



Identifying Housing Maintenance Needs



DEFECT RECOGNITION HANDBOOK



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INTRODUCTION

All houses require maintenance and repairs from time to time. Housing managers in First Nation communities are responsible for maintaining various types of residential buildings within their community.

Housing managers often rely on housing inspectors to assess the condition of houses in the community, but housing inspectors may not always be readily accessible to the Housing Manager. This could be due to the remoteness of the community; the unavailability of local housing inspectors; or even a lack of funds to hire external expertise. At such times, First Nation housing managers may need to be able to carry out maintenance condition reviews themselves to determine the priorities of housing maintenance and repair work needed on their homes.

While it is important to recognize that something is wrong with a house, it is even more important to recognize the cause of the problem. It would be a waste of valuable resources to repair the damage, or treat the symptom, without determining and repairing the condition causing the problem. An example of this would be to repaint a water-stained ceiling without first finding and repairing the leak in the roof.

This Defect Recognition Handbook has been prepared to assist First Nation housing managers in recognizing housing defects and analyzing the causes of such defects before determining the solution.

It should be noted that some building components, especially mechanical systems, require assessment by qualified technicians. Whenever the Housing Manager is not sure about a certain repair need, a qualified tradesperson or service technician should be consulted.

ROOF DEFECTS

Defect Recognition – slide 2-01



What's wrong?

These roof shingles are deteriorated (curled edges, missing or broken shingles) and have reached the end of their useful life. The roof shingles should be replaced. If not replaced, the roof will start to leak.

What caused it?

The age of the roof, along with the sun, wind and snow, has damaged the shingles over time, making them brittle and curling them (normal wear and tear).

What needs to be done?

Remove and dispose of the existing shingles and replace any moisture-damaged roof decking material. Install a new roof, starting with ice and water shield at the eaves, building paper underlayment where required, a new drip edge and flashing, roof shingles, roofing vents, ventilation fan hoods, and plumbing flanges, all installed in accordance with manufacturer's instructions.

Defect Recognition – slide 2-02



What's wrong?

The concrete chimney cap on top of this masonry chimney has deteriorated. If left much longer, rainwater will seep into the chimney itself, damaging it and possibly interior finishes.

What caused it?

The age of the chimney cap, along with acidic chemicals from the chimney exhaust gases, and the freeze-thaw cycle have broken down the strength of the concrete.

What needs to be done?

Remove the old concrete chimney cap and upper chimney flue pipe. Install a new upper chimney flue or a complete new metal chimney liner. Build a wooden form and pour a new concrete cap about 100 mm (4 in.) thick and higher in the middle around the metal chimney pipe to provide a slope away from it. Provide for rain drips on the underside of the chimney cap to shed water away from the chimney.

Defect Recognition – slide 2-03



What's wrong?

The eavestrough is full of leaves and twigs, and likely the downspouts will be blocked as well. These obstructions will prevent the proper drainage of water from the roof and away from the foundation. Overflowing eavestroughs could lead to water getting into eaves and soffits and causing damage to the wall areas below.

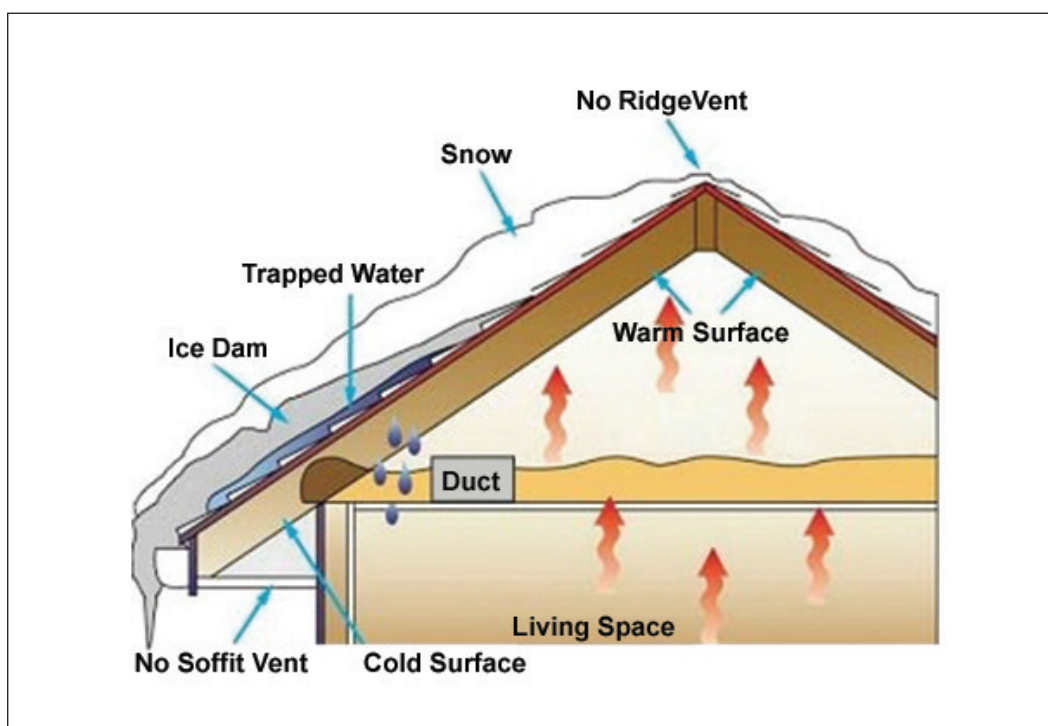
What caused it?

This is a normal recurring condition, due to the leaves that fall every year.

What needs to be done?

At least once a year, preferably in the late fall, the eavestrough and downspouts should be cleared of leaves, twigs and other debris collected in the eavestrough. Collect the debris into a bucket and then spray out the eavestrough and downspouts with a water hose that has good pressure, and ensure the water is properly draining from the downspouts.

Defect Recognition – slide 2-04



What's wrong?

“Ice damming” is the buildup of ice along the lower slope of the roof, as shown above. If not corrected, it can cause water to leak under the shingles and into the house.

What caused it?

Ice damming is caused by snow melting on the roof surface due to a buildup of heat in the attic space caused primarily by heat escaping from the living area below into the attic space and, secondly, by insufficient ventilation of the attic space. As the snow on the roof surface melts, this water runs further down the roof slope until it hits the colder portion of the roof above the overhang. There it freezes and builds an “ice dam,” which can send a thin slab of ice a significant distance up the roof slope. Trapped water from the snowmelt then gets under the shingles and leaks into the house along the exterior wall, often coming in along the top of the windows.

What needs to be done?

Reduce air leakage into the attic space wherever possible (weather-strip the attic-hatch lid and make sure the bathroom exhaust fan is not vented into the attic space) and ensure sufficient ventilation of the attic space (soffit/roof/ridge vents). When hiring contractors to add insulation in your homes' attics, make sure that they do not block off the existing soffit ventilation areas.

EXTERIOR FINISH DEFECTS

Defect Recognition – slide 3-01



What's wrong?

The paint has worn off of the fascia board. As the wood absorbs the rainwater, it gets wet and begins to rot.

What caused it?

Paint will break down with age, primarily as a result of ultraviolet rays from the sun. Then water will soak into the unprotected wood and cause the wood to rot, as is evident in the lower edge of the fascia board near the eavestrough.

What needs to be done?

According to Building Code requirements, all exterior wood must be properly painted or be covered (flushed) with aluminum flashing (fascia board).

In this case, you must sand and repaint the wooden fascia or cover it with aluminum metal flashing.

Defect Recognition – slide 3-02



What's wrong?

The vinyl siding has come loose. If not resecured soon, the wind will rip this piece of siding, and perhaps many others, off the wall.

What caused it?

As the sun shines on the vinyl siding, it expands. As a result, loose joints will become even looser, sometimes causing the joints to open or unhook from the sheet below.

What needs to be done?

In this case, you should, without delay, resecure the vinyl sheet into the joint and secure it with a small aluminum colour-matched nail or screw through a small slot to allow for expansion, perhaps positioned under the ledge of the middle bevel.

Defect Recognition – slide 3-03



What's wrong?

Vinyl siding has been ripped off the exterior wall.

What caused it?

Vinyl siding is “hung” on nails. It needs to be hung securely so it can expand horizontally but not sag vertically and become unhooked from the sheet below. When fastened with nails through sheet insulation (Celotex), as above, the nails need to be long enough to penetrate through the insulation and into the framing members. Otherwise, they will come out and the siding will blow away in the wind.

What needs to be done?

Find or buy additional vinyl siding, with matching colour and texture, and replace the missing pieces. Ensure that each sheet is securely hooked up into the joint below and “hung” securely with nails sufficiently long enough to penetrate into the framing members behind the sheet insulation.

Defect Recognition – slide 3-04



What's wrong?

Aluminum vented soffit is missing on this gable end of the house.

What caused it?

It appears that the aluminum fascia board was not installed on the gable end of this roof, or heavy winds blew the fascia board off the house, leaving the ends of the soffit sheets exposed to the wind. Either the soffit ends were not nailed securely enough, or the strong winds simply pulled the small finishing nails out and tore away three to four pieces of the soffit.

What needs to be done?

Find or purchase matching soffit. Replace the missing pieces and finish the installation of aluminum fascia to complete the job and protect the soffit ends from high winds.

Defect Recognition – slide 3-05



What's wrong?

The aluminum flashing (capping) around this window frame has come loose at the mitered joint, causing the caulking joint between the flashing and the window frame to open as well.

What caused it?

This was probably an installation of a new window insert into an existing window frame. Then the pre-existing wood frame was capped with aluminum flashing. It could be that the old wood was a bit “spongy,” and then the finishing nails did not hold as well as they should have and came loose.

What needs to be done?

Put a small amount of clear silicone caulking behind the open joint. Push it back into place and re nail it with longer aluminum or galvanized finishing nails, wiping away any excess caulking. Remove the old caulking where the flashing meets the window's edge and recaulk all joints around the window.

Defect Recognition – slide 3-06



What's wrong?

The cement parging has broken off the foundation wall at the corner of the house and the wood trim on the adjacent framed wall (walkout basement) appears to have rotted. The lower part of the downspout is missing. If not repaired, the wood will continue to rot and water may enter the basement through the foundation wall.

What caused it?

The lower part of the downspout, which directs water away from the house, is missing and eavestrough water has been running down the foundation wall. The freeze-thaw cycle has caused the cement to break away and leave the foundation wall exposed at this area. Water, both from the downspout and from contact with the soil, has also soaked into the adjacent wood corner trim, which in turn has started to rot.

What needs to be done?

Remove any loose cement parging on the concrete foundation wall and repair the damaged area with new parging. Replace the rotted wood corner trim and paint it. Keep the wood trim at least 200 mm (8 in.) above grade. Install a new downspout to just above the ground and an extension pipe to take the water away from the foundation.

Defect Recognition – slide 3-07



What's wrong?

The caulking between the window frame and the masonry wall has become hard, brittle and cracked, which will allow rainwater to enter the building envelope and cause mould or rotting of the wood framing.

What caused it?

Age, weather exposure and sun damage (ultraviolet light) will deteriorate the caulking and cause it to become hard, brittle and crack.

What needs to be done?

Remove the old caulking, install new silicone-based caulking and touch up the paint.

Defect Recognition – slide 3-08



What's wrong?

You are looking at the sill of a basement window. The caulking has become hard, brittle and cracked, allowing water to get into the joint.

What caused it?

Age, weather and sun damage (ultraviolet light) has caused the caulking to become hard, brittle and crack. Rainwater getting into that joint in winter will freeze and expand, causing the sill to push further away from the window. And, any rainwater entering the building envelope can cause mould or rotting of the wood framing.

What needs to be done?

Remove the sill. Clean away the old caulking from the window. Replace the sill if it is rotted wood; or at least clean away all old caulking and refasten it into place against the window and recaulk the joint with silicone caulking.

Defect Recognition – slide 3-09



What's wrong?

There is a gap between the vinyl siding and the electrical receptacle cover. This can allow rainwater to enter into the receptacle and cause an electrical short. And it could even allow water to enter into the wall cavity, causing mould or wood rot.

What caused it?

It's possible that the electrician installed the cover before the siding was installed and then the siding installer did not remove it before installing the siding behind it.

What needs to be done?

The simplest fix now is to caulk around the edge of the cover to seal the gap between it and the siding. A better and neater solution would be to cut the opening a little bigger; use vinyl J-trims to frame the opening and then caulk the opening between the J-trim and the electrical box.

Defect Recognition – slide 3-10



What's wrong?

There is a gap between the vinyl siding and the base of the light fixture. This gap will allow wind-driven rainwater to get into the electrical box and behind the siding.

What caused it?

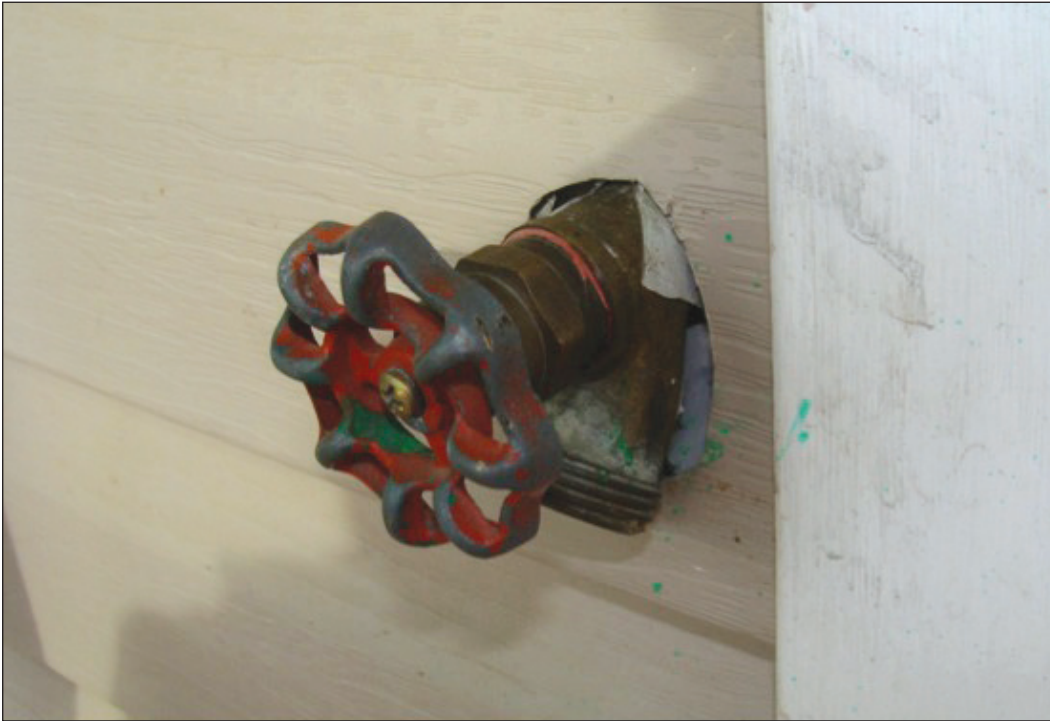
The siding should have been cut to fit tight around the electrical box. Now, the small base of the light fixture does not cover the gap.

What needs to be done?

Since the light fixture is also damaged, buy another light fixture with a larger base that will cover the gap and then caulk the opening between the base and the siding.

Also, counsel the tenants to not hang clothes from the light fixture!

Defect Recognition – slide 3-11



What's wrong?

Aside from this water tap not being a frost-protected tap, the tap is now too close to the siding to allow a hose to be easily attached. There is also a gap around the siding cut-out for the tap, which could allow rainwater to enter the building envelope.

What caused it?

It's possible that the tap was there first and then, as part of a renovation, strapping and new vinyl siding were added to the exterior wall.

What needs to be done?

As a minimum, the gap should be caulked with silicone caulking.

However, since the tap is too close to the wall, a better solution would be to remove this tap; patch the existing hole with a piece of vinyl siding; and then drill a smaller opening to install a new frost-protected hose bib (tap). The new tap has a flange that can be screwed to the wall. When the installation of the tap is complete, caulk any remaining gap between the tap flange and the vinyl siding.

Defect Recognition – slide 3-12



What's wrong?

While an extreme example, here we see a frost plume on the outside of a window.

What caused it?

There is likely no insulation and no air seal of the rough opening between the window frame and the wall (at least at the upper right corner of the window) resulting in warm moist air from inside the house leaking out, condensing and freezing on the cold exterior trim surfaces.

What needs to be done?

Remove the interior window trim and install a continuous bead of foam insulation around the window frame. When dry, trim off the excess foam flush with the window frame. Reinstall the window trim and repaint the trim if necessary.

STEPS, LANDINGS AND RAILINGS

Defect Recognition – slide 4-01



What's wrong?

The protective paint has worn off the steps. Now the treads are rotting and breaking away causing a potential fall hazard to the occupants and visitors. (There also appears to be no railing.)

What caused it?

The protective paint has worn off allowing moisture from rain and/or snow to soak into the wooden treads, causing them to rot and break away.

What needs to be done?

Damaged and rotten treads are to be replaced and painted or stained to prevent moisture from soaking into the wood. In this case, it might be best to replace the whole stairs, install a proper railing and stain or paint all of it.

Defect Recognition – slide 4-02



What's wrong?

Given the height of this landing and ramp off the ground, it does not have an adequate railing system.

What caused it?

This project was undertaken without an appreciation of the minimum safety standards built into the Building Code. The Building Code calls for a railing system with a minimum height (dependent on the distance from the ground) and vertical rails or guards spaced to ensure that even small children cannot fall through the railing to the ground.

What needs to be done?

The existing horizontal rails should be removed and a new railing system with upright, vertical posts and guard-rails should be installed in accordance with Building Code requirements. All new or unprotected wood should be stained or painted.

Defect Recognition – slide 4-03



What's wrong?

The railing has come loose from where it was attached to the exterior wall, causing a potentially dangerous situation.

What caused it?

The nails or screws attaching the railing to the wall pulled out. They were either too short or did not grip into solid wood.

What needs to be done?

First, check that the bottom of the post is not rotten or broken. If it is, replace it. Next, install a metal corner bracket screwed into the railing and into the wall, securing the top of the railing solidly to the wall.

Defect Recognition – slide 4-04



What's wrong?

This picture shows an area of serious wood rot or dry rot.

What caused it?

There was no eavestrough installed on the roof edge above this deck and the water collected by the roof continuously dripped down on the deck at this location. Once previous coats of paint deteriorated, it allowed the deck joists at this point to absorb the water and begin to rot. Additional coats of paint could not adhere to this wet location and the rot continued unabated over many years.

What needs to be done?

This deck joist, and others like it, will need to be replaced. That being the case, the complete deck should be examined as to whether it can be partially saved or should be totally replaced at this time. The restaining or repainting of decks, railings and stairs should be done on a cyclical basis, perhaps every five years, if possible, to ensure they remain water-resistant. Also, give consideration to installing an eavestrough.

Defect Recognition – slide 4-05



What's wrong?

The outer support (left side) is not stable, causing the deck to be lifted and dropped during and after winter.

What caused it?

While the right side of this deck is fastened to the house wall, which is supported by a permanent foundation; the left side is supported by deck blocks. Deck blocks are not a permanent foundation and they will rise and sink during the freeze-thaw cycle.

What needs to be done?

According to the Building Code, if a deck is fastened to the house, it should be supported by a permanent foundation on the other side as well. That would be concrete piles extending down to a depth below frost penetration in the area where the deck is built.

FOUNDATION DEFECTS

Defect Recognition – slide 5-01



What's wrong?

Pictured above is a serious foundation crack, as seen from outside the house.

What caused it?

A primary cause of foundation cracks is unstable soil under part of the foundation footing. As that part of the footing sinks and settles, the uneven settlement creates a vertical crack in the foundation wall.

What needs to be done?

Monitor the crack to see if the settlement has stopped. You may need to hire a foundation specialist to stabilize the foundation first, possibly by underpinning a section of the footings.

When the foundation is stabilized, the crack only needs to be repaired if it is leaking water or if you are planning to finish the inside of the foundation wall. If the crack is leaking, dig it up on the outside, right down to the footing. Get a reliable contractor to chip it out to form a “V,” fill the crack with epoxy and waterproof the exterior of that section of wall with a product similar to a “System Platon” membrane.

Defect Recognition – slide 5-02



What's wrong?

An area beside the foundation has been washed out and has undermined the back entrance slab, causing it to sink.

What caused it?

The black pipe coming out of the wall is a sump pump drainpipe. It was not extended away from the foundation and, as a result, has washed out this area beside the foundation and even under the concrete rear entrance slab.

What needs to be done?

First, extend the sump pump drainpipe well away from the house. Remove the slab if possible, raise the level of the granular fill at the back entrance, replace the slab and level it.

Finally, regrade the area around the house, where necessary, to direct water away from the foundation.

Defect Recognition – slide 5-03



What's wrong?

This is the inside of a basement with serious mould growth on the drywall finish.

What caused it?

Since the mould is not up to a specific horizontal line all around the basement (there may have been a mattress or box against the left side wall), it is not due to a flooded basement. In this case, the problem is likely a blocked perimeter drain tile, which has saturated the lower portion of the foundation wall and caused mould growth at various interior locations.

What needs to be done?

Remove the interior finish on the lower half of the basement foundation walls, both to remove the mould and to further examine the wetting pattern on the walls. If there is significant moisture saturation in the lower half of all the perimeter walls, likely the exterior of the whole basement needs to be dug up to the bottom of the foundation footing. Clean the foundation wall, redo the dampproofing (waterproof if a concrete block foundation), install a new drain tile and crushed stone. Finally, backfill the excavated area with a free-draining granular fill. Note, if the house is in an area with a high water table, ensure there is a reliable sump pump system to collect the perimeter drain water and pump it away from the foundation.

INTERIOR FINISH DEFECTS

Defect Recognition – slide 6-01



What's wrong?

The caulking around the lip of the tub has deteriorated and is getting mouldy.

What caused it?

It could be that the caulking was spread too thinly over a broader area than necessary and it was likely not a mold-resistant type. With age, it has become brittle, cracked and grown mould.

What needs to be done?

Remove all the old caulking around the lip of the tub. Clean the surface with liquid dish detergent and dry all surfaces completely. Fill the tub to just below the overflow (this is done to load the tub so the joint is at its greatest width) and then recaulk around the lip of the tub. Allow the caulking to set overnight before draining the tub. Once the water is removed, the joint may close, thereby compressing the seal. Typically a silicone bath and kitchen mould-resistant caulking is used.

Defect Recognition – slide 6-02



What's wrong?

Mould is growing in a lower corner of this room.

What caused it?

There must be water/moisture getting into this corner through the exterior finish. Or, there was high humidity in the house and a cardboard box was tight against the exterior wall at this location, contributing to the mould growth.

What needs to be done?

Check the humidity level in the house and ensure it does not exceed 40 per cent R.H. in the wintertime. Also, prevent cold spots at exterior corners by ensuring inside air can circulate to all parts of the exterior walls.

Check the exterior wall finish outside this location and repair any area of potential water entry (missing siding corner, caulking of holes). Also, confirm that there are no deficiencies on the roof above this location, which could cause a water leak. Clean up the mould area with warm water and a mild liquid dish detergent, dry completely and repaint if necessary.

Defect Recognition – slide 6-03



What's wrong?

These are mould spots in the corner where an exterior wall meets the ceiling.

What caused it?

This is usually caused two things: a high humidity level inside the house and insufficient insulation above the ceiling line. The thermal bridging, where the trusses sit on the exterior wall top plate, causes cold spots— which are damp in the winter and support mould growth.

What needs to be done?

Start with lowering the humidity level in the house to a maximum of 40% during the heating season. Clean up the mould with warm water and a mild liquid dish detergent, dry and repaint the affected spots. Ensure that there is sufficient heat in the room (21°C [70°F]) and perhaps circulate the warm air with a small fan.

If the mould comes back, you will have to open the exterior soffit and insulate the exterior face of the double top plate by applying either a spray-in-place closed cell foam or a strip of rigid insulation. Then repeat the steps above to eliminate the mould again.

Defect Recognition – slide 6-04



What's wrong?

A piece of ceramic tile along the ridge of the bathtub has come loose.

What caused it?

It is likely that moisture has gotten behind the tiles and caused the tile glue to let go or the paper facing on the gypsum board to debond from the gypsum core. The moisture has either entered from the bottom, as a result of a poor or deficient caulking seal along the joint between the tile and the tub, or the tile joints were not properly grouted and, over time, have allowed water to seep through.

What needs to be done?

In this case, remove and clean off the loose tile. Check that the wall behind the tile is dry and free of mould. If it is, you can reglue the tile to the wall and after it has set; regrout the joints and caulk along the top ridge of the tub.

If there are numerous places where the tiles are loose and the drywall behind the tiles has been damaged by moisture, remove all the tiles and drywall around the tub area and install a completely new tub surround. Ensure that the new drywall used is moisture-resistant gypsum board or, better yet, consider using a cementitious backer board instead of gypsum board behind the new tub surround finish.

Defect Recognition – slide 6-05



What's wrong?

There is some mould on the ceiling above the shower.

What caused it?

If the bathroom exhaust fan is not on while taking a shower, high humidity levels in the bathroom will form droplets of water on the ceiling. These, together with accumulated paper and towel lint that sticks onto the moist surfaces, will contribute to mould growth.

What needs to be done?

Instruct the tenant to always turn on the fan while taking a shower and to leave it on until the humidity level in the bathroom is low. Alternatively, have the fan controlled together with the light switch or operated by a humidistat control.

Clean up the mould on the ceiling with warm water and a mild liquid dish detergent. If repainting the ceiling, use a gloss or semi-gloss paint.

ELECTRICAL SYSTEM DEFECTS

Defect Recognition – slide 7-01



What's wrong?

1. The electrical GFI receptacle cover installed here is not permitted for exterior use.
2. The siding should extend behind the electrical cover (poor workmanship) and now presents a possible water leak issue.

What caused it?

Both concerns are caused by poor workmanship or a lack of knowledge.

What needs to be done?

1. The receptacle cover must be replaced by an exterior-grade GFI receptacle cover (cover has a gasket and spring-loaded cover to keep water out).
2. Any remaining gap between the siding and the new cover must be caulked with an exterior-grade caulking.

Defect Recognition – slide 7-02



What's wrong?

The protective globe or cover on this light fixture has been broken or removed and the light bulb itself has been broken off the screw base.

What caused it?

Rough treatment or inappropriate use of the light fixture has resulted in damage.

What needs to be done?

Makes sure the power to the light fixture is OFF; remove the light bulb base with a pair of needle-nose pliers; install a new light bulb and a new globe or protective cover. Instruct tenants not to use the light fixture to hang out their clothes.

(Also ensure that the gap between the siding and the light fixture base is caulked to keep the rain out.)

Defect Recognition – slide 7-03



What's wrong?

This electrical receptacle is within 1 m (36 in.) of a water source (kitchen sink) and is not a ground-fault interrupter (GFI) receptacle. Also, the protective cover is missing on the electrical receptacle (plug).

What caused it?

This installation (within 1 metre of a sink) was acceptable under earlier versions of the electrical code. The newer versions of the code require GFI plugs be installed IF renovations are taking place and the plug is within 1 metre of the kitchen sink.

The cover was obviously removed to allow for the repainting.

What needs to be done?

Replace the electrical receptacle with a GFI plug and ensure the cover is replaced after the painting is completed.

Defect Recognition – slide 7-04



What's wrong?

1. Plastic-sheathed electrical wiring should not be exposed. It must be behind the drywall or be protected by being inside wiremold or BX (armoured) cable.
2. The smoke detector is not installed up against the ceiling.

What caused it?

This is caused by a temporary installation or simply poor workmanship. (It looks like a ceiling repair is underway.)

What needs to be done?

Call an electrician to feed the electrical wire behind the drywall, reconnect the smoke detector and mount it up against the ceiling.

Defect Recognition – slide 7-05



What's wrong?

The light fixture is hanging by its electrical wiring. This is dangerous and should be corrected right away.

What caused it?

The light was probably lowered to permit painting or the mounting screws came loose and fell out.

What needs to be done?

Remount the light fixture to its metal base, using the proper metal screws.

Defect Recognition – slide 7-06



What's wrong?

The smoke detector is missing. Alarmingly, this is a common sight in houses in First Nation communities.

What caused it?

Often, when there are too many nuisance alarms (caused by opening the oven, the toaster or even steam from the shower), the occupant will disable or remove the smoke detector.

What needs to be done?

All tenants must be educated and constantly reminded of the life-saving value of having functioning smoke detectors in their home. Nuisance alarms can be minimized by keeping burners and ovens clean or by moving the smoke detector further away from the kitchen or bathroom area.

There are two common types of smoke detectors: ionization and photoelectric. For smoke detectors located near the kitchen, replacing the ionization units with photoelectric ones may help reduce the nuisance alarms.

Defect Recognition – slide 7-07



What's wrong?

An unprotected, plastic-sheathed electrical cable is being used to power the hot water heater. Also, the wire is running directly into the fixture.

What caused it?

This installation was performed by a do-it-yourselfer or uncertified handyman who does not know the electrical code.

What needs to be done?

The plastic-sheathed electrical cable needs to be replaced with BX cable or be protected inside a plastic trim channel called “wiremold.”

Also, there must be a mechanical clamp attaching the electrical cable to the hot water tank so the electrical connection cannot be pulled apart.

Defect Recognition – slide 7-08



What's wrong?

A live electrical wire is exposed and presents a life-threatening hazard.

What caused it?

Someone either did not complete an installation or removed an appliance, such as a hot water tank, and did not secure the live wire.

What needs to be done?

The electrical breaker feeding power to this wire should be shut off. If that cannot be done, because of other fixtures or appliances on the same circuit, you need to mount the wire into a secured junction box (with a mechanical connector) and put a cover on it.

Defect Recognition – slide 7-09



What's wrong?

The electrical panel is open and exposed. This is extremely dangerous and life-threatening.

What caused it?

It is possible that a tradesman was working in or around the panel and took the cover off. He then left the house and left the panel open and exposed.

What needs to be done?

The cover must be replaced immediately. And whoever left it off while away from the site should be warned of the liability of such a situation.

PLUMBING SYSTEM DEFECTS

Defect Recognition – slide 8-01



What's wrong?

The threaded end of the tap is too close to the wall to facilitate an easy connection of the garden hose. Also the tap itself is not a frost-protected valve, which could present a risk of freezing in cold areas.

What caused it?

This tap was installed with a limited budget and limited skill, or it is an older house that had additional siding installed without moving the tap further out.

What needs to be done?

Replace this tap with a frost-protected hose bib that is screw-mounted into a framing member and then caulk around the mounting plate. The hose bib should be installed so as to allow more space between the hose attachment area and the wall.

Defect Recognition – slide 8-02



What's wrong?

The deck-mounted faucet has been leaking water over a long period of time causing the countertop to absorb water and swell and the Arborite™ surface to come off. There is likely some mould on the underside of this countertop.

What caused it?

Likely one of the taps or the O-ring on the faucet itself was leaking for a long time and was not replaced. Not doing this simple maintenance has now caused a more expensive problem.

What needs to be done?

Given to the extensive damage to the countertop and the likelihood of mould underneath, a new countertop with new sink and faucet should be installed, and the occupants should be instructed to tell the office whenever they notice any water leakage around any of the taps or sinks.

Defect Recognition – slide 8-03



What's wrong?

There is some deterioration to the underside of this moulded countertop causing the faucet deck above to become loose. There is also some mould growth.

What caused it?

There has been water leakage around the faucet deck of this kitchen sink, and water has leaked through the holes cut out for the tap connections. This has resulted in some deterioration of the moulded countertop.

What needs to be done?

At this point, you could still save the countertop by removing the faucet deck and sink; and drying and sealing the exposed wood of the countertop (cut-out edge and underside). If the underside is only slightly damaged, a thin metal plate or large metal washers could be installed to strengthen the openings where the taps get fastened. Reinstall the sink and taps, ensuring the leak has been repaired.

Defect Recognition – slide 8-04



What's wrong?

The P-trap or drainpipe joints are leaking. The placement of the pot only buys some time to do the repair, but should not be considered a permanent fix.

What caused it?

It is possible the installer overlooked a joint that should have been glued or forgot to do a final tightening to some screw-joints on either side of the P-trap or the standpipe.

What needs to be done?

Run water in the sink and observe the drainpipe below, with a flashlight if necessary, to see where the pipe is leaking. If the leak is at a screw joint, simply tighten that joint to stop the leak. If the leak is at a glue joint, remove the P-trap and standpipe and repair the glue joint as necessary to stop the leak. Reassemble the piping and check again by running water in the sink and monitoring the drainpipe to ensure the leak has been fixed.

Defect Recognition – slide 8-05



What's wrong?

Observation of the underside of the main floor, indicates a leak around the toilet seal.

What caused it?

Leaks around the wax seal of a toilet are usually caused by movement of the toilet, indicating that it was not fully secured at the time of installation or has squeezed down after installation and become loose.

What needs to be done?

Shut off the water supply to the toilet and remove the toilet. Clean away the old wax seal and install a new one, perhaps one with the plastic extension. Line up the toilet base with the mounting screws and press it firmly down onto the new wax seal. Tighten the nuts on the mounting screws but do not overtighten as that could cause the porcelain base to break.

HEATING SYSTEM DEFECTS

Defect Recognition – slide 9-01



What's wrong?

There are a number of things that could go wrong with a forced-air furnace. If you are not an expert, you should not take it upon yourself to inspect heating appliances.

What needs to be done?

If you see anything questionable or the occupant complains of a condition you are not familiar with, call a qualified service technician to inspect and service the appliance.

Defect Recognition – slide 9-02



What's wrong?

There are a number of things that could go wrong with a wood-burning or combo forced-air furnace. If you are not an expert, you should not take it upon yourself to inspect heating appliances.

What needs to be done?

If you see anything questionable or the occupant complains of a condition you are not familiar with, call a qualified service technician to inspect and service the appliance.

Defect Recognition – slide 9-03



What's wrong?

There are a number of things that could go wrong with a wood stove. If you are not an expert, you should not take it upon yourself to inspect heating appliances.

Wood stoves must be ULC approved and must be installed according to the manufacturer's installation instructions, with special attention to the required clearances from adjacent combustible surfaces.

What needs to be done?

If you see anything questionable or the occupant complains of a condition you are not familiar with, call a qualified service technician to inspect and service the appliance.

Defect Recognition – slide 9-04



What's wrong?

Creosote is leaking out of the cemented connection of the metal chimney to the masonry chimney.

What caused it?

There appears to be a buildup of creosote in the chimney and, as the chimney heats up, it is running down the chimney lining and coming in at a crack in the masonry joint around the metal chimney pipe.

What needs to be done?

Obtain the services of a technician familiar with the wood-burning appliance installed, and have him or her inspect and clean both the appliance and the chimney. The masonry joint should also be checked and repaired.

Defect Recognition – slide 9-05



What's wrong?

This furnace air filter is clogged with dust and dirt.

What caused it?

Air circulating through the ductwork of a furnace will carry a lot of dust and dirt. It is the job of the filter to capture that dirt and keep it from being recirculated throughout the house.

What needs to be done?

The air filter should be replaced about every three months of continuous operation. Remove and dispose of the dirty filter and install a new one of the correct size.

Instruct the occupant on the importance of checking and replacing the filter on a regular basis, as this will contribute to cost savings through a more efficient operation of the furnace.

VENTILATION DEFECTS

Defect Recognition – slide 10-01



What's wrong?

This exhaust fan hood is missing the hood and flap that stops the wind and birds from going into the duct.

What caused it?

The hood could have come off in a strong wind, but also could have been damaged on installation.

What needs to be done?

Simply replace this hood with a new one. Be careful to not damage the new hood or the ductwork sleeve as you slide it into place.

Defect Recognition – slide 10-02



What's wrong?

This bathroom exhaust fan hose was terminated in the attic space. The Building Code requires all exhaust fans to be terminated on an exterior wall or through the roof. You can see evidence of the beginnings of moisture damage to the underside of the roof sheathing.

What caused it?

This was caused by a lack of knowledge on the part of the installer or simply poor workmanship.

What needs to be done?

This exhaust hose should be relocated and extended through the upper part of the roof into a proper roof exhaust hood.

Alternatively, if the building code in your region permits it, extend the bathroom fan exhaust hose down through the exterior soffit using an exhaust vent hood.

Defect Recognition – slide 10-03



What's wrong?

A flexible plastic dryer exhaust hose has been installed. It is too long and has many tight curves that will restrict air flow and collect lint. This installation could become a fire hazard, as the plastic piping will heat up considerably and possibly begin to melt.

What caused it?

Dryer exhaust vent kits used to supply flexible plastic exhaust piping. However, it is safer and more energy efficient to use rigid metal piping (with the least number of elbows) to pipe the exhaust to the exterior.

What needs to be done?

Remove the existing plastic vent hose and install new rigid metal piping to exhaust the dryer through the nearest exterior wall, using the least number of elbows possible. Tape the pipe joints with duct tape.

Defect Recognition – slide 10-04



What's wrong?

This exterior dryer exhaust hood is completely plugged with lint.

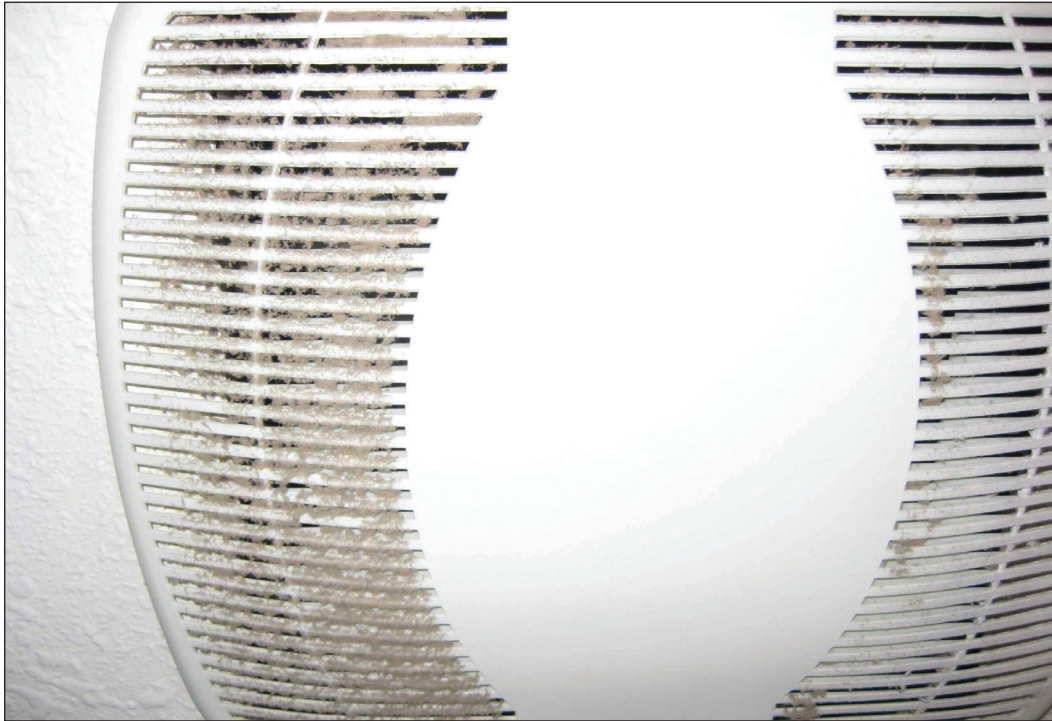
What caused it?

The lint collector screen in the dryer is not being cleaned after each load and no one has checked or cleaned the exterior exhaust hood for a long, long time. There appears to be uncertainty as to whose responsibility it is to check and clean dryer vents and exhaust hoods.

What needs to be done?

Counsel occupants on the inefficient operation of the dryer and the resultant high energy cost from not cleaning out the lint collector and allowing the exterior exhaust hood to become plugged. Then show them how to clean both the lint collector and the exterior dryer exhaust hood. Let them know that this is part of their basic home maintenance tasks.

Defect Recognition – slide 10-05



What's wrong?

This is a bathroom ceiling exhaust fan grille that is becoming clogged with dirt.

What caused it?

Since the bathroom fan is used to exhaust humid air, any dust particles will usually stick to the fan grille. If not cleaned, it will eventually completely clog the grille, making the fan useless.

What needs to be done?

Try to vacuum the grille in place. However, it might be better to remove the grille; wash it; dry it; and then reinstall it. It can be removed by pulling it down, then disconnecting the wire clips on either side. Reinstall in reverse.

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