



Guide to the Care and Maintenance of Your New Home

April 2019

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INTRODUCTION

Protect your investment

New homes represent large investments – the largest investment many people ever make. As all investments require safekeeping and protection, New Home Warranty Program of Manitoba has 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.

It is 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 outlined in a table – 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 New Home Warranty Program of Manitoba provides is detailed in the Certificate of Possession and New Home Warranty 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. Its purpose is to bring to your attention areas of your home that may require maintenance. It does not include all situations or all potential solutions. You are responsible in assessing your own capabilities, potential health concerns, and safety risk before attempting the maintenance or repairs suggested in the guide. We recommend you seek professional advice as some maintenance/repair items in this manual may require the assistance of a professional. In performing any maintenance task, New Home Warranty Program of Manitoba will not be held responsible for bodily harm (self or others) or damage to the home or personal property. Performing maintenance is a homeowner’s responsibility and is outside the terms of Warranty.

The absolute BEST information on how to care for or perform maintenance and do repairs to the various components of your home is found in the manufacturers’ manuals. Care and

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maintenance instructions can vary from one manufacturer to the next, due to the large variety of different kinds of products and methods of manufacturing/production. If you encounter conflicting information, always follow the manufacturer's recommendations. If you are not sure of the manufacturer, refer to any information that you may have received at the time you purchased your home. If you do not have a manual that came with your flooring, countertop, furnace, etc., you may likely find this information on the Internet or by contacting the manufacturer or your builder.

We cannot stress enough how important it is to take all safety precautions when performing a maintenance task or repair. If you do not feel safe or capable of performing the task, hire a professional. If you choose to hire a professional, ensure they are qualified - the right person for the job.

Maintenance Versus Repairs, Replacements and Alterations

This manual may occasionally indicate when an item may require more than simple maintenance, such as repair or replacement. Depending on the problem requiring repair/replacement and when it is discovered, it may be covered under Warranty. It is your responsibility to determine if you have encountered a 'defect in workmanship or materials' under the terms of your Warranty, within the coverage period. If you are unsure, contact us. Any repairs or alterations that you perform to an alleged defect that you claim under Warranty, may cause your claim to be denied. Please refer your Certificate of Possession and New Home Warranty for more information.

Acknowledgements

This guide was originally developed by The Alberta New Home Warranty Program with substantial contributions from suppliers, manufacturers and industry partners. With permission from The Alberta New Home Warranty Program, this guide has been modified substantially by New Home Warranty Program of Manitoba. Modifications have been made to reflect the specific conditions of this warranty program and any construction/ building code provisions and environmental conditions which are specific to Manitoba. Special acknowledgement is given to the Program's Technical Committee who greatly contributed to the re-working of this guide.

Workmanship & Material Reference Guide

A companion document to the Maintenance Guide is the New Home Warranty Program of Manitoba publication "Construction Performance Standards". This guide identifies common workmanship and material issues which have been raised by builders and homeowners over the years. The Program's Construction Performance Standards can be found online at <http://www.mbnhwp.com/standards.htm>.

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Chapter 1 – Exterior Elements and Site Conditions

Survey Plans and Pins

A survey plan establishes legal boundaries and defines the extent of a person's ownership or other rights in land. A Manitoba 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 – do not 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. Your homebuilder ensures that your new home is being placed within the established boundaries. However, pins may become displaced during construction. It is your responsibility to ensure that the property lines are established, and the boundary pins are in place. Contact the [Association of Manitoba Land Surveyors at www.aml.ca](http://www.aml.ca) to identify the correct boundaries.

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.

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 you are 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.

Click (Call) Before You Dig

If you are considering digging anything such as a new flowerbed, fence or deck pile, you are advised to familiarize yourself with the locations of all underground services. Utility services on your property (within Manitoba) will be located for you. For more information, visit clickbeforeyoudig.com or call 1-800-940-3447.

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 or landscape over top.
- 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.

Manitoba Soil Conditions

The soil under and around your home plays a critical part in your foundation and drainage. It has certain unique characteristics that you should become familiar with, so you can understand certain conditions of your home and why drainage is so important.

History of Manitoba's Soil

Manitoba's provincial soil is officially referred to as Newdale. This is the layer of soil that is found beneath the topsoil of your yard. In this manual, we will refer to it as clay subsoil.

Clay is formed from long-term weathering of rock. During the end of last ice-age about 10,000 to 12,000 years ago, Lake Agassiz (a glacial lake) covered nearly all of Manitoba and small parts of Saskatchewan and Ontario, North and South Dakota, and Minnesota. The movement of glaciers across Manitoba during the formation of Lake Agassiz caused a churning of granite, limestone, and shale. When the glaciers finally melted, the coarse particles of the resulting sand and gravel were deposited near the mouth of the rivers and streams and the finer particles (silt, and clay) were carried out into the lake where they ultimately settled. Compaction of large amounts of clay settlement over-time has resulted in the clay-based soil in certain parts of Manitoba.

The Characteristics of Clay Subsoil

Depending on where you are located in Manitoba, the soil under your home may contain layers of clay-based soil, along with other layers of sediment. In Winnipeg, the concentration of clay subsoil is the greatest, and therefore affects homes the most.

Clay subsoil is malleable (similar to artist's clay) when moisture is present and very hard when it is dry. It is very dense and therefore provides excellent drainage. However, it also has the ability to absorb and hold lots of water, as it is made of fine particles. If a cup was half-filled with this clay and water added to fill the cup, the clay would eventually absorb the water and nearly double in size, filling up the cup. The opposite is also true. If that moist clay dries out, it will shrink and will also crack. Manitoba goes through very extreme changes in temperature and varying amounts of moisture – and sometimes even drought conditions.

Clay subsoil is very susceptible to expansion during the winter. When the moisture in the soil freezes it forms ice structures that displace the soil, causing expansion and the accumulation of additional layers of ice as liquid water is drawn up from below the frost line. This is often referred to as 'frost-jacking' or frost heave. Because of this phenomenon, items such as deck piles and water lines are installed below the frost line, which may be anywhere from 6 to 8 feet and possibly deeper in northern regions.

Both rain and snow-melt can add a lot of moisture to the clay subsoil. Generally, a well-graded yard will move most water away from the home, as the clay subsoil has excellent drainage properties. However, because of these excellent drainage properties, if there is a slope toward your home water will be carried toward your foundation walls. Standing water against your home can degrade your parging and seep down under the foundation adding excess moisture. While your weeping tile and sump pump system is designed to carry water from under the perimeter of your home away, it can become over taxed during heavy rains or when water is allowed to constantly drain toward the home due to an improperly maintained slope. This may add excessive wear to your pump, possibly causing it to fail prematurely.

Also, not all moisture under your foundation/basement slab will be moved away by the weeping tile system. A weeping tile system is comprised of both perforated and solid PVC piping. The perforated piping is along the exterior perimeter of your home. The perforations allow water to collect into the pipe. This perimeter weeping tile then connects to solid 'leads' that direct the water to your sump pit. Since these 'leads' are not perforated, they do not collect water from beneath the basement slab or crawlspace. Therefore, the clay subsoil under your home will absorb some moisture. Due to the expansion of this moist clay subsoil, your concrete basement floor may heave and crack. (Refer to the section on Basements for more information)

When your home is first constructed, the clay subsoil is loose (not as compacted as soil in undisturbed areas). Therefore, the soil near the home may take some time to settle. You may

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therefore experience a negative slope toward your home as the soil begins to compact. You will need to correct this slope to ensure drainage away from your home at all times. When the clay subsoil loses moisture in drier months, you may see that it begins to shrink away from the home and form depressions. These depressions and negative slope will need to be corrected for positive drainage away from the home. During times of drought, the clay subsoil may become very dry and leached of moisture, causing it to shrink. This may cause your basement concrete slab to sink slightly and crack. You may also see large cracks that penetrate the surface of your yard. You can reduce the excessive shrinkage by watering your lawn at least 3 feet away from your home. Generally, the amount of moisture that keeps your grass healthy is a good amount.

Both excessively dry and moist clay subsoil will cause some movement of your home. This in turn will cause dry-wall cracks, interior doors to close improperly, cabinet doors to become misaligned, separations to form between the wall and countertops, movement in flooring systems (sometimes causing floor squeaks), and movement of the basement floor. These conditions, among others, are discussed throughout the manual.

Grading and Drainage

In most instances your builder will provide a rough grading of your lot. If so, your lot has been graded for drainage in accordance with normal rainfall. In most areas of Manitoba 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. 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. For more information 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. These drainage systems must be kept in place. It is your legal responsibility to maintain these drainage systems and ensure that no landscaping or other changes offset these systems from performing as intended.

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.

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.

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Depressions should be filled by removing the topsoil and filling the depression with compacted clay subsoil. **Do not use topsoil, gravel, decorative rock, or other materials** to correct the depression, as water will still drain through and will still collect in the hollow when it reaches the clay layer located just below the topsoil.

Other Drainage Considerations:

- Ensure sump discharge is drained away from the foundation.
- 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, snow/ice, 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 subsoil 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.
- Do not use decorative rock for grading purposes.

Note that your warranty excludes coverage of site grading and surface drainage. Please speak to your builder or your municipal office should you have further questions or concerns. It is up to the homeowner to ensure that there is adequate positive drainage of surface water away from the foundation walls of the home. Failure to ensure proper grading and drainage may cause your warranty to become null and void.

Do Not Pile Snow Against Your Home

During periods of heavy snow fall, snow can drift against your home. You will also be clearing snow from your driveway, walkway, patio areas, etc. It is important to move the snow away from your home – rather than piling it up against your home. Snow piles can cause or amplify drainage concerns in the spring when it melts (see above, ***Water Ponding On Site***). It can also cause damage to your parging and stucco. As discussed in Chapter 7, stucco and parging are porous cementitious materials that can absorb moisture. Excess moisture may cause parging and stucco to crack and come loose. Further, the moisture can lead to efflorescence, causing discolouration of stucco. Snow piles can also prevent your building envelope from venting and shedding excess moisture, especially with cladding systems that have weeping holes at the bottom. See [Masonry](#), Chapter 7 for more information. Also, ensure that snow does not pile up against areas of egress, such as windows, exterior doors, patio doors, etc.

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The Connection Between Roof Drainage and Basement Leaks

Eavestroughs allow water to move from your roof to the downspouts, then to the downspout extension and away from your home. 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 (or re-attach to downspout) after cutting lawns.
- Keep eavestroughs and downspouts free of obstructions such as leaves and other debris. Surface particles from shingles, washed down by rains, often settle in gutters and reduce their efficiency. Gutters should be cleaned at least once a year.
- Return downspout extensions to upright position (or remove if it is detachable) at the end of the fall season once temperatures reach below zero. This will prevent damage to the downspout from snow-load and snow clearing equipment. (During the winter, temperatures may occasionally warm up enough to cause snow to melt off the roof. If this occurs, you will need to lower the downspout extensions to allow the water to drain away and then put back to the upright position.)

For more information on Eavestroughs and Downspouts, visit [Chapter 3, Roofing and Attics](#).

Landscaping

Landscaping is often outside of the contractual agreement between the builder and the homeowner and is not included in your warranty. 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 Manitoba receives, on average, up to 20" of precipitation annually. This equates to 49,870 gallons or 188,780 litres of water. However, annual precipitation is not evenly spread throughout the year. Reference to the National Research Council Canada Supplement to the Building Code, indicates that the amount of rainfall in parts of Manitoba could be as much as 6" in 24 hours (14,961 gallons or 56,634 litres) or 1 ½ inches in 15 minutes (3,740 gallons or 14,158 litres).

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Grassed areas generally require steeper drainage slopes compared to hard surfaces such as concrete or asphalt. In planning and installing planting beds, be careful not to interfere with the drainage system. 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.

Grass will aid in absorbing standing water, which will prevent soil erosion and improve drainage. 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.

Outside Hose Connections

Most water valves located on the exterior of homes today are “frost-free” types. They are known as hose bibbs. The hose bibb 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 valves 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.

If the garden hose connection has a valve inside the house it has to be shut off and drained from the inside before winter to prevent freezing and possible bursting. For the same reason, a garden hose should never be left connected during freezing weather. Ice forming in the hose will break either the hose or the hose faucet.

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.

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- They must be checked regularly for leakage to prevent accumulation of unnecessary water underground.

Note that irrigation systems are considered part of landscaping and are excluded from your warranty.

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.

Note that the warranty does not cover concrete patio areas.

Location & Design

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. Before you build or modify a deck ensure you understand all local and Manitoba Building Code rules regarding deck construction.

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 exposed 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.

The occurrence and severity of slivers is dependent 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.

Before performing maintenance or repairs on your home, please review the Guide Limitations at the beginning of this Guide.

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- 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 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.

Remember 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.

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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.



For more information visit The Canadian Wood Council at www.cwc.ca Go to Durability under 'Design with Wood'.

Chapter 2 – Foundations and Basements

Basement Concrete Floors and Walls

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.

Basement Floor Cracks

Your basement concrete floor is a slab of concrete poured in place over a bed of gravel. This type of concrete floor is often referred to as a ‘floating slab’. As this name suggests, the slab is free to move up and down dependant on soil movement and hydrostatic pressure. Since Manitoba soil is mostly clay based, it has a tendency to absorb water readily, causing expansion. In fact, a cup of clay-based soil will double in size when the same amount of water is added to it. The reverse is also true. When the soil becomes depleted of moisture, it will shrink.

Your basement slab is therefore susceptible to changing soil conditions under it. Small cracks can result due to the heaving or settling of the soil beneath. Thermal changes can cause concrete and many other materials to expand and contract which may also cause minor cracks. Concrete also goes through a natural drying (curing) process that may result in the formation of shrinkage cracks. These minor cracks due to drying, thermal change and soil movement are normal and will not affect the structural integrity of your home.

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:

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- 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 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 water fills the pit.

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, gravel, decorative rock, mulch, or other materials.
- Ensure the downspout extensions are down and clear of debris.
- Ensure the downspouts direct water away from the house.
- Keep downspout extensions lowered (or on) during periods of precipitation. They should be moved to their upright position (or removed) during the winter to avoid damage from snow-load and snow-clearing equipment
- 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 year-round. Do not disconnect the power source for your pump anytime - including the winter season.
- Attach a discharge hose during spring and summer to move the water collected by the sump further away from the house. In the winter, remove the hose to prevent water from freezing inside the line.
- Place a splash pad under the discharge location. This will help move water away from the foundation during periods of temperature fluctuation in the winter when the hose is disconnected, but still periodically discharges some water. It will also prevent ice from accumulating at this area which could potentially damage stucco/parging. You may also consider using a 4" or larger non-perforated weeping tile (sometimes called a mole pipe) for this purpose.

Damp Basement Floors

Concrete basement floors sometimes feel damp to the touch. There is a significant amount of water present in new concrete. In the first year (and in some cases longer) 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.

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.

Frost on Basement Walls

Following winter time when the temperature begins rising above zero, you may notice moisture on your basement floor along the perimeter. What you may be seeing is residual moisture following the melting of frost from your basement walls. This situation may occur in homes with a typical concrete foundation with fibreglass insulation and polyethylene vapour barrier.

Your concrete basement walls contain a significant amount of moisture. This moisture will be released gradually, as the concrete cures, over an approximate period of 2 years. During the curing process, moisture will naturally dissipate. If the concrete still contains enough moisture and the temperature drops low enough outside, this moisture will change to frost. Once the temperature returns to above freezing, the moisture will again begin to dissipate toward the outside. However, if there is a sudden warming trend, it can cause this frost to melt before it has a chance to slowly dissipate. This may result in moisture on your basement floor.

This issue can be worsened if the humidity is high in the home and there are gaps in the vapour barrier. A newly built home contains a vast amount of moisture in the construction materials. Over a period of a few years, the home must expel this moisture. Within the first year, a home is giving off approximately 13 litres of moisture per day. In addition, everyday activities in an average household produces up to 7 litres of moisture per day. That's over 7000 litres of moisture in a year.

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Dehumidification and ventilation is your best defence against humidity related issues. You can reduce any additional moisture from settling onto your concrete walls by ensuring that your vapour barrier is continuous and does not have punctures, and by removing excess humidity from your home. This can be achieved by increasing ventilation periodically and ensuring that your ventilation system/HRV is operational. In the summer, using a dehumidifier will also help. If you are not sure how much humidity is in your home, you can purchase a measuring device called a hygrometer at your local retail construction outlet.

Radon Gas

Your home is potentially exposed to a variety of gasses such as exhaust fumes from your car, carbon monoxide from gas-fuelled appliances, and sewer gases. Your home is constructed in a manner to protect your living space from these gases. Radon is another one of these gases. It is a colourless, odourless, naturally occurring gas that forms by a breakdown of uranium in the soil. When your builder constructs your home, there is no way to determine the concentration of radon in the soil on which your home sits.

Your basement slab or crawlspace sits over a gravel bed, covered with a sheet of polyethylene. This polyethylene will assist in protecting your home from both moisture and radon gas.

As a precaution, a radon rough-in pipe has been installed in your basement. The pipe will be at least 4" in diameter, sticks out of your concrete slab, and will be capped and labeled. Do not enclose or build around this pipe – or remove it. This pipe has been installed for future radon mitigation, if required. Since the existence of radon gas does not result from builder negligence and is not a building code defect, it is not covered under your warranty. The radon pipe, however, is a required construction component under concrete slabs. Testing for radon gas and its remediation is a homeowner's responsibility.

Caulking at concrete penetrations

Along with the radon rough-in pipe, there will be several other plumbing fixtures, etc. that will penetrate your concrete slab. These penetrations require a sealant as an added level of protection from the entry of radon gas into your home. Look for this sealant round the plumbing stack, sump pit, teleposts, radon pipe, and back-water valve. This sealant is highly elastic and durable and should last for a long time. However, it may become displaced if your concrete slab moves or cracks. Replace or repair this caulking as necessary with polyurethane sealant.

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

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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.

Sump Pit and Pump

Your sump pit is a 'catch basin' for water that is collected by your weeping tiles. Your weeping tile and sump pump system is designed to move collected water from under your home's foundation to prevent water from entering your home. (See Grading and Drainage for more information.) The pit is located under your basement slab with a round or square cover. You might see a ABS pipe extending out of this lid. This cover should remain in place and be accessible. Do not cover this area with flooring or immovable objects. The lid will be bolted – but it is designed to be removeable should your pit or pump require maintenance or repair. Your pit is meant for the collection of water from your weeping tiles only. DO NOT pour solvents, paints, wash water, sand, debris or other items into your pit as it will damage the pump and its connected systems.

Inside your pit is a sump pump. This pump uses a mechanism to detect water in the pit and will activate the pump when water reaches a certain level. Water is then pushed up through the attached ABS pipe. This pipe is called a sump pump discharge, and it extends upwards and outward through your exterior wall. A discharge hose is attached on the exterior to move water away from the house. In the winter, remove this hose to prevent water from freezing inside the line. You can place a splash pad under the discharge location to help move water away from the foundation during periods of temperature fluctuation in the winter when the hose is disconnected, but still periodically discharges some water. It will also prevent ice from accumulating at this area which could potentially damage stucco/parging. You may also consider using a 4" or larger non-perforated weeping tile (sometimes called a mole pipe) for this purpose.

Your pump is an electrical device and will have a cord extending from out of the lid. Ensure the pump is always plugged in, even in the winter. During the winter, water can still flow beneath your home and make its way to the pit.

Sump pumps are fairly low-maintenance. However, they should still be tested and inspected regularly or immediately when you suspect a possible malfunction. Your pump is a mechanical device with moving parts. Sand and debris that is carried with the water that empties into your pit from your weeping tile lines can sometimes get lodged in the float or impeller of the pump,

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causing it to stop working. Sometimes, a pump can simply fail prematurely. Do not wait for the sound of your pump coming on during the first big rain of the spring or summer, as it may be too late if your pump is not working. Instead, check your pump and pit at least once a year. If you do not feel comfortable in performing this inspection and maintenance, hire a professional.

The operation of the pump can be checked by opening the lid and pouring clean water from a bucket into the pit. As the water level increases, the pump's mechanism engages to pump out the water. If water goes above the pump and it does not engage, the pump may be defective or is clogged with debris. Do not touch or remove the pump without first unplugging it. Cleaning or repair of the pump may require professional assistance. Refer to your maintenance manual.

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.

Your home may experience slight seasonal movement due to changes in soil conditions below your home (moisture/frost causes swelling of soils and lack of moisture causes soils to shrink/settle). Your teleposts are adjustable so they can account for these changes.

Some indications that a telepost adjustment may be required:

- Separation between flooring and baseboards
- Angled cracking at doorways
- Interior doors binding

Contact a qualified contractor to determine if an adjustment is required. Proceed with caution when adjusting teleposts. Adjustments in the wrong direction or too quickly can cause further damage to your home.

If you are finishing the basement on a brand-new home, incorporate framing details that allow access to adjust the teleposts and for small movements of the beam above the telepost.

ROOFING AND ATTICS

Chapter 3 – Roofing and Attics

Roof and Shingles

The roof of your house should give you many years of service. Fibreglass shingles are the most common type of roofing materials, but some alternatives are tile, concrete, wood, rubber and metal.

Windstorms may cause loose, broken or missing shingles. 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 can be damaged by the installation of things such as satellite dishes. 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 roofing is normal and unavoidable and does not affect durability.

Fibreglass 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. In the winter, shingles will be brittle and can be easily damaged when walked upon or from snow removal. Exercise 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.

Attic Ventilation, Attic Moisture and Ice Dams

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

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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 be on the wall that encloses 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.

Do not use your attic for storage, as this will cause displacement of your insulation. If you encounter water spots on your ceiling, this may be an indication that the insulation in your attic has become displaced. Visit your attic at least once a year to ensure your insulation has not shifted due to wind. (Displacement may also occur following the movement of a Ready to Move Home.) This is best accomplished in the spring or fall. Note, if you perform this maintenance in the winter, you will be adding warm moist air into the attic which can create or exacerbate frost or moisture issues. After exiting the attic ensure the attic hatch is firmly closed and latched, if a latch is provided.

Leaks Due To Snow or Rain

Under unusually high wind conditions, 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 or moved.

Moisture Due to Ice Damming

Ice damming is the accumulation of snow and ice on a roof, and is especially prevalent on a slanted roof. It can often be found near the edge of the roof or in valleys. In older homes, ice damming often occurs due to inadequate insulation and warm air leakage into the attic at penetrations for wiring, plumbing stacks chimneys, recessed lights, attic hatches, etc.

Insufficient or displaced insulation allows warm air from these penetrations to warm the roof causing snow on the roof to melt. Melted water will flow under the blanket of snow, onto the eave and into the gutter, where colder conditions on the overhang cause it to freeze. Over time, ice accumulates. Snow that melts later cannot drain properly through the ice, causing

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water to back up under the shingles. This can result in a leak which may penetrate into the attic.

In your new home, however, your attic will be well-insulated and have a vapour barrier sealed at any penetrations. So why would ice-damming still occur? New homes often have more complicated roof designs with varying changes in pitch and multiple valleys. These areas with valleys or changes in pitch make it difficult to insulate, causing “cold” spots on your roof. In Manitoba, large amounts of snow fall and extreme change in temperature is the culprit when it comes to ice-damming, **even in a home with a properly sealed and insulated attic**. Large amounts of snowfall with warmer temperatures followed by cooler temperatures cause an insulating effect with the blanket of snow. If temperatures warm up again, the bottom layer of snow will begin to melt along with thinner layers of snow above it. This can be accelerated by direct sunlight on an area. The melted snow will run down the roof under the blanket of snow until it reaches a cooler spot and will freeze. As this process repeats, ice damming occurs.

Large amounts of snow fall can also plug up roof vents. When venting is blocked, it can exacerbate any potential for ice-damming. When possible, carefully clean off any snow which accumulates with the help of a roof shovel fit for this purpose.

Also, ensure your attic hatch is always secured and that the weatherstripping is in place. Further, do not store objects in your attic or disturb the insulation in any way. Warm air entering the attic or disrupted insulation will also exacerbate any potential for ice-damming.

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, to allow for air movement to the soffits.

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.

Frost in the Attic

Due to Manitoba’s extreme climate, frost may form in the attic during the winter months. This is a common occurrence and a small amount of frost is no cause for concern. Over time as the temperature steadily warms, the frost will condense turning into water vapour and dissipate to the exterior through the roof vents.

Ensure your roof vents are free of encumbrances such as snow.

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However, Manitoba winters are sometimes unpredictable and come with extreme changes in temperature, rather than a steady thaw. When the colder temperatures suddenly change and a short warming trend occurs, the attic frost may melt. Should this happen, water may find its way through a very tiny opening in the vapour barrier and form a small water spot on your ceiling. It is improbable to get a 100% seal from a vapour barrier, and tiny gaps may exist at pot lights and screw holes.

Although this condition is somewhat unpredictable and beyond the control of the homeowner or builder, measures can be taken to reduce excessive frost from forming. Ensure the attic hatch is properly secured and sealed with weatherstripping, do not disturb the insulation in the attic and remove excess snow from the roof. Remember, every time you open your attic hatch you are allowing warm air to enter the attic space which will condense and form frost.

Soffits and Fascia

The soffit and fascia make up the section of roofing that extends below the shingled area is usually made of wood, vinyl, aluminum, or a composite material.

The soffit is the underside of the overhanging portion of a roof. It functions as ventilation to your attic. Ensure your soffits are free of dirt and debris that can block the tiny ventilation holes. You can use a broom to gently remove loose dirt and then clean with a damp cloth. Inspect this area periodically for cracks, holes, or loose edges and repair as needed.

The fascia is a flat, vertical strip that runs horizontally along the roofline, under the last row of shingles. It functions as a cosmetic finish piece, capping the ends of the eaves and covering the space between the soffit and the roof. Damaged fascia should be repaired to prevent unwanted pests and moisture into the roof assembly. If there is caulking along your fascia, ensure this kept in good condition and repair/replace as necessary.

Eavestroughs and Downspouts

Your eavestrough (often referred to as the gutter) is a horizontal 'trough' usually made of aluminum located at the edge of your roof. Water that collects on your roof will spill into this 'trough'. Your downspout is a vertical aluminum drainage tube that extends down from the eavestrough to move the water away from your home. The downspout is held in place with screws and sealant where it penetrates the eavestrough. There may also be caulking along other joints of the eavestrough. Over time, the caulking may wear down, causing your eavestrough to leak where it meets the downspout or at these joints (often at the end of the eavestrough – at the mitre joins or the end-cap). Inspect the caulking each spring and fall when you clean out your eavestroughs or when you see leaks and repair/replace as required. Use only an exterior grade caulking/sealant.

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During a heavy rainstorm your eavestroughs and downspouts 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. Note that the slope may be very gradually and may not be noticeable from a normal standing distance. Further, you may experience some standing water in the eavestroughs. This is normal, as eavestroughs will not drain 100% completely.

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 other debris. Surface particles from shingles, washed down by rains, often settle in eavestroughs and reduce their efficiency. Eavestroughs and downspouts should be cleaned as needed.

Downspout extensions

A downspout extension will be attached to your downspout to direct water away from your home. It will either be attached the downspout with screws (lever-type), so it can fold upwards when not in use, or it may be detachable at the base of the downspout. Check the screws on the lever-type periodically to ensure they are not loose or missing. Ensure the mouth of the extension is clear of leaves, soil, and debris. Take care that this extension is not damaged by mowers, and lawn equipment. If it becomes punctured or crushed, replace promptly.

If your extension is moving water to an undesirable area, not providing positive drainage from the foundation, or is causing water to drain and pool on concrete surfaces, use an additional extension to move water further away or divert it. These extensions can be found at your local home improvement store. Always ensure your downspout extension is in the lowered position or attached during periods of precipitation.

CARPENTRY, FRAMING

Chapter 4 – 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:

- thin cracks appear in exposed wood structural members (e.g. joists and beams)
- small gaps appear between counter tops, cabinets, vanities and the wall
- minor joints open in door and window trim, baseboards, walls, etc.
- fireplace mantels may shrink slightly and separate from the wall or at joints
- wood flooring opens between individual pieces or settles from the baseboards at wall or under door jambs and trim
- squeaks develop in floor underlay, wood flooring and stair treads
- small gaps show between stairs or stair mouldings and the wall
- hairline cracks form on drywall surfaces
- nail/screw pops show on the surface of drywall

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. See Chapter 7, [Drywall](#), for more information on drywall cracks and nail/screw pops.

Basement Framing

When finishing your basement, you may wish to add partition walls or whole rooms. When constructing these framed areas, be sure the wall partitions are floated. A minimum 2" is recommended. As your concrete basement slab may be subject to movement due to natural heaving of the soils underneath, it is important that any partition walls are floated to allow for this movement.

Chapter 5 – 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 local 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

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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. Delamination due to lack of adhesive usually occurs 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. Refer to the section on [Grout](#) in Chapter 7 for more information.

Natural Stone Countertops

A natural stone countertop is a solid piece of stone that has been cut from a large piece naturally found in the earth. This should not be confused with engineered stone countertops that are 'formed' in the factory using stone particles and resin.

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

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scratches but is porous and may need to be treated every six months with a sealer to prevent staining. Marble is softer and more porous than granite and may require more frequently applied sealer. (More information is found below under **Countertop Sealers**) Slate is durable, heat-resistant and does not stain easily, whereas limestone is more prone staining. Extra protection can also be applied if desired in the form of a sealer. 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 and harsh chemicals. Consult the manufacturer for specific care instructions for the type of stone your counters are made with. Using an incorrect cleaner can result in a dulled appearance or haziness of your stone.

Quartz Surfaces and Other Engineered Stone Countertops

Engineered stones are composed of natural minerals, such as granite, marble and quartz. Particles of stone aggregate are combined with resin and colour pigments and formed into a countertop. 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. Most quartz and other engineered stone countertops will not require a sealer. However, it is best that you check with the manufacturer to be sure. (More information is found below under **Countertop Sealers**) 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. (More information is found below under **Countertop Sealers**) Protect the finish by cleaning with a soft cloth and a mild soap. Avoid corrosive or abrasive cleansers, or cleaners that contain ammonia.

Countertop Sealers

Sealing your countertop has been mentioned in the above sections – Natural Stone Countertops, Quartz Surfaces and Other Engineered Stones, Concrete Countertops. It is important to note that even amongst the different types of stone (marble versus granite) there are different 'varieties' of stone having different characteristic. For example, darker granite is less porous than lighter granite and some types of granite (such as darker varieties) do not need to be sealed. It is therefore very important to consult the manufacturer for specific care instructions especially when it comes applying sealant. One way to check is to see if your countertop is 'thirsty'. Add a few drops of water to the countertop. If any of that water absorbs into the stone after a few minutes, then its likely time to re-seal. Keep in mind that areas that are used more often may need to be re-sealed before other areas.

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There is a large variety of sealers on the market that each provide a different level of protection, length of protection, and sheen. Some sealers last 3 months, whereas others can last several years. The length of time a sealer lasts will also depend on how much you use your countertop. Take into consideration that some areas may get used or cleaned more often than others – and may require re-sealing earlier than other areas. The type of sealer required will also vary based on the type of stone countertop you have. In other words, a sealer for a concrete countertop may not be appropriate for a granite countertop.

Countertop sealers may indicate that they are ‘stain-resistant’ but are never ‘stain-proof’. The level of ‘stain-resistance’ of your countertop is highly dependant on the porosity of the stone and the type of sealer. All spills should still be cleaned up as quickly as possible. Pay close attention to spills from corrosive or acidic liquids such as wine, coffee, lemon juice, or any cleaning agent not designed to clean your countertop. Repeat attacks by acidic liquids and chemicals or those left too long may result in a stain.

Refer to the manufacturer’s maintenance instructions to determine what sealer to use and how often to seal your countertop.

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 Manitoba. This shrinking and expanding is normal.

- Follow the manufacturer’s 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.

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- 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.
- Moisture from kettles and other appliances can damage your cabinetry, causing doors and drawers to warp and finishes to deteriorate. When using these types of appliances that emit steam, ensure they are located in such a way that the steam does not come in contact with cabinet surfaces.

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. Most new hardware used to hang the doors or drawer slides are fully adjustable. Normal home maintenance includes adjusting the cabinet doors from time to time.

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. Water spills and kitchen splatters should be cleaned quickly. Warping due to environmental conditions in the house would not be considered a warranty issue.

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Chapter 6 – Windows and Doors

Windows

Windows today are typically composed of a pvc, fiberglass, or are wood metal-clad. The frames of pvc and fiberglass windows and the exterior metal on a metal-clad window are virtually maintenance free. Interior wood finishes should be maintained as per the manufacturer's 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 weatherstripping 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 weatherstripping 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 weatherstripping 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 as it will lose its flexibility.

Most windows will not have caulking around the perimeter. However, depending on the type of window and type of cladding, the window manufacture may require a bead of caulking around the window as a bond break from the cladding. If you see this caulking around your window, it is imperative that it be maintained.

Cleaning Your Windows

Do not use abrasive cleaners or sharp objects such as razors blades to clean or remove debris from your windows. There are many products on the market that will remove hard to clean residue such as tape and paint, without scratching your windows. Refer to your window manufacture's maintenance manual for further cleaning instructions.

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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 weatherstripping 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 on Windows

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.

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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. Placing numerous objects along your window sill will result in the same condition. Ensure your window drapes or blinds are left at least partially open during cold weather. Also, removing the window screens during the winter will improve air circulation, thus reducing condensation.

Heat outlets 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. Good air circulation and ventilation will reduce condensation. For optimal ventilation, refer to your manufacturer's heating/cooling manual.

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.

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However, these recommendations 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.

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

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

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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.

Weatherstripping 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.

Weatherstripping is a porous material and can freeze during periods of cold temperatures, even in a properly-sealed door. When this happens, the weatherstripping becomes rigid and will not allow a proper seal with the door. To prevent this, you can lubricate the weatherstripping. Refer to your manufacturer’s instructions to determine the appropriate lubricant. Take caution when using lubricant as it can affect the paint or stain finish of your door and any surrounding wood trim.

Doors that are used often or are closed hard may cause the striker plate to become misaligned. You may need to occasionally adjust the striker plate to ensure the door remains in contact with the weatherstripping to form an adequate seal.

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

Exterior Doors and Locks are Icing up; Hard to Open in Cold Weather

Exterior doors can warp to some degree due to temperature differential between inside and outside surfaces. Extreme changes in temperature in the colder months can also cause your doors to stick in the winter due to the build-up of ice along the frame and hardware. Ice can also form inside the locking mechanism, causing difficulties locking and unlocking your door. High humidity levels in the home may aggravate this condition.

You can reduce the effects of seasonal changes and extreme temperature fluctuations by ensuring your weatherstripping is in good order, lubricating your hinges with an appropriate lubricant and lubricating your door locks with dry graphite. Further, ensure the humidity in the home is appropriate for the conditions in and outside the home. For more information visit the section on [Humidity](#) under Chapter 12.

Manitoba has a severe climate. Even with the best of intentions in maintaining proper humidity, etc., doors may occasionally stick and locks may ice up due to extreme temperature fluctuations. During the colder times of the year, check your locks often, especially on doors

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that are used infrequently. If ice forms on your door, do not chip it off as you may damage your door and/or the weatherstripping. Increase the air circulation around your entrance way. Do not slam doors to force them to shut, as this may also damage the door and its hardware.

Exterior Screened Doors

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.

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 finishing. Consider hiring a carpenter for such a renovation.

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

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the door is difficult to repair. It is essential to control the humidity levels in the home to prevent this from occurring.

Bifold and Pocket Doors

Bifold and Sliding 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.

Bi-fold and sliding doors may require adjustment from time to time to maintain alignment and hardware may need to be cleaned and lubricated as part of normal home maintenance. 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. Take care in opening and closing bifold doors slowly to prevent them from coming off the tracks.

Pocket Doors

Pocket doors slide into a cavity in the wall when they are opened. The wall cavity where the door 'pockets' must remain unobstructed for proper operation of the door. The placement of a nail or screw for the simple purposes of hanging a picture along the wall where the door 'pockets', may prevent the opening and closing of the door.

Pocket doors may require adjustment from time to time and hardware may need to be cleaned and lubricated as part of normal home maintenance.

Chapter 7 – Exterior & Interior Finishes

Vinyl Siding

Vinyl siding is generally a maintenance-free exterior finish which can be washed occasionally with a small amount of water from a garden hose to remove dust. Do not 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, portland cement stucco, 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. Some masonry products have integral weeping systems, which are built-in without the visible signs of weep holes. Weep holes and integral weeping systems 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. Do not pile snow against your home for the same reason.

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.

Do not use power-washers, detergents, or soaps on your masonry. A fine spray from your garden hose is all you need to clean debris away. Masonry surfaces are porous. Excess amounts of water can move through the masonry surface causing damage to the building envelope and may also produce efflorescence. Soaps and detergents can also cause damage to surfaces and your building envelope which will lead to the ingress of moisture.

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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.

Care should be taken when attempting to clean efflorescence from masonry. Refer to the manufacturer’s instructions for proper guidance.

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 Manitoba, 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

Your home may have a textured cement-like finish. This finish could be either 'traditional' stucco or 'acrylic' stucco. Stucco is a decorative finish to your home and is not a structural component. Further, although it is the secondary plane of protection in the building envelope, stucco does not 'water-proof' your home.

Although both finishes have a similar appearance, there are some key differences that you should be aware of when it comes to maintenance and product expectations. While both are 'vapour permeable', meaning that moisture can move through the material, traditional stucco is more porous than acrylic. See below for additional information.

Traditional Stucco

Traditional stucco is made from portland cement, sand, lime and water. As this is a natural cement product, it is porous and will absorb moisture. You may notice a change in the colour when the stucco is wet following a rain. This is normal. As stucco dries, it should return to its original colour. Overtime, however, your stucco may fade or discolour due to natural weathering.

Hairline cracks may appear in the finish coat of the stucco. This may be due the natural process of drying of the stucco, minor settling/movement of the home, and vibrations on or near the home. Minor cracking is normal and will be most noticeable on smooth finish coats. Hairline cracks are not an indicator of structural problems and will not result in the stucco falling off.

Do not use power-washers, detergents, or soaps on your masonry. A fine spray from your garden hose is all you need to clean debris away. Masonry surfaces are porous. Excess amounts

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of water can move through the masonry surface causing damage to the building envelope and may also produce efflorescence.

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 [Efflorescence on Masonry](#) under Masonry in Chapter 7 for additional information on efflorescence.

If you are thinking of updating your stucco (repairing or changing the colour) contact a professional. Stucco should never be painted. Paint will interfere with the breathability of stucco, possibly allowing moisture to become trapped in the wall behind. Water that cannot escape will simply cause the paint to bubble and peel. Even worse, trapped moisture beyond the stucco may lead to mold and bacteria creating rot that will eventually move through the building envelope.

Acrylic Stucco

Acrylic stucco is sometimes referred to synthetic stucco or elastomeric stucco finish. This type of stucco is made from acrylic resins and/or polymers that resemble a thin sticky paint and contains an aggregate such as sand and/or crushed quartz to give the finish some definition.

While acrylic stucco is vapour permeable (like traditional stucco), it is more water resistant. It is also more resistant to hairline cracks due to its elasticity. Since the material is synthetic, it can come in a variety of colours and will resist fading and discolouration if maintained properly.

To clean your acrylic stucco, use a light spray from a garden hose. For stubborn soiled areas, use a manufacture recommended cleaning solution. Refer to the manufacturer for additional cleaning and maintenance tips.

Exterior Penetrations and Sealants/Caulking

Exterior Penetrations

Your home will have several openings through which plumbing, electrical and mechanical/ventilation components penetrate through to the interior of the home. These include but may not be limited to: furnace/HRV exhaust and air intakes, wiring, dryer vent, sump hose connection, hose bib (water tap), exhaust for bathroom fans and range hoods, gas line, exterior lights, exterior plug outlets. The holes through which these components exit should be sealed to prevent moisture and pests from entering the building envelope. Many of these penetrations will be sealed with a sealant/caulking.

Periodically check that these penetrations are properly sealed. While these sealants are designed to be long-lasting and withstand weathering, they can be damaged by pests, such as

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rodents. If it becomes necessary to repair or replace a sealant, ensure that that you use a material that is waterproof, flexible, long-lasting, designed for exterior use, and suitable for the application.

Exterior Caulking

Depending on the cladding type of your home, decorative trims, and other exterior elements, you may find caulking. Cement board cladding is just one example. In some case, you may find caulking around your windows and doors. Caulking may also be found around decorative ' housings ' such as exterior lights and dryer vents. Ensure that this caulking is maintained and repair/replace as necessary. Refer to the instructions on the caulking for suitable application.

Drywall

All homes will experience some movement especially in the first year. As a result, minor hairline cracks may form in drywalled areas. Drywall cracks can also occur due to minor lumber shrinkage due to it drying in the first year.

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 to hold drywall in place. Screw pops are caused when wood shrinks and expands, forcing screws holding the gypsum to work their way through the wall board. This results in a bump in the drywall as the screw forces its way through the drywall. These screw pops typically appear at the upper edge of a wall or at a truss line on a ceiling.

Screw pops can be repaired by cutting away the wallboard over the screw head that has bulged and tightening the screw until it is counter set into the drywall. Add another screw about 1 inch above. Fill the holes with joint compound, prime and re-paint.

Note that hairline cracks in drywall caused by natural movements or the shrinkage or expansion of materials is not covered under warranty.

Truss Uplift

Trusses are prefabricated structural assemblies which hold up the roof and the top floor ceilings. Truss uplift is a phenomenon which causes the top floor ceilings to lift off the interior walls in the winter and then drop back down in the summer. This often results in gaps and cracks in the drywall where the wall meets the ceiling. Truss uplift occurs because of moisture content differences between the upper and lower chords of wood trusses. The bottom chord of a truss is buried below insulation, keeping it warm and dry. The top chords however, are above the insulation and get very cold in the winter months, retaining their moisture. The top chords will absorb additional moisture causing them to elongate. The bottom chord, however, stays

warm and will shrink slightly due to it naturally drying. With the top chords elongating and the bottom chord shrinking, the truss arches up in the middle causing the ceilings to lift off the walls. In the summer, the cycle reverses itself.

Truss uplift is NOT a structural concern and will often correct itself after a couple years once the trusses have acclimated. However, some homes may continue to experience minor disturbances to the drywall due to this 'truss uplift' phenomenon.

If you are doing any drywall repairs to these affected areas or redecorating, it is best to do it in the winter when the ceiling is at its highest point.

Wall Coverings (Wallpaper)

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.

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. Interior 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.

Note that freshly painted surfaces may require time to enamelize before the surface can be cleaned. Refer to the manufacturer's specifications for dry times and cleaning instructions.

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

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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/Caulking

Sealant or caulking 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.

Water Has Penetrated Behind a Bead of Sealant/Caulking

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.

EXTERIOR AND INTERIOR FINISHES

If the grout is cracked, repair it per the manufacturer's recommendations. 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 if required. Also check for leaks from the water pipes or the drains.

Grout

Grout is a thin mortar used to fill the joints between wall or floor tiles. There are 2 types of grout most commonly used: epoxy and cementitious.

Epoxy Grout

Epoxy grout consists of an epoxy resin, filler and hardening agent. It is highly water-resistant and resistant to stains and chemicals. It is ideal for countertops, backsplashes, bathrooms and other areas susceptible to stains and moisture. While epoxy grout is more durable, it is also more expensive, more difficult to apply, requires a longer curing time, and light colors can yellow if exposed to sunlight. Epoxy grout does not require a sealer.

Cementitious Grout

Cementitious 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 cementitious grout is porous and can stain and be easily discoloured (especially lighter shades) by routine activities. Sealing grout and maintaining that seal can greatly reduce discolouration and water penetration. Your grout may need to be re-sealed as often as once a year, or every few years. It depends on how often the area is cleaned, high traffic areas (especially at entrance ways), and high moisture areas such as your shower. The good news is you cannot over-seal cementitious grout, and applying sealer is a fairly simple job and you can do the whole area or only a small area. If your grout is starting to look dull, is cracking/chipping, or pulling away from the sides of the tile – these are signs that you need to re-seal. Also, you can test your grout by adding a drop of water or spray it with a fine mist of water. Wait 2 to 3 minutes. If the water beads or flows from the grout, the grout is properly sealed. If the grout darkens or absorbs the water, the grout has not been sealed or the old sealer has broken down and is no longer protecting the grout.

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.

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Chapter 8 – Flooring

Resilient Flooring

Resilient flooring refers to a family of synthetic flooring that offers a measure of impact absorption that makes floors more comfortable to walk upon. It is available in sheet format as well as flexible tiles and planks. Some examples are vinyl, rubber, and linoleum. In some cases, vinyl tiles can be grouted. Visit the section on [Grout](#) in Chapter 7 for more information on caring for grout.

Cleaning and Maintenance

While this type of flooring is highly water-resistant water can still find its way underneath at joints and seams, especially on tile or plank products. Therefore, clean up spills quickly. This flooring should be cleaned in accordance with the manufacture's instructions, use the recommended cleaning product. Ensure the floor is swept free of sand and other abrasive debris first, as debris can scratch the surface. Do not use soap and water unless recommended by your manufacture. Certain detergents can leave a dulling film on some flooring products. 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. In all cases, the manufacturers' cleaning and maintenance recommendations should be followed.

Depressions

By its resilient nature, heavy furniture can impart dents in the flooring. The occurrence of dents can be reduced by a leg coaster that distributes weight over a larger area.

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 and mats, 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. Refer to the manufacturer's instructions for guidelines on cleaning and repair.

Hardwood Flooring

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

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“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 flooring can be solid wood or engineered wood. Engineered wood flooring is made up of layers – usually 2 or 3. The top layer is the natural wood. The middle ‘core’ layer may be plywood, fibreboard, or particle board. Sometimes it will have a bottom layer that is designed to balance the top layer.

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. Each hardwood floor manufacturer will have their own recommended humidity setting, which may even vary dependant on the type of hardwood. Be sure to check your product manual to determine what the recommended setting is for your specific hardwood flooring. The average relative humidity setting suggested by most hardwood floor manufacturers is around 35 – 55% 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.

Changes in humidity and temperature can also cause flooring noises.

Separations are Developing Between Strips of Hardwood

Separations 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. Wood flooring applied over a floor with radiant heating underneath it is also more susceptible to separation between the strips of wood. Broader strips of hardwood are more prone to cupping and separation 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.

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

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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 can occur when excess moisture comes in contact with the unfinished side of the wood. This moisture could come from a leak or drip or from moisture which originates from a previously wet area such as the sub floor, a crawl space, or a freshly poured basement floor slab. Common causes to isolated areas are plumbing leaks (often from the dishwasher or fridge) or large water spills.

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.

Crowning occurs when the edges of the wood shrink in towards the bottom while the middle or the top of the plank swells up, creating a raised/rounded appearance. This happens when moisture is left sitting on top of the floor or when there is a significant difference in moisture above the flooring compared to underneath. The main cause of this is excessive damp mopping of floors. In isolated areas, this can occur from mats that absorb moisture at wet areas such as the entrance of the home or a laundry room.

In some cases, a slight cupping or crown can be a seasonal occurrence and the issue will often diminish over time. In many cases, too much or too little humidity in the house will cause cupping/crowning. If excessive moisture is causing cupping or crowning, identify the source, remedy the problem, and then allow the flooring to reacclimatize.

For plumbing leaks and water spills, remove any mats or furniture covering the area. Soak up any moisture on the floor and then ventilate the area well. Use a fan to increase drying, especially for large spills or plumbing leaks that may have moistened the subfloor beneath the planks. Allow the area to dry completely before replacing any mats, furniture, etc.

Refer to the flooring manufacturer’s guidelines on recommended humidity levels, cleaning tips and other maintenance requirements. No amount of standing water should be left on the surface of a hardwood floor.

Durability Considerations

Most hardwood flooring installed today is pre-finished with a coating such as polyurethane. These coatings are extremely hard and long wearing but that does not mean that wood beneath the coating cannot be dented.

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.

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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.

Hardwood Floor Finish Seems Dull from Cleaners

Corrosive solutions, chlorine cleaners or abrasives will, over time, dull the finish of a hardwood floor. Commonly available cleaners, soaps, oils, waxes or polishes can adversely affect the finish of the floor. Use **only** cleaners recommended by the manufacturer of the hardwood floor.

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



For more information on hardwood flooring visit the National Wood Flooring Association at: www.woodfloors.org

Laminate Flooring

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. Follow the manufacturer's instructions when cleaning the floor. Contact the manufacturer for stains caused by such things as paint, adhesive, oil, etc. Never use a steam cleaner on a laminate floor.

Just like hardwood flooring, laminate flooring is susceptible to cupping and crowning due to moisture/humidity. For more information go to [Cupping, Crowning and Shrinkage](#) under Hardwood Flooring in Chapter 8.

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 high humidity or water.

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If the laminate has swelled due to moisture, contact the supplier and arrange for a professional repair. To prevent damage, follow the manufacturer's recommendations for care and maintenance.

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. Some common carpet fibres are nylon, olefin, polyester, triexta 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. For best results, follow the manufacturer's instructions for cleaning your carpets.

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.

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.



For Further Information visit The Carpet and Rug Institute website at www.carpet-rug.org

FIREPLACES

Chapter 9 – 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. Consult the manufacturer’s guidelines for the appropriate cure time of your fireplace. 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 owner’s 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. Refer to the manufacturer’s instructions on the replacement of this sensor.

Solid Fuel Burning Appliances

Before operating your fireplace, refer to your manufacturer’s instructions.

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

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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.

Remember to clean your chimney regularly to prevent chimney fires.

Carbon Monoxide Detectors

Carbon monoxide (CO) is a colourless and odourless gas. You cannot 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. Therefore, we do not recommend running a vehicle, mower or other gas-powered equipment in the garage. Check doors that lead from the garage to the home to ensure they are properly sealed.

Carbon monoxide detectors are required in every home that has an attached garage or fuel-burning appliance. 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. In most new homes, the CO detector and the smoke detector are combined in one unit.

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.

Smoke Detectors

Wired-in smoke detectors with battery back-up are required by code. In most new homes, the smoke detector and CO detector are combined in one unit.

Maintenance Considerations for CO and Fire Detectors:

- Your smoke/CO detector is wired directly into your home’s electrical system. You should test it monthly.
- Your smoke/CO detector has a battery back-up. Change the battery when needed as per the manufacturer’s instructions.

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- Consider installing smoke alarms with “long-life” batteries.
- Do not paint a smoke/CO detector.
- Smoke/CO detectors are sensory devices that have a limited lifespan. Each year, detectors get more efficient and cost less. Follow your manufacturer’s recommendations on replacement.

PLUMBING

Chapter 10 – 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.

Waste Water Management 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 waste water management 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. Consult your manufacturer's maintenance manual for helpful information on your system. The system must be correctly and regularly maintained to ensure that it operates properly. Faulty systems create health hazards and contaminate the environment. A waste water management 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.

Note, that wells, and attached water systems, septic tanks or fields are not covered under Warranty.



For more information on Waste Water Management Systems visit the Government of Manitoba, Conservation and Water Stewardship at www.gov.mb.ca/conservation/envprograms/wastewater/information/index.html. There you will find a link to a ***Homeowner's Manual for Onsite Wastewater Management Systems***.

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.

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Sewers, Drains or Fixtures are Blocked

You can avoid the majority of drain blockage problems by not disposing of foods, fats, oils, waxes, paint, 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, it is the p-trap that becomes blocked under the kitchen or bathroom sink with common items such as hair and food particles. These p-traps can be removed to facilitate cleaning. If the blockage is further along the plumbing the cleanout can be utilized with the 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, potentially damage the plumbing, and possibly make the blockage worse. If you encounter a blockage, contact a professional if simple removal methods do not work (e.g. using a plunger; cleaning the p-trap).

Backwater Valves

Your home has a sewer backwater valve that helps prevent sewage in an overloaded main sewer line from backing up into your basement. When the valve is in the closed position, waste water from the home may overload the main drain line and cause plumbing lines to backup into the home.

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 appropriate professional 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 garden hoses, shut off exterior valves and allow the line to the exterior hose bibbs 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 glass of water on a humid summer day. This typically occurs on the toilet tank or the toilet

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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), there is usually a pressure regulator valve located on the outlet of the pressure tank. Check your manufacture's manuals for the recommended psi (pound per square inch) of your tank. If the psi is set too low it may cause low water pressure.
- Most water faucets in bathrooms have faucet aerators that may restrict the flow for water conservation. This is not a defect. Aerators and screens can become dirty and will require periodic cleaning.

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.

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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.

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.

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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 4, [Countertops](#) for 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.

Shower doors will not provide a 100% seal against water leakage. Avoid directing your showerhead at the shower door.

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Hot Water Tank

There are 2 types of hot water tanks – gas-fired and electric. The most common is an electric hot water tank.

Should the tank cease to function (no hot water) check your manufacturer's manual for instructions on adjusting the temperature. If temperature setting is not the problem, check the breaker panel for a tripped breaker. If this does not resolve the problem, contact your builder if you are within your coverage period.

Gas-fired hot water tanks 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.

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.

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.

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.

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.

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 device or appliance that uses water. Mineral build-up can reduce efficiency and necessitate de-scaling regimes.

PLUMBING

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.

There are several different types of mineral salts that can be used in a water softener and can come in a variety of forms. The most common are potassium and sodium. Choosing the correct salt is important for optimal operation of your softener by reducing common problems such as salt-bridging and mushing. Refer to your manufacturer's manual for more information.

Your softener will require periodic maintenance which is best followed using your manufacturer's manual. The level of maintenance required will vary between different types/models of water softeners. Below we list some typical items that may need to be addressed.

- Check salt levels once a month to ensure the optimal level of salt for your softener.
- Break up salt-bridges if they form. A salt bridge is a solid clump of salt that forms in the brine tank, creating an empty space between the water and the salt. It will prevent the salt from dissolving into the water to make brine. If brine is not being made, the water will not soften. The most common cause of salt-bridging is high humidity around your water softener. Other causes are temperature changes around the water softener or using the wrong kind of salt.
- Salt mushing is similar to salt-bridges but occurs when dissolved salts recrystallize and form a sludge at the bottom of the tank. This layer of salt will affect the water softener's regeneration process, preventing the softener from properly softening your water. It can create a tough blockage in the tank that can only be cleaned by draining the tank, cleaning out the old salt and bottom sludge, and replacing with fresh salt. Check for high humidity around the softener and ensure you are using the correct salt in the correct quantity according to the manufacturer.
- Some water softeners may require the resin bed to be flushed periodically. Refer to the manufacturer's manual on how to perform this and the correct solution to use.
- The venturi valve and nozzle may need occasional cleaning. This valve moves brine from the brine tank into the resin tank during the regeneration cycle.

Natural Gas Appliances

Follow your manufacturers' manuals for the operation and maintenance of any of your natural gas appliances.

- Only a qualified professional should install, repair or remove natural gas appliances.

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- 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.

ELECTRICAL

Chapter 11 – 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.

Circuit Breakers

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. A 15 amp circuit can handle 1800 watts for a short period of time and 1440 watts for a longer period of time. A 20 amp circuit will handle 2400 watts for a short period of time and 1920 watts for a longer period of time. Generally, 15 amp circuits are used for lights, switches and general receptacles in bedrooms and hallways. 20 amp circuits are usually found in the kitchen, where you may be plugging in small appliances (toaster, coffee maker, etc.). Check to ensure that the appliance you are using has the appropriate wattage for the outlet it is plugged into. 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.

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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. As such, the Manitoba Building Code requires that circuits supplying 20 amp and 15 amp receptacles are protected by an AFCI. These breakers will replace the normal circuit breakers in your electrical panel on the circuits that provide power to the bedrooms and other areas.

Older appliances that are no longer working optimally or ones with frayed cords or damaged plugs may cause the AFCI to trip. If the AFCI breaker trips, check any cords first then reset the breaker. If you are unsure how to reset the breaker or encounter difficulties, consult your builder and/or an electrician. Also ensure that the appliance's plug is pushed all the way into the receptacle. Some appliances that use a motor (such as a vacuum) create 'arcing' during normal operation. Sometimes an AFCI may trip as a result. Check with the manufacturer to determine if your appliance will work on an AFCI before purchasing.

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, kitchen 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.

If the circuit is overloaded, the power may go out causing the "Reset" button to pop outward. To reset the circuit simply depress the "Reset" button. Power should be immediately restored.

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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 your builder.

Ceiling Mounted Fan Vibrates and is Noisy

Ceiling fans should be installed so that they operate 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

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 within the time period required. This registers your purchase which provides warranty protection and allows you to receive recall notifications, if any, for 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.

INTERIOR CLIMATE CONTROL

Chapter 12 – Interior Climate Control

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

Humidity

Humidity is mentioned throughout this guide numerous times as it is a highly important variable, continuously affecting how the construction components and various finishes in your home will look, feel, and behave. Maintaining appropriate humidity is considered one of the most important maintenance tasks a homeowner has. Failure to maintain appropriate humidity can result in the denial of a warranty claim.

What is humidity?

Humidity is the quantity of water vapour (moisture) in the air and is usually expressed as a percentage. When expressed as a percentage, it is called relative humidity, which also takes into account the temperature of the air. So relative humidity is the actual amount of moisture present in the air in relation to the capacity that the air has at a particular temperature. The higher the air temperature, the more water vapour it can hold. If your indoor temperature was 18° C with a relative humidity of 30% and you increased your temperature to 25° C, the relative humidity will go down to 21%.

Water vapour, when it reaches an absolute point of saturation, becomes liquid. As mentioned above, cooler temperatures hold less water vapour. Moist air has a 'dew' point: the temperature to which the air must be cooled to become saturated with water vapor. When the moist air finds a surface at or below its dew point, the air reaches 100% humidity and the water vapour will liquify, causing condensation. Outside, when water vapour cools enough it rains. On a cool summer morning dew forms on grass and your glass of cold water 'sweats' on a hot day. This is the same phenomena happening to the cool surfaces of your home, such as the inside surface of your windows when the temperature of the windows is colder than the indoor air around it – usually in the winter.

The amount of condensation that forms will depend on the temperature of the object and the relative humidity of the air. On a really cold winter day (-30° Celsius), the dew point of the air at your window can be reached quicker, needing a smaller amount of indoor relative humidity (less than 30%) than on a warmer day at the same relative humidity. Here is another way to look at it. If your indoor temperature is 21° C, and your humidity is 35%, the dew point is 5° C. So, if your window surface was to reach below 5°, it would form condensation. On really cold winter days, you may see condensation in the form of frost at the corners of your window.

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Keep in mind that condensation does not happen just in the winter. It is the same phenomena as when your mirror in the bathroom fogs up or when moisture forms on your cabinets and windows from a large amount of cooking.

If you are curious to learn more, search for 'dew point table' on the Internet. The following website has a tool to show the affects between temperature, relative humidity, and dew point: <http://www.dpcalc.org/>

How does humidity affect the home?

Humidity affects any material that has the capacity to absorb and lose moisture, such as wood, concrete and drywall. Wood products are likely the most susceptible to physical changes in appearance and damage due to changes in moisture content. Too much and too little moisture can affect flooring, cabinets, furniture, interior doors, trim, etc. - including the lumber used in the home's framing. Wood can shrink, expand, twist, bow, crack and splinter – often leading to irreversible damage.

The key point to remember about humidity, is it is not going to be the same in every room and area of your home and will constantly fluctuate because of many variables (everyday activities, temperature, humidity outside, etc.). If your thermostat on the main floor near the bedrooms shows 35%, then the air within that area may have that humidity level, but your kitchen at the other end of the home or basement may be higher. Read more about this below under ***What is the ideal relative humidity for my home?***

Low Humidity and Moisture Loss

When your home is constructed, the components (wood, drywall mud, concrete, paint, glues) contain a certain amount of moisture. Over time these materials will dry, so some normal shrinkage is expected and is not considered a defect. When a material loses moisture it can shrink, become brittle (less flexible), look dull in appearance, crack, and pull away from other materials. This shrinkage can be made worse if the humidity in the home is kept too low.

Below are some examples of low humidity or loss of moisture. Follow the Chapter reference to learn more.

- Hardwood/laminate floor cracks, separations, and noises [Chapter 8](#)
- Cracks in basement concrete slab or concrete wall [Chapter 2](#)
- Stucco or parging cracks [Chapter 7](#)
- Warped cabinet doors [Chapter 5](#)
- Shrinkage of framing members [Chapter 4](#)
 - thin cracks appear in exposed wood structural members (e.g. joists and beams)
 - small gaps appear between counter tops, cabinets, vanities and the wall
 - minor joints open in door and window trim, baseboards, walls, etc.
 - fireplace mantels may shrink slightly and separate from the wall or at joints

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- gaps between wood flooring and baseboards or under door jambs and trim
- squeaks develop in floor underlay, wood flooring and stair treads
- small gaps show between stairs or stair mouldings and the wall
- nail/screw pops and hairline drywall cracks
- twisting of open-end beams; bowed wall

High Humidity

Too much humidity can also negatively affect construction materials and the finishes in your home. High humidity can cause hardwood flooring to warp, paint to blister, drywall tape to buckle, and frost to form on your window. It can also provide a breeding ground for mould, mildew, and fungus.

New homes are much more energy efficient than those built 20 years ago, having less penetrations, more insulation, and better air/vapour barrier systems. Energy efficiency means less indoor air loss to the exterior and less air infiltration. So, the air inside your home stays inside, unless it is mechanically circulated by your HRV system or by other means of ventilation. Further, your new home will have extra moisture from the construction materials and it may take a couple years for these materials to expel their extra moisture. Within the first year, a home is giving off approximately 13 litres of moisture per day. Therefore, you may find that high humidity levels are reached quicker or more easily than the previous older home that you lived in – especially in the first couple years.

Humidity can increase just from everyday activities such as showering/bathing, cooking, line drying clothes, washing dishes and from items such as aquariums, pet water bowls, vaporizers/humidifiers, etc. (Visit Chapter 6 under [Condensation on Windows](#) for a chart on how much moisture is produced by certain activities.) Too much humidity can cause condensation and sometimes frost on colder surfaces such as windows, toilets, plumbing and cooler areas that lack ventilation such as closets. Wood surfaces, such as wood/laminate flooring, trim, doorjambs, cabinets, will absorb moisture resulting in swelling, warping, and delamination of finishes. Below are some examples of issues caused by high humidity. Follow the Chapter reference to learn more.

- | | |
|---|----------------------------|
| ● Condensation on windows | Chapter 6 |
| ● Exterior doors – jambs and locks are icing up | Chapter 6 |
| ● Frost on basement walls | Chapter 2 |
| ● Interior door veneer delaminates and splits | Chapter 6 |
| ● Wall covering peeling | Chapter 7 |
| ● Hardwood and laminate floor swelling, cupping or crowning | Chapter 8 |
| ● Warped cabinet doors | Chapter 5 |
| ● Carpet is stretched and loose | Chapter 8 |
| ● Condensation on water supply lines and toilet | Chapter 10 |

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- Condensation and frost in the garage (doors, locks, walls)
- Frost in the attic
- Water softener – salt bridging and salt mushing
- Peeling/blistering paint and other finishes
- Soft drywall, swelled drywall, or drywall tape that lifts/buckles
- Mould, mildew and fungous

[Chapter 13](#)

[Chapter 3](#)

[Chapter 10](#)

What is the ideal relative humidity for my home?

Determining the appropriate humidity level for your home and maintaining it can be a bit of a balancing act. The components of your home will have different temperatures, absorption capacity, and moisture tolerances. Even different species of wood vary with their moisture tolerance. Different manufacturers may even recommend different humidity levels for the same type of product (example: flooring) based on their own product specifications. You may also have personal belongings (guitars) or pets (birds) that may require a specific relative humidity.

The temperature you keep your home will also affect the humidity. As mentioned above, higher temperatures are capable of holding more water vapour. This is why some hardwood flooring manufacturers may recommend a relative humidity range that must be considered within a corresponding temperature range.

Some areas of your home may have better ventilation than others. While a relative humidity of 35% may be working well for the majority of the home, a closet on a north wall that has poor ventilation and air circulation may develop condensation and mould on the wall. Your relative humidity can also fluctuate dramatically throughout the day/week and from room to room based on everyday activities. The relative humidity in your kitchen may be much higher from cooking, than in the bedrooms, so you may find paint on a nearby door is blistering/peeling, but the rest of the doors in the house have no issues. Humidity might be higher in the basement in a new home due to the concrete slab curing. There will be increased moisture in the air near an exterior door during the winter due to snow and melt water from boots. Even the humidity outside plays a factor. If its more humid outside than inside, and you open a window, the humidity in your home will rise as you are allowing in moist air.

Despite all the variables, there are some general guidelines. Health Canada recommends that relative humidity not exceed 55% to reduce the spread of mould. Mould can affect your health and cause damage to your home. The National Wood Floor Association advises that wood floors perform best at a relative humidity range of 30% to 50% percent, and a temperature range of 60° to 80° Fahrenheit (15.5°C to 26.6°C). The Canadian Kitchen Cabinet Association recommends 35% to 40% for solid wood cabinets. The Association of the Wall and Ceiling Industry recommends that relative humidity not exceed 50%, to prevent degradation of drywall and its finishes.

Before performing maintenance or repairs on your home, please review the Guide Limitations at the beginning of this Guide.

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This provides a general idea of what some of the industry recommends, but it should be used as a guideline. We recommend you inquire with the manufactures of the different finishes in your home (flooring, cabinetry, wall paneling, fine wood finishes), to learn the moisture tolerances of these products. **IMPORTANT: Even when following manufacturer and industry recommendations, condensation can still occur on some surfaces of your home.**

Condensation, mould, and moisture damage can still happen

While a relative humidity level between 35% - 45% may be healthy for many components of your home (hardwood floors, fine wood furniture, finishes, etc.) keep in mind that your windows, doors, and other cool surfaces can still form condensation, especially in the winter. Mould and moisture damage can still occur. Below are reasons why you may still have moisture issues.

- **Its very cold outside.** The temperature outside will affect many interior surfaces that are on an outside wall. Windows and doors do not have the same thermal insulation value as your exterior walls and will be colder in the winter. If the temperature inside is 22°C and the relative humidity is 30%, the dew point is 4°C. Therefore, condensation or frost will occur on any interior surface that reaches 4°C. Even a relative humidity level of 25% may not be low enough on an extremely cold day to prevent some condensation on some windows, plumbing, exterior doors or in cooler areas lacking ventilation such as closets. The formation of condensation does not mean your window or door is defective or you are lacking insulation. It means the air around it has reached its dew point. Even a well-sealed exterior door (no air infiltration) can ice-up at the jamb or locks.
- **Lack of air flow.** Good air flow and ventilation through your home will help the warm air of your home reach cooler areas. Furniture and belongings that block heat registers will reduce air flow. Crowded areas or those with closed doors, such as closets can have poor ventilation and may be susceptible to condensation or frost which often forms near the bottom corners of the room – often on an outside wall.
- **The temperature inside is too cold.** An indoor temperature of 17°C will hold less water vapour than at 22°C, making condensation more likely to occur.
- **Temporary or focussed areas with increased moisture.** Each morning after you shower you are raising the humidity in your bathroom and surrounding area. This moisture may create a problem for nearby finishes or form condensation on windows in the winter – even if the general relative humidity of your homes is at low level. Be sure to always use your bathroom fan to fully exhaust this moisture. Another common area of focussed high moisture is at your entrance in the winter. Snow that comes off your boots and soaks into a mat or sits on the floor will raise the humidity in that area – potentially causing your door to ice up. Items such as aquariums, pet food bowls, hang drying clothes will all cause excess moisture in the surrounding area.

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Do not allow condensation to sit, as it may lead to mould issues. Always wipe away surface moisture. Ensure mats under pet bowls and at entrance ways are kept dry. To help moisture at entrance ways in the winter, use a fan. NEVER chisel frost off a door jamb. Check all areas of your home periodically, especially closets and other areas with reduced ventilation for signs of condensation – particularly in the winter – and increase ventilation (open the door, de-clutter, use a fan). To reduce condensation on windows in the winter, remove screens and allow air movement to the window surface (open drapes/blinds).

At the same time, keep your surfaces clean and dust free. Organic debris such as lint, dirt, pet hair/dander, food residue etc. combined with moisture is a perfect environment for mould growth.

Summary - controlling and monitoring humidity

- Use a hygrometer. We recommend that you have a portable hygrometer so you can read the humidity in different areas of your home.
- Know what the manufacturer of your flooring, cabinets, etc. recommends for humidity.
- Monitor large sources of moisture (pet bowls, aquariums, humidifiers) for spillage and increased localized humidity. Do not dry cloths in the home and do not exhaust your clothes dryer indoors.
- Look for signs of high or low humidity (cracking, warping, condensation, mould, etc.)
- Know when to use your HRV. Your HRV will help circulate the air in your home and exhaust moist air outside. Ensure your HRV is working optimally by replacing or cleaning your filters as required and ensure the exterior vents and air intake are not blocked. Consult the manufacturer's manuals for proper operation. More information on HRVs can be found in Chapter 12 under [Heat Recovery Ventilation](#).
- Use bathroom and kitchen fans to exhaust moist air.
- Keep rooms free of clutter to allow air circulation and do not stack belongings against exterior walls. Do not block heating and return air vents. Periodically open doors to rooms and closets to improve air circulation.
- Do not ignore excess moisture (condensation/frost on surfaces). Dry the area by wiping away moisture or increasing ventilation.



Additional Resources

- Natural Resources Canada – *Why Should I Worry About Moisture Problems?*
http://publications.gc.ca/collections/collection_2013/rncan-nrcan/M144-59-2007-eng.pdf
- Government of Canada - Reduce humidity, moisture and mould
<https://www.canada.ca/en/health-canada/services/air-quality/indoor-air-contaminants/reduce-humidity-moisture-mould.html>
- The CMHC website contains a vast amount of information on condensation. Visit www.cmhc.ca and type in “condensation” in their search box.

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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. A more common cause of inadequate heat or cooling is 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. Heat travels differently in your home in the winter versus the summer. Consider re-balancing your system in the heating and cooling season.

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 as necessary. The frequency in which your filter needs replacement will depend on the size and type of filter you have as well as the amount of dust and debris circulating throughout your home. You may need to replace the filter as often as every three months. When replacing the filter, ensure you use the correct type for your system and insert it in the correct direction. The wrong filter or one installed incorrectly can limit the air flow.

Most air conditioning units for new homes are mounted on the exterior of the home and will not have a cover. Overtime it will collect debris and dirt. A dirty air conditioning unit will not run optimally. As such, your air conditioner will require periodic maintenance and service. Some manufacturers have specific recommendations for preparing your air conditioner for when it is

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not in use for a prolonged period, as in the winter. This might include turning the power off and covering it. Refer to the manufacturer's manual.

Your heating and cooling system vents to the outdoors through a direct vent (pvc pipe). This vent is located on the side of your home. Blockages to this direct vent will affect the efficiency and performance of the system or may cause it to cease in functioning. Keep this area free from debris. In the colder months check for snow and ice build-up around the direct vent, and gently remove any blockage.

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. Temperature differences will occur simply based on the direction (north, east, west, south) a room faces. For example, a room with a west exposure, especially in the summer, will be much warmer in the afternoon due to solar gain, than an east-facing room. 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. Interior doors that are open will promote air movement whereas closed doors may reduce air movement leading to an increase or decrease in temperature of a particular room. Drapes and furnishing can also influence the heat balance in a room.

Condensate Line is Blocked

Most furnaces have the air conditioning coil placed in the plenum above 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.

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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.

Note that frost formation on your door jamb does not necessarily indicate you have air leakage. Even the most well-sealed doors can experience sticking and frost build-up at the locks and jambs if the humidity in the home is high, or even if the temperatures have become extreme. See Chapter 6, [Exterior Entry Doors](#), for more information.

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 is referred to as 'convection'. This downward movement of air is often mistaken for air leakage. This can be improved by warming up the surface of the window by ensuring the area around the window is well-ventilated. Removing window screens and opening up window coverings can assist with this. If there are heat registers below your windows, ensure they are not blocked and the heat is being distributed upwards, so it can wash over the window

Ventilation

Ventilation in the home serves three purposes. The first is to ensure there is fresh air for its inhabitants. 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.

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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 in the winter as windows tend to ice over and become frozen open.

Heat Recovery Ventilation

As at April 1, 2011, the Manitoba Building Code requires that all new homes have an HRV – Heat Recovery Ventilation system. An HRV exchanges the air in your home regularly, ensuring that the interior air is as healthy as possible. Stale, humid air is directed through the HRV system and is exhausted outside. Simultaneously, fresh air from the outside is brought in through the HRV, passing through a filter to clean out any pollutants. The outgoing and incoming air passes each other in the system, allowing the outgoing warm air to preheat the colder incoming air, which saves energy. The incoming fresh air then passes from the HRV into the return air duct of the furnace where it is filtered again, heated to room temperature and distributed throughout the entire house.

Your HRV not only improves your air quality but will assist in controlling the humidity in your home by venting moist air outdoors. You will likely have a main control in a central location of your home, likely located near your thermostat. Most bathroom and kitchen exhaust fans are connected to the HRV unit as a whole system and may have separate controls. Kitchen and bath fans draw humidity and odours from cooking and bathing out of the house before the vapour can circulate. Refer to your HRV manual on the proper operation of your HRV and the use of controls and humidity settings.

Your HRV unit will require regular maintenance for optimal operation. Clean or replace your air filters in accordance with your HRV maintenance manual. Note that you may have a separate charcoal filter located in your kitchen in one of the air intake grilles, likely located near the range. Periodically check the outdoor intake and exhaust hoods and remove leaves and other debris that may be blocking the outside vents of your HRV. During colder months, clear any snow or ice buildup that may be blocking outside vents. Without adequate airflow, your HRV will not function properly. Your HRV has fans, a condensate line, a heat exchange core and ductwork that will all require periodic cleaning. The condensate line removes moist air that condenses in the unit. Ensure this line is free from blockages and is directed to basement drain. If the line is blocked or dirty, warm clean water can be poured through the line to wash out the debris. Refer to your HRV's manuals for proper cleaning or servicing of all these parts.

Your HRV unit has been selected to work optimally in Manitoba's climate. However, even approved HRV units may experience periodic ice-build up when the temperature dips below -25° Celsius. Your HRV has a defrost cycle to ensure continual operation during periods of ice-build up. During the defrost cycle, your HRV will temporarily turn off and expel water through its condensate line as it goes through its defrost cycle, and automatically turn back on when the ice has been removed. If you suspect your HRV has turned off due to ice-build up and is not

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coming back on, check to see that the condensate line is properly expelling water, and then refer to your operator's manual for further instruction.

Vented 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 may end with a screen or flapper 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 some homeowners like to use humidifiers to maintain health and the appearance of hardwood floors including other interior wood finishing and furniture. Some 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 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.

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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.

GARAGES, DRIVEWAYS AND WALKWAYS

Chapter 13 – Garages, Driveways and Walkways

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. How often you reseal your garage concrete floor after this depends on its installation, use, and wear and tear. Based on these variables, it may need to be resealed as often as once a year. 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.

Just like your driveway, your garage slab is susceptible to degradation due to de-icing salts and road-way salts/debris that shed from your tires or snow/ice melt-off from the vehicle. Studded tires, oils and other vehicle fluids can also harm the concrete.

When possible, sweep excess moisture that accumulates on the garage floor toward the drain or to the exterior. You want to prevent standing/pooling of water.

Check for oil puddles or vehicle fluid leaks and clean up immediately. When performing maintenance on your vehicle, snowmobile, lawnmower, etc., protect the concrete with a pad or drop cloth.

Note that garage floors are excluded from warranty.

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 weatherstripping 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

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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 you have personal access to your home from the garage, the door is a fire rated steel door with a self-closing device. Do not replace that door with a conventional wood door and do not disable the self-closing device, as this would constitute a contravention of fire regulations. Always ensure this door closes fully and safely on its own.

Condensation – Garage

The garage is usually not recognized by most as an area to be concerned about when it comes to moisture. However, since your garage is not connected to your home's ventilation system and likely has no ventilation system of its own, care must be taken to ensure that moisture does not build-up to incur frost or mould. We recommend that you monitor the humidity on a regular basis. A measuring device called a hygrometer can be purchased at your local retail construction outlet for this purpose.

Due to Manitoba's extreme climate, a lot of moisture can be introduced into the garage in the winter. Ice and snow that is stuck to the car's underside will melt off after a period of time while inside the garage – which may be slightly warmer than outside. This melt-water will evaporate into the air of the garage. Running a car or a gas-powered machine (e.g. snow-blower; snowmobile) inside the garage produces moist exhaust that will also contribute to condensation in the garage. (See Chapter 11, [Carbon Monoxide Detectors](#) for information on garage fumes). Condensation will find its way to the coldest areas of the garage and will form frost. This can cause the overhead door to operate improperly or the lock to the 'man-door' leading to the home or exterior to become frozen. Condensate moisture can build-up between the bottom of the garage door and the garage floor and actually cause the overhead door to freeze shut. Frost can sit on the walls of the garage and then melt in periods of warmer temperatures, possibly leading to mould.

To limit the amount of condensation in your garage, remove standing water, snow and ice on the garage floor to a drain or to the outside. Do not idle your car or other gas-powered machines in the garage. (Per Chapter 11, Carbon Monoxide Detectors, we recommend that gas powered vehicles not be idled at all in the garage for the safety of the home's inhabitants). If you see frost on the walls or the garage windows, you may want to consider opening the overhead door a few inches (if your opener allows a partial open), to allow this moisture to dissipate to the outside. Do this only if the relative humidity inside is more than the relative humidity outside. This can also help if you have encountered your overhead door freezing to the garage floor. Another method to keep your overhead door from freezing to the ground is to

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clean the door's rubber gasket, and then apply a non-corrosive, safe-for-rubber silicone spray. For excessive moisture issues, consider running a fan to improve air movement, or a dehumidifier.



The CMHC website contains a vast amount of information on condensation. Visit www.cmhc.ca and type in "condensation" in their search box.

Walks and Driveways

Seasonal temperature and precipitation variations may cause cracks in concrete walks and driveways. Frost penetration may cause heaving or settlement changing the direction of surface drainage. These issues are beyond the builder's and homeowner's 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. Equally, studded tires can cause damage.

Sealing your concrete is recommended to maintain its longevity. How often you reseal your driveway depends on the material, its installation, use and wear and tear. Based on these variables, it may need to be resealed as often as once a year.

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. Further, the use of ice picks and shovels to chop away ice can damage your concrete.

Reducing the Effect of De-icing Salts

The use of de-icing salts will damage your concrete surfaces (driveways, steps, sidewalks, patios, etc.)

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

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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.

Note that driveways (including garage slabs), concrete patios, and walkways are excluded from the warranty.

MAINTENANCE SCHEDULE

Suggested Home Maintenance Schedule

Outlined below are some key areas to be inspected as part of your regular home maintenance. Unless otherwise noted, these items should be checked periodically throughout the year. Refer to any and all manufacturer's manuals/website for specific maintenance frequency, cleaning instructions and other requirements.

Exterior

<ul style="list-style-type: none"> ➤ Check for soil settlement around the home periodically and after long periods of rain or dry-spells. Ensure grading slopes away from house. Check swales and other surface drainage. Clean debris from window wells. ➤ Check sump hose to ensure proper drainage away from the house; remove and replace with splash pad in the winter. ➤ Clear snow piles from foundation walls and areas of egress. 	Chapter 1 & Chapter 2
<ul style="list-style-type: none"> ➤ Check eavestroughs and downspouts for blockages; clean as needed. Check caulking. 	Chapter 1 & Chapter 3
<ul style="list-style-type: none"> ➤ Detach garden hoses, etc. from exterior water taps and ensure tap is closed before the temperature goes below zero. Shut off interior valve if applicable. ➤ Check irrigation system regularly for leaks (if applicable). ➤ Check your deck and other exterior wood structures for slivers and weathering. 	Chapter 1
<ul style="list-style-type: none"> ➤ Check roof periodically in the winter for excessive snow build-up and ice dams. ➤ Inspect the shingles on the roof periodically and following wind storms. ➤ Inspect soffits and fascia for damage and debris. 	Chapter 3
<ul style="list-style-type: none"> ➤ Ensure plants, soil and other debris are not blocking or clogging masonry weep holes. ➤ Inspect masonry for loose bricks and stone and missing mortar. ➤ Inspect vinyl/wood/composite wood sidings and trims; replace sealants as necessary. ➤ Check sealant/caulking around exterior penetrations. 	Chapter 7
<ul style="list-style-type: none"> ➤ Inspect waste water management system (if applicable). 	Chapter 10

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<ul style="list-style-type: none"> ➤ Check insulation. ➤ Check roof vents for blockages from debris and snow/ice. 	Chapter 3
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Heating/Cooling System

<ul style="list-style-type: none"> ➤ Drain sediment on hot water tank periodically. 	Chapter 10
<ul style="list-style-type: none"> ➤ Check heat registers periodically and remove debris. ➤ Check furnace and HRV filters and clean or replace as necessary. ➤ Check humidifier monthly and clean as necessary (if your home has one). ➤ Balance air flow at heating ducts. ➤ Inspect air conditioning system (if installed) and condensate line; refer to manufacturer for instructions on preparing a/c unit for winter or for prolonged periods of non-use. ➤ Check intake vent screens and clean as necessary. 	Chapter 12

Before performing maintenance or repairs on your home, please review the Guide Limitations at the beginning of this Guide.

MAINTENANCE SCHEDULE

Windows and Exterior Doors

<ul style="list-style-type: none"> ➤ Check caulking, weatherstripping, and door sweeps – clean/replace as necessary ➤ Check windows (window tracks/drain ports) and screens – clean/repair as necessary 	Chapter 6 & Chapter 12
<ul style="list-style-type: none"> ➤ Check exterior door locks often especially in winter to ensure proper operation ➤ Check sliding doors and clean and lubricate track components as necessary 	Chapter 6

Kitchen and Bathrooms

<ul style="list-style-type: none"> ➤ Check countertops and vanities for chips, gouges and delamination ➤ Check your stone or concrete countertop for a proper seal and reseal as required. 	Chapter 5
<ul style="list-style-type: none"> ➤ Inspect caulking around countertops, vanities, showers and tubs; inspect tile grout 	Chapter 7
<ul style="list-style-type: none"> ➤ On infrequently used toilets or sinks, ensure P-trap is filled with water to prevent sewer smell ➤ Clean P-traps periodically to prevent clogged drains ➤ Clean faucet aerators and screens regularly (and cartridges if applicable) ➤ Inspect rubber/vinyl seals on shower doors and clean/replace as necessary ➤ Gas appliances should be checked annually by a qualified professional 	Chapter 10
<ul style="list-style-type: none"> ➤ Clean/replace range hood filters; Check exhaust fans and clean as necessary; check exterior exhaust flapper/vent 	Chapter 12

Whole House and Garage

<ul style="list-style-type: none"> ➤ Check for condensation and wipe dry immediately. Check for signs of high/low humidity and humidity levels periodically (all seasons) and adjust as necessary; ventilate as needed (Note: hardwood flooring and other wood furniture/finishes are highly susceptible to changes in moisture and may show gaps, splits, etc. due to excessively high or low humidity) *Chapter 12 will provide specific references to the appropriate chapters where humidity is discussed throughout this guide. 	Chapter 12
<ul style="list-style-type: none"> ➤ Check interior doors for proper operation; lubricate hinges as necessary and clean bifold/sliding door tracks 	Chapter 6
<ul style="list-style-type: none"> ➤ Test CO and smoke detectors monthly; change back-up batteries as recommended by manufacturer ➤ Gas fireplaces should be checked annually by a qualified professional ➤ Clean chimney regularly; inspect damper/chimney flue (if applicable) 	Chapter 9
<ul style="list-style-type: none"> ➤ Inspect weatherstripping on overhead garage door ➤ Inspect garage man door leading into home to ensure door closes fully on its own 	Chapter 13

Basement

<ul style="list-style-type: none"> ➤ Inspect basement for water issues ➤ Check caulking at concrete penetrations ➤ Check sump pump to ensure it is operational (never unplug from power) ➤ Inspect floor drains ➤ Check for signs of seasonal movement and adjust basement teleposts as needed 	Chapter 2
<ul style="list-style-type: none"> ➤ Gas appliances (hot water tank/furnace) should be checked annually by a qualified professional 	Chapter 10

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