall. On a cold day, the surface of the window will be cooler than the surrounding walls. A more likely cause of a draft at a window or door is air movement along and across the interior face of the window or door. When warm air from the room comes in contact with the cooler surface of a window, it cools, becomes denser and falls toward the bottom of the window or wall. More warm air moves into the void left by the cooling air. This downward movement of air is often mistaken for air leakage. This is most easily corrected by warming up the surface of the window by ensuring a heat duct is located underneath it. Do not block or divert heat from these heat registers.



Ventilation

Ventilation in the home serves three purposes. The first is to ensure there is fresh air for people. The second is to remove odours, excess humidity and pollutants from the house air. The third is to provide intake air to balance air that is being exhausted out of the house. This balance is important to ensure that moisture generated in the home is not forced into the walls or that gases moving out of exhaust vents or chimneys are not pulled back into the house. Attic ventilation is separate from house ventilation.

Windows are the simplest ventilation system in houses. For example, windows near a source of moisture, such as a bathroom, can be opened to vent out excess moisture and odours. This, however, does not work well is the winter as windows tend to ice over and become frozen open. In houses with a forced air heating systems (furnace with ducting), fresh air is brought into the house from an intake vent, located near the ground at one side of the house, each time the furnace fan runs.

Kitchen and bath fans draw humidity and odours from cooking and bathing out of the house before the vapour can circulate. In some houses, the operation of the furnace fan, and one or more of the exhaust fans, are interconnected. This is an attempt to balance air coming into the house with air being exhausted out of the house. Remember, exhaust fans are only effective at doing their job when they are switched on.

Exhaust fans and furnace exhaust fan ventilation systems require little care, other than ensuring the filters stay clean and any outdoor intake vents are clear of obstructions.

Some new homes have whole-house balanced ventilation systems installed to ensure a balanced intake and exhaust of air, airborne pollutants and moisture. These are usually box-like units which contain filters, a heat exchanger, a motor, and supply and exhaust ducting. Balanced ventilation systems are designed to warm incoming air with some of the heat that would otherwise be lost to exhaust air.

The filters in these units and the screens on the intake and exhaust ducting need to be checked on an regular basis to ensure the units function well.

13

Range Hoods

Kitchen exhaust fans are an important part of your home's ventilation system. They remove odours from your house and improve indoor air quality. Cooking can also generate significant airborne moisture which can cause window condensation and support mould.

Efficient and quiet operation of the fan requires that the filters located in the throat of the hood be kept clean. Some kitchen range hood fans are interconnected with the operation of the furnace fan. The reliable operation of the sensor located in the fan throat is dependant upon keeping it clean.

Maintenance or replacement of filters should be in accordance with manufacturers' recommendations. Most kitchen exhaust fans have sealed bearings and do not require lubrication.

Kitchen or Bath Fans Allow Cold Air Infiltration

Ventilation fans are indirectly open to outside air. They contain a damper to limit the back-flow of cold air. The damper is balanced to allow exhaust air to escape freely and falls back to a closed position when the fan is turned off. By design they are not completely effective at eliminating cold air infiltration.

Exhaust fans will accumulate dust and air borne debris over time that can impair fan efficiency, obstruct the damper and create excess noise. The fan is connected to ductwork that ends with a screen at an outside hood. Regularly, the fan housing and the screen at the hood vent should be checked and cleaned of debris.

During gusty winds, the damper may flutter as it adjusts to fluctuating air pressure. This is normal.

Humidifiers

Due to our dry winter weather we use humidifiers to maintain our health and the appearance of hardwood floors. Most homes have a drum-type or drip type humidifier mounted on the side of the furnace. It usually has an automatic water feed from a small line that comes off of a nearby water line. Over time, the repeated evaporation of water will leave behind a deposit of minerals contained in the tap water. Dust that circulates through the furnace in the air will also deposit in the humidifier. This becomes a breeding ground for various types of mould and bacteria. It is important that the humidifier be checked on a monthly basis and cleaned.

A number of anti-scale products can make the cleaning process less of a chore. If the unit has a float valve, ensure it is opening and shutting down the flow of water to maintain a certain level of water.

During the spring and fall, relative humidity levels can be set around the 40% mark and adjusted downward to 20% during the coldest winter days. If ice or excessive condensation is appearing on the windows, the humidifier setting should be further reduced.

Acknowledgements

This guide was initiated and organized by The Alberta New Home Warranty, but could not have been written without the advice and input of the following individuals and organizations:

Darren Chorney & Mark Kennedy..... Backyard Alberta Inc.
Peter Jackson .....Pals Surveys and Associates Ltd.
Dennis Clayton .....Vista Geomatics Ltd.
Brian Munday..... Alberta Land Surveyors Association
Ed Kalis..... Alberta Ready-Mixed Concrete Association
Gary Sturgeon.....National Concrete and Masonry Association
Sandy Van Someren & Andrew Thompson.....CWD Windows and Doors
Gaston Duguay & Stephen Buller.....Legacy Kitchens
Robert Dunlop.....A. Clark Roofing and Siding Ltd.
Kimberly J. Thompkins ..... Georgia-Pacific Canada, Inc.
Leona Cook .....Touchwood Flooring Ltd.
Ernie McCulman .....Paradise Carpets
Richard Fankhanel ..... Diamond Fireplace Distributors Ltd.
Marty Bruins ..... Bruins Plumbing and Heating

Joan Maisonneuve ..... The Alberta New Home Warranty Program
Bryan Ketcheson..... The Alberta New Home Warranty Program
Joe Mis ..... The Alberta New Home Warranty Program
Ingo Viehweger..... The Alberta New Home Warranty Program

SUGGESTED HOME MAINTENANCE SCHEDULE

January

- Clean humidifier
- Check CO and smoke detector batteries
- Clean range hood filters

February

- Check roof for ice dams
- Check CO and smoke detector batteries
- Clean range hood filters

March

- Clean humidifier
- Check sump pump (if installed)
- Check CO and smoke detector batteries
- Clean range hood filters

April

- Check eavestroughs and downspouts
- Inspect basement for water issues
- Inspect the shingles on the roof
- Check for soil settlement at foundation
- Inspect driveways and walkways
- Clean filters on central ventilation systems (HRV's)
- Clean intake vent screens
- Replace CO and smoke detector batteries
- Clean range hood filters

SUGGESTED HOME MAINTENANCE SCHEDULE

May

- Clean humidifier
- Inspect fences and decks
- Check caulking and weatherstripping
- Check windows and screens
- Check basement columns
- Inspect private sewage system (if applicable)
- Check CO and smoke detector batteries
- Clean range hood filters

June

- Inspect air conditioning system (if installed)
- Fertilize the lawn
- Clean intake vent screens
- Check CO and smoke detector batteries
- Clean range hood filters
- Check for soil settlement at the foundation

July

- Clean intake vent screens
- Inspect condensate line of air conditioner
- Check CO and smoke detector batteries
- Clean range hood filters

August

- Clean intake vent screens
- Check sealants and caulking
- Check CO and smoke detector batteries
- Clean range hood filters

SUGGESTED HOME MAINTENANCE SCHEDULE

September

- Clean solid fuel fireplace chimney(s)
- Check door and window weatherstripping
- Clean and service humidifier
- Drain exterior water lines
- Drain sediment on hot water tank
- Fertilize lawn
- Winterize landscaping
- Check CO and smoke detector batteries
- Clean range hood filters
- Check for soil settlement at the foundation

October

- Water trees and shrubs
- Inspect eavestroughs and downspouts
- Check basement teleposts
- Inspect floor drains
- Check furnace and ventilation system filters
- Check CO and smoke detector batteries
- Clean range hood filters

November

- Clean range hood filter
- Check CO and smoke detector batteries
- Check for condensation and humidity
- Clean humidifier

December

- Balance air flow at heating ducts
- Clean furnace filter
- Clean range hood filter

Value of
$19.95

Guide to the
Care and Maintenance of Your New Home

also available online at:
www.AlbertaNewHomeWarranty.com

The Alberta New Home Warranty Program