Manufactured Homes

Some differences in Manufactured Home Inspections

Inspecting Manufactured Homes

- A manufactured/mobile home is inspected the same way as a house with a few differences.
- This document is meant to give you a starting point should you decide to do manufactured home inspections.
- We recommend that you do independent research and get as much training as you can prior to adding this to your service offerings.

Construction Methods

Construction History

- Pre 1976 floor joists were run from front to back, supported on the metal transport frame. The heating system's ducting was run through one of these cavities from end to end.
- Plumbing was kept centralized and to one side of the home. Supply piping was routed above the floor and covered with a small chase box made of paneling.
- When they changed to running the joist across the metal frame (approx. 1976), all of the plumbing and duct work was run under the joists, with a loose bag (sometimes plastic, sometimes wood) used to hold the insulation in place. This allowed the ducting of the furnace to be directed under the windows, and bathrooms to be located further to the ends.

Construction History (cont'd)

- Whether the floor construction was joists run end to end or cantilevered across the metal frame, both types have only a single rim joist/plate at the sides and are not designed to have additional weight added, such as additions or sundecks. Some manufactured homes have a triple plate at both side walls and the joist have joist hangers, the set-up blocks are set directly under the sidewalls. This makes it possible to support the home on the outside perimeter and remove the frame which was only intended for transport.
- Newer construction has the steel beams sitting closer to the outside walls (smaller cantilevers). This was done to accommodate the heavier building materials used. If you see shorter cantilevers (1-2' instead of 3-4') then some of the structural issues identified below may not be applicable.
- In 1978 the Mobile Home Act was changed to the Manufactured Home Act.

Construction Types

- There are multiple construction types when it comes to manufactured homes:
  - Park Models
  - Modular Homes
  - Mobile/Manufactured Homes

Park Models

- **Park Models** are not built to any building code but are built to CSA standard Z241 and are technically RVs. You will be able to identify them because they are not hard wired but **use a plug-in** (or if you can see the CSA sticker you can see the standard used).
- You'll have to decide if you are going to inspect these units but if you do be sure to add a disclaimer that says these are not built to any building code and may have underlying issues. The structure of these units can be quite different (for example: it could be laminate walls with paneling glued to the inside and paneling glued to the exterior with rigid insulation in between).
- Contact your insurer to make sure your coverage applies to these types of units (RVs).

Modular Home

- Modular homes are built in a factory in sections and assembled on site (usually a city lot). They should be inspected the same way you inspect any home.
- These homes will be built to the CSA Standard A277 and should have the corresponding CSA sticker attached (usually at the electrical panel). Seeing this sticker may be the only way to know the home is modular.

This single wide had this CSA Label A277

Modular Homes – CSA A277

- Just to keep the waters muddy…sometimes they will use CSA A277 to construct a single or double wide unit as well.
- In this case, inspect these units as you would any manufactured home.

Manufactured / Mobile Homes:

- **Manufactured homes vs Mobile:** These two words are essentially interchangeable, and the units can be built in multiple ways.
  - Single Wide, Double Wide and multiple section home
  - Sections built on 2 steel beams.
  - Multiple sections can be joined on site to create a larger home.
  - A manufactured home that gets transferred to a concrete foundation (the framing used for moving the home is removed on site) These are essentially mobiles with crawlspaces or basements.
- Sometimes it's hard to tell if the home you are looking at is a manufactured home or not because they look similar to a regular home. If you have any or all of these, you may be looking at a manufactured home:
  - Look to see if you've got 2 half trusses.
  - Look to see if you have 2 wooded beams down the centre (either on an 8" pony wall or piers).
  - Look to see if you have 2 gable vents at the ends (one for each half).
- These homes are governed by CSA Standard Z240

How to tell if it's a manufactured home

- Set of 2 half trusses assembled
- Hinged trusses (used to increase the slope of the roof once on site)
- Since you don't always have an attic hatch – look on the exterior for double gable vent at the ends (one per side).

How to tell if it's a manufactured home

- 2x8 Wall down the middle to support the 2 separate roofs
- Large double beam down the middle

Roofs

Roofs

- There are all the usual types of roofs found with manufactured homes and they should be inspected the same way you would any roof.
- If the roof is still the rounded sheet metal type, be careful where you walk, there is probably little or no roof sheathing below the metal (some inspectors choose not to walk these roofs due to the limited support).

Roofs – what to look for:

- Mastic is often used to seal all roof penetrations. This should be reviewed and maintained annually.
- Adding more mastic isn't the correct method. The old mastic should be removed, and new mastic used.

Roofs – what to look for:

- Hooded roof vents used for bathroom and kitchen fans. These should be changed to proper roof vents that have a flap and screen. This will prevent cold air from coming into the unit when the fan isn't running. Check to ensure you feel air at these connections.

Pick a vent any vent! 2 of these are for bathroom fans. This type of vent will allow cold air (or hot) to enter the home when the fan is off. Recommend changing them to a proper roof vent with flap and screen.

Roof-Overs and Additions:

- Roof-overs: try to determine if the roof structure is original to the unit. The unit was engineered to take the original roof and adding a truss roof with sheathing and shingles puts an excessive amount of stress on the original structure. If you suspect a roof-over recommend the buyer obtain copies of the engineer report and if one isn't available, then recommend it be reviewed by a structural engineer to ensure integrity. It's not always easy to determine if the roof structure is original. If there is an attic hatch, then the truss roof was likely always there. If you see a good sloped roof and no attic hatch, it may be a roof-over. If there are large overhangs it may be a roof-over. Missing plumbing stacks – roof over. Sometimes you have to combine a few things together to come to that conclusion.
- Additions tied into the existing roof. This will put excessive weight on the unit that was not accounted for in the original design. Recommend a copy of the engineer's document or review by structural engineer.

These photos show an addition tied in and where did the plumbing stacks go? So, although the overhang at the side wasn't very big, the lack of plumbing stacks made this unit suspect to be a roof-over.

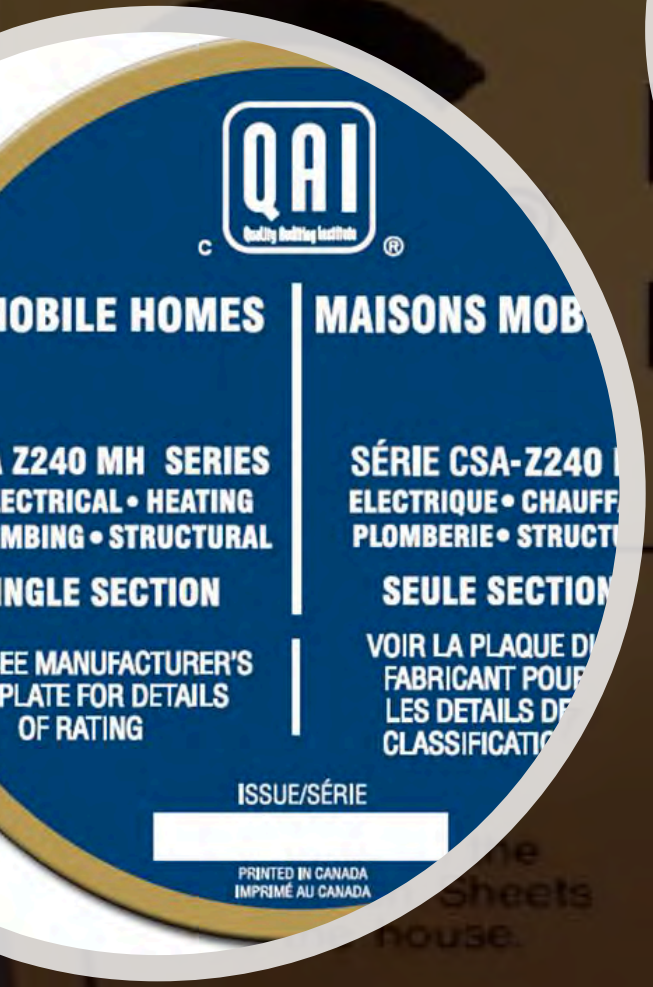
Electrical

Electrical - CSA numbers & certification labels

- In order to list a manufactured home for sale in the Province of BC, there must be a CSA number indicating proper electrical installation for the original home, or an approval mark by an acceptable certification agency.
- Manufactured homes must conform to CSA testing and certification standards and are required to show evidence of conforming to the applicable standard. When a new manufactured home is missing the approval mark, the owner or vendor of that unit must apply to the certification agency for special acceptance and labeling (Silver label). There is no date on the Silver label so careful examination of the electrical is needed to ensure that alterations haven't been made since the label was attached.
- Units may only be offered for sale without re-inspection provided they bear an approval mark and that the wiring has not been altered.

Electrical - CSA numbers & certification labels (cont'd)

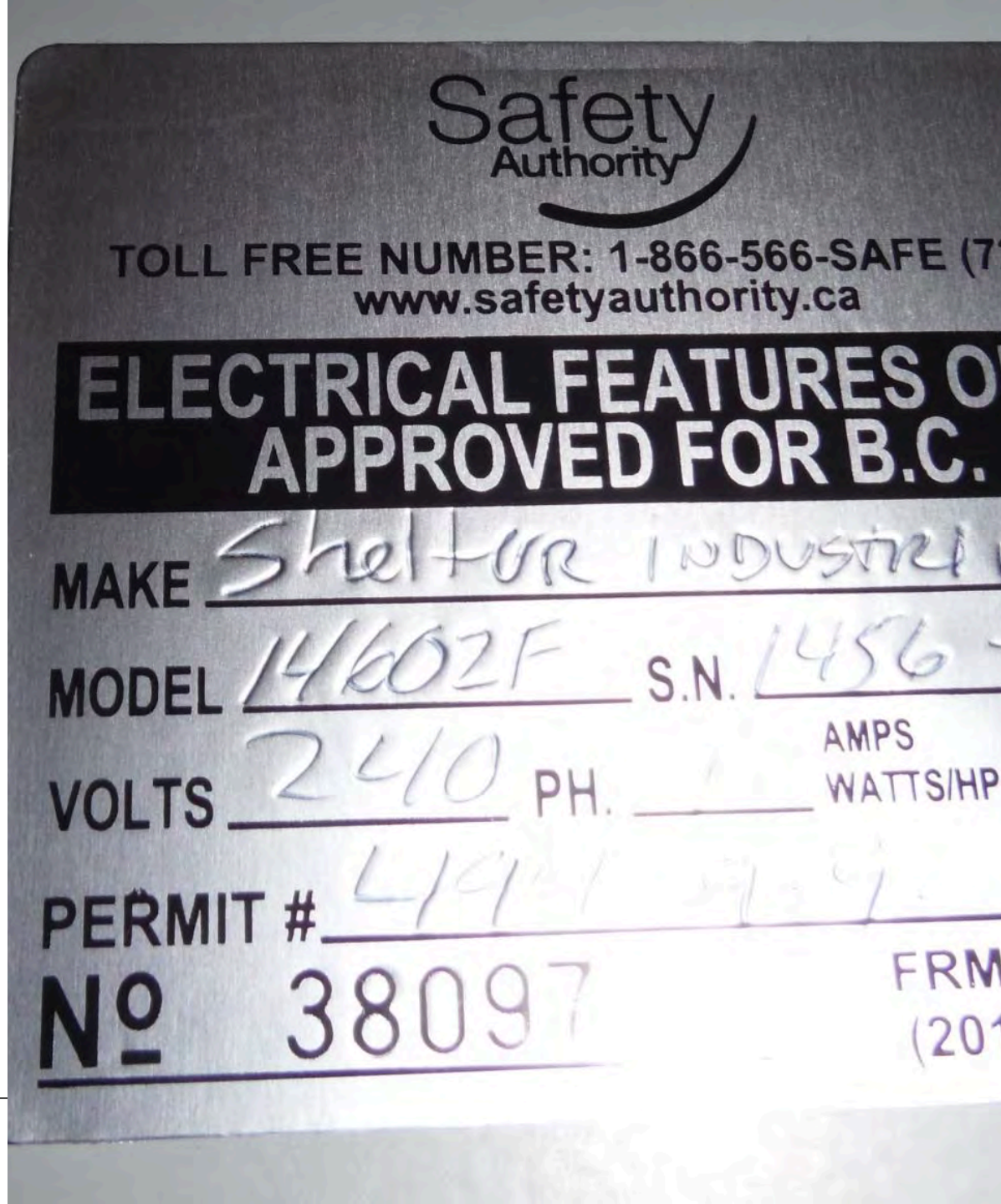
- Prior to 2017, if any change was made to the original electrical, the unit needed to be re-inspected and a silver label (seal) was required. This, however, was an expensive process and was becoming cost prohibitive for many seniors, so they changed the rules.
- Under the new rules (updated June 2020):
  - **Additional wiring done within the original manufactured home under permit does not invalidate the original label.**
  - **Additional wiring done within the original manufactured home without a permit does not invalidate the original label.** When the electrical wiring has been altered without a permit, a permit must be obtained, the work surveyed and submit a declaration confirming the electrical installation is adequate.
  - A new label is required where wiring of a used manufactured home has been completely removed and new wiring installed.



Examples of CSA Stickers you may see:

Sometimes you'll see a copy of the permit for the electrical work

Example of a silver seal. Newer ones will say Technical Safety BC.



Electrical – what to look for:

- Look for the CSA label or Silver Seal from the appropriate authority. If you can't find either, look for the specification sheet as this will usually show the CSA number. If you can't find any of these items, be sure to put it in your report. Getting the Silver Seal is costly, so this is very important.
- If the labels are present but you see additional or incorrect electrical issues, advise the buyer to obtain copies of the permitted work. Technical Safety BC (use to be called the BC Safety Authority) does not require its' electricians to go underneath the unit. Be sure to look for issues under there and advise the buyer to have them fixed. Electrical wires should not be on the ground and junction boxes should be in place and closed. Wiring may not have been done by a professional electrician should you see these issues.

Electrical – what to look for:

- Most units are built with 100 Amp panels; however, some parks only send 60-70 Amps to each unit. Be sure to tell your buyer to check with park to see how many amps have been wired to the unit, this may be important if they plan to do some renovations or add central air.
- Homes imported from the US may still have the CSA sticker on them but may not always meet the standards so look closely for aluminum wiring.
- You will often see wiring issues or poorly done wiring. Call out everything you see as you normally would. You may get some pushback from the seller if it was done under permit by an electrician, but just like every profession there are good electricians and bad electricians.
- It's your job to identify any work that was not done properly.

[redacted]

[redacted]

HEAD OFFICE

[redacted]

Date: Nov 14, 2018

Invoice: 157361

PO Number:

Work Order #: 154307 (1-70-022E 2E1322)

[redacted]

Service at: [redacted]

Work Performed:

Pulled permit and inspected hot water tank and furnace wiring. Ok. Completed Nov 2/18.

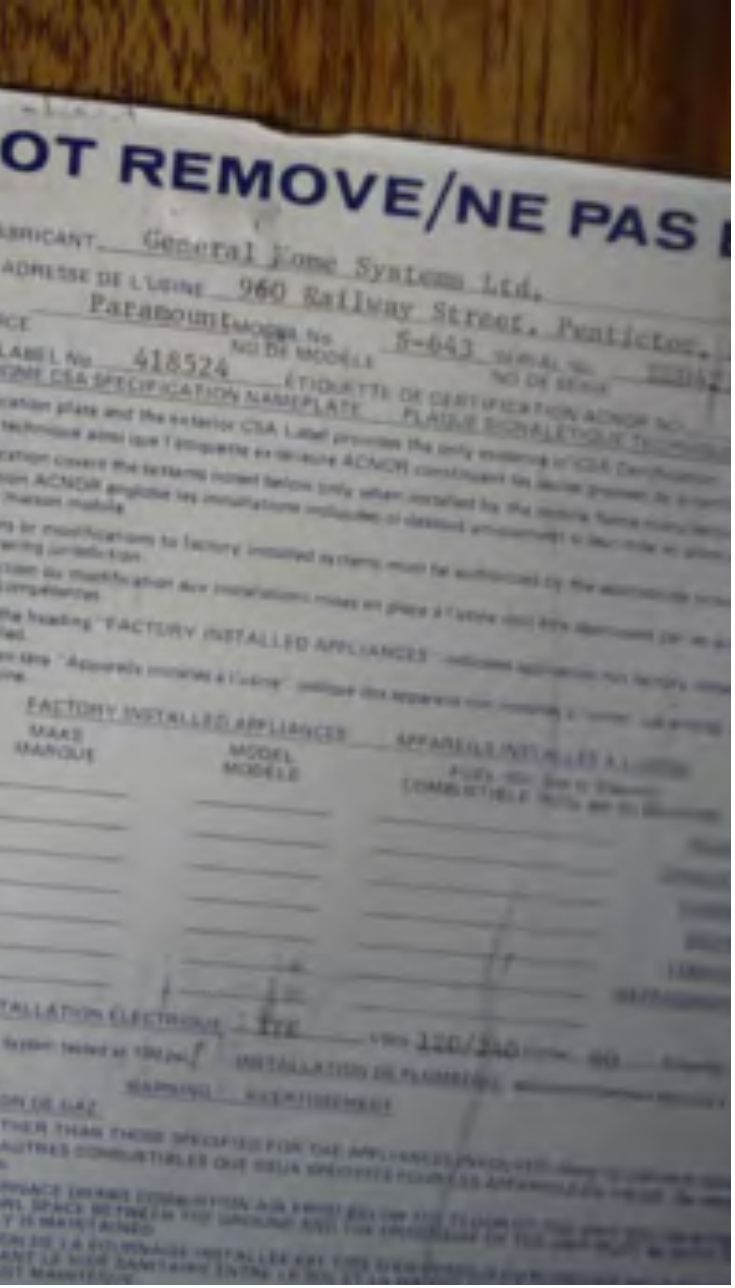
Description	*Total*
Work Order #: 154307 (1-70-022E 2E1322)	
Labour	91.00
Permit	67.60
Materials	9.95
Work Order #: 154307 Total	$ 168.55

Electrical – what to look for

- An example of “permitted” work…
- Copy of the receipt from a reputable electrical company – says “Pulled permit and inspected hot water tank and furnace wiring. Ok.”
- Wiring to water heater is NOT ok.

Electrical – what to look for:

Here we see wires through the main disconnect. Typically wires running up into the breaker section of a combination panel from the main disconnect section, is not allowed. However, depending on your Technical Safety BC representative, they may be ok with this. Technically the main panel in the unit is a sub panel with the main disconnect somewhere on the park property (along with the meter). This still isn't best practice so you should call it out. If the owner is going to leave it there, then be sure to tell them to turn the power off at the main disconnect prior to an electrician doing any work.



Specification Sheet

- A specifications sheet on the inside of a cupboard door or hot water tank access door gives date built and insulation values, among other things (also may be found in a closet, electrical panel door, or under the kitchen sink).
- You can often find the CSA number here and that is acceptable.
- If the unit has been renovated – these sheets are sometime long gone. So if you find it, snap a photo of it in case your buyer looses it down the road.

Plumbing

Plumbing

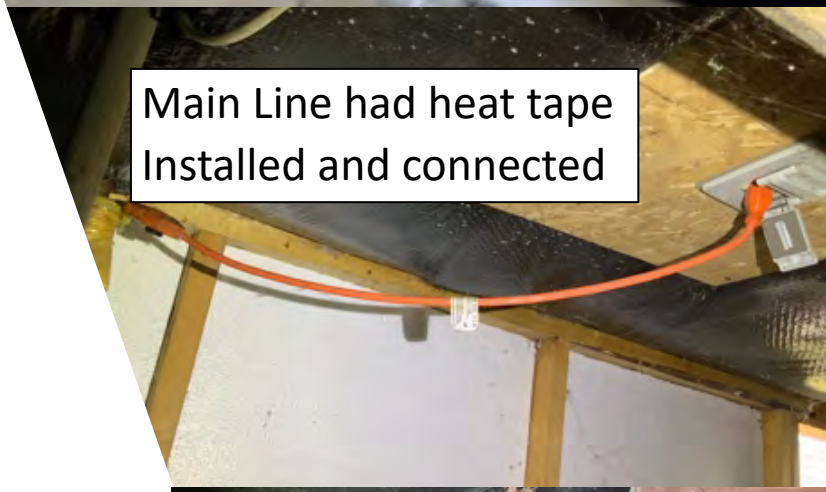
- Plumbing in a manufactured is mostly hidden between the belly cover and the floor – so it's likely not very visible to the inspector.
- You inspect the plumbing in the unit the same way you inspect the plumbing in a house.
  - The main shut-off (usually in the crawlspace and next to the water heater)
  - Leaks
  - Missing valves
  - Corrosion
- Water heaters are usually found in a closet behind a panel door (some even access from the exterior). For gas units ensure there is sufficient combustion air so that the unit can burn effectively and vent effectively. For propane units there needs to be a vent in the floor that connects to the exterior to prevent build-up of propane that is an explosive hazard.

Plumbing – what to look for:

- Poly-B would be called out the same way you would on any home (risk of the pipes cracking/ failing), however, manufactured homes were often constructed with the plastic fittings (keeping costs down). Plastic fittings are more likely to leak than copper fittings and it's getting harder for buyers to get insurance with this type of connection. Keep an eye out for it (you can often see it near the water heater) .
- Sometimes they will change the visible plumbing to PEX and leave the rest as Poly-B – so check carefully under sinks if the unit is of Poly-B generation. You may want to advise your buyer to get clarification from the seller as to whether ALL the plumbing was switched over.

Plumbing – what to look for:

- Heat tapes, depending on where you are working, should be found on the main line in and on any exposed plumbing underneath that is utilized year-round.
- These should be connected directly to a GFCI outlet and NOT connected with an extension cord.

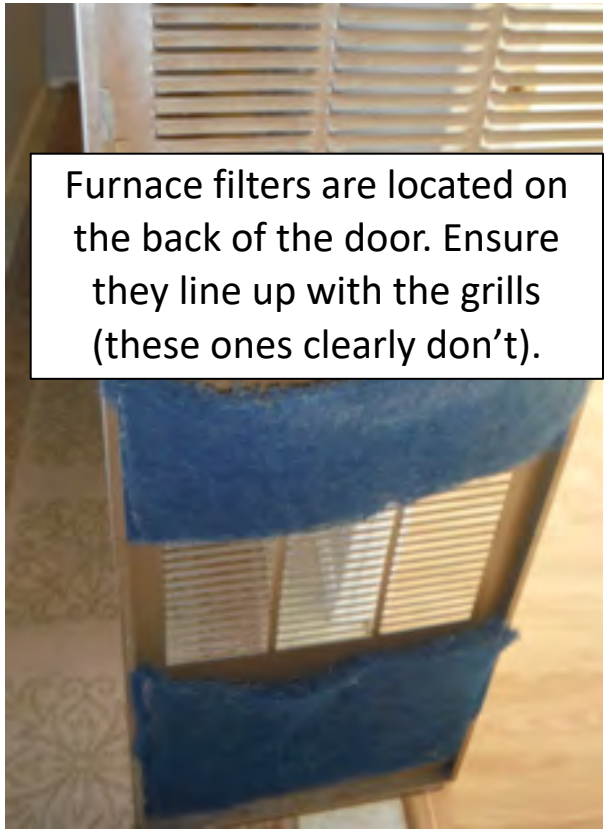


HVAC

Heating

- Manufactured homes do not have cold air return ducts. The interior passage doors are all higher off the floor than in a normal house construction to allow for return air which returns through the front of the furnace door.

Typical Manufactured Home Furnace



Furnace filters are located on the back of the door. Ensure they line up with the grills (these ones clearly don't).

Typical Furnace Chimney

The combustion air for the furnace does not come from within the manufactured but is supplied from around the outer exhaust pipe at the roof (like a direct vent gas fireplace). Some manufactures added a tube from the attic cavity to the return air of the furnace to help decrease any condensation in the roof cavity. Furnace chimneys should all have a collar to prevent water from running down inside.

Heating – Combo Units

- Some homes have combination units (air conditioner & heating) installed on the exterior. Some people mistaken these for heat pumps. These units generally last 15-20 years (the life expectancy of the cooling unit) and like all HVAC equipment should be maintained annually. Be sure to let your buyer know that if the cooling goes on the unit (and can't be fixed), the entire unit will need replacing regardless of whether the heating function works.

Heating – what to look for:

- If cold air returns are not present and new doors have been added – be sure they still have the gap underneath or tell the buyer to make an adjustment.
- Electric baseboards were generally not used in manufactured homes. Look to see if there is evidence of a past forced air system and if the baseboards were added later, then tell your buyer to make sure they were done with permit.

Regular HE Furnace

Cold air return must be at the top.

If a regular high efficiency furnace has been installed, make sure the cold air return is visible at the top of the furnace (hot air will be blowing down into the ducts located underneath).

Crawlspace

Most of the deficiencies found on a manufactured home are found in the crawlspace. If you do not intend to crawl through the crawlspace (as much as you can) then do not take the job. The liability can be high if you miss something important and costly.

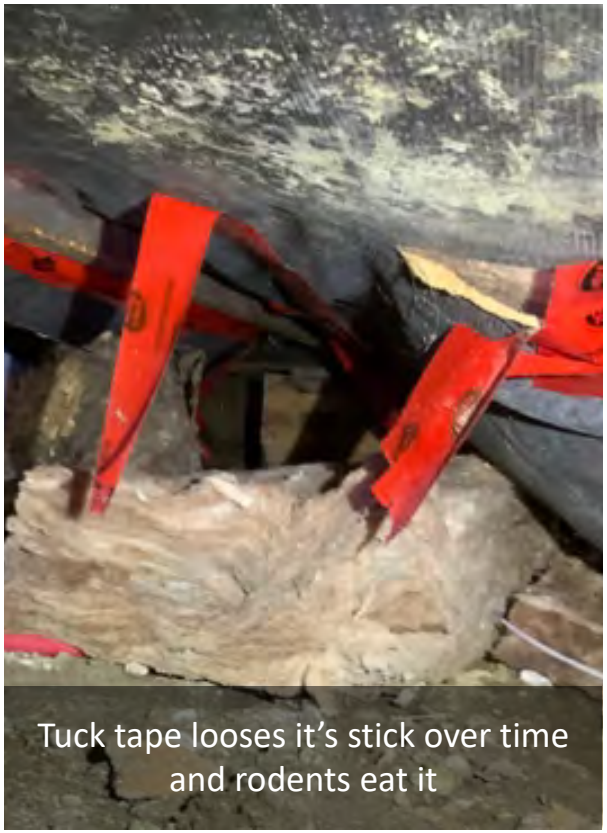
Units imported from the US may not be built to the same standards as Canadian units. Look for missing insulation in the floor.

Belly Cover

- Belly cover is either plastic or wood. Any openings in the belly cover should be sealed to prevent vermin ingress, improve heat efficiency and keep ground gases out of the unit. This is not an easy job given the space someone must work in.

Proper belly bag tape from FlexMend

Duct tape comes loose over time



Tuck tape looses it's stick over time and rodents eat it

Belly Tape

Tuck tape and duct tape will likely come loose. Recommend it be changed to proper belly tape.

- Look for excessive rodent droppings…

These should be insulated and properly supported. Solid ducting preferred.

Ducting

- Look for dryer ducts that run through the space but aren't insulated. All exposed ducting should be insulated.

Wire should never touch the ground.

Open splice maybe a sign of DIY install.

Wire should be secured to framing.

Look for electrical issues – open junction boxes, missing junction boxes, wires on the ground…

Piers

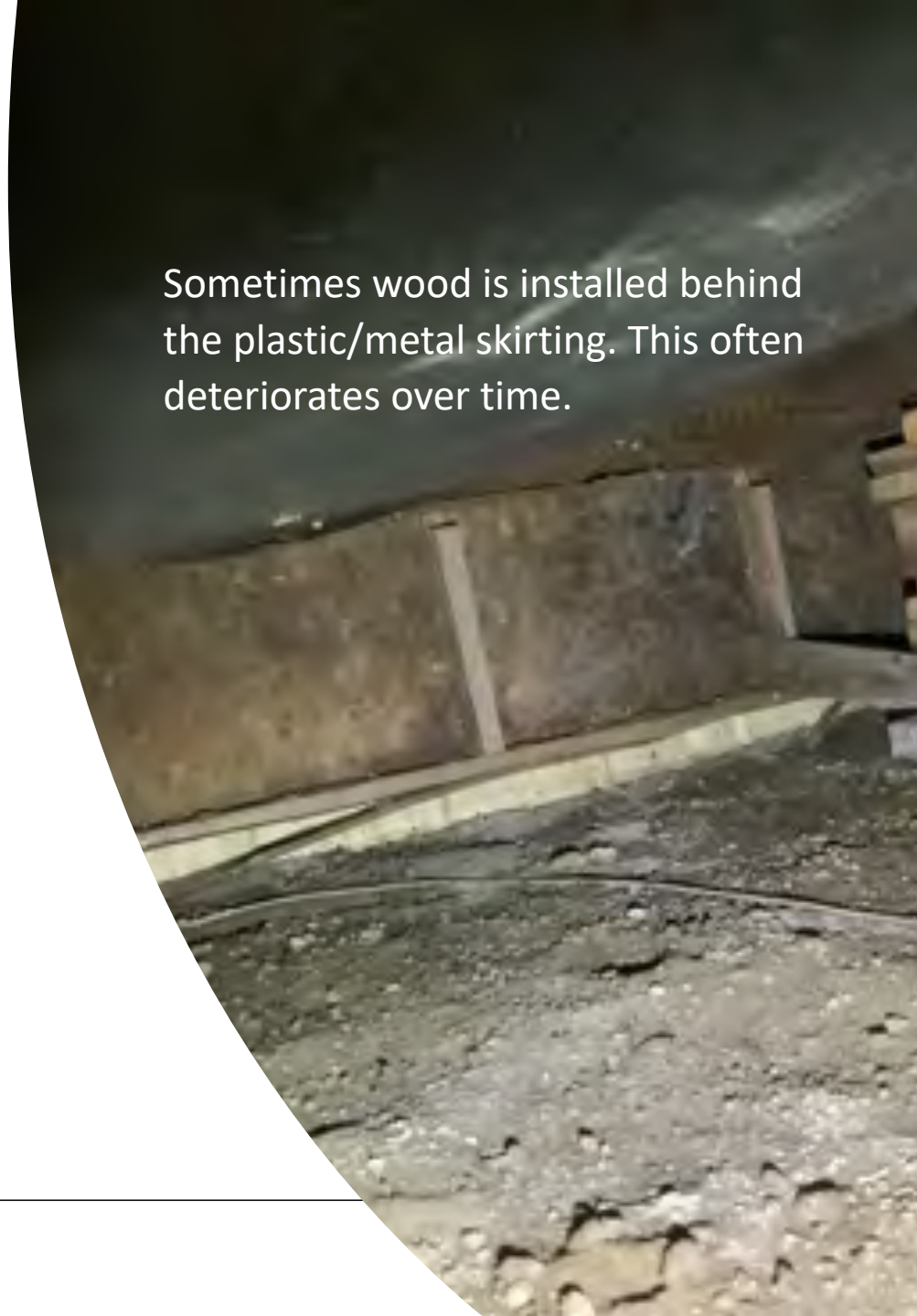
- Concrete piers – if they are using concrete blocks make sure they are installed the right way (hollow cores vertical).
- All piers should be no more than 8’ apart (inside measure). Lack of support can cause sagging.
- Caps on any piers should be the same size as the piers to evenly distribute the weight and shims should be present from both sides, again to even the weight distribution and to avoid the shim from coming loose.

Piers/Cribbing

- Wood cribbing should be on a concrete base. Look for broken cribbing and pieces of wood at the top that are mis-matched to the size of the beam or the pier size. Wood to earth contact should be corrected to prevent rot and wood deterioration.

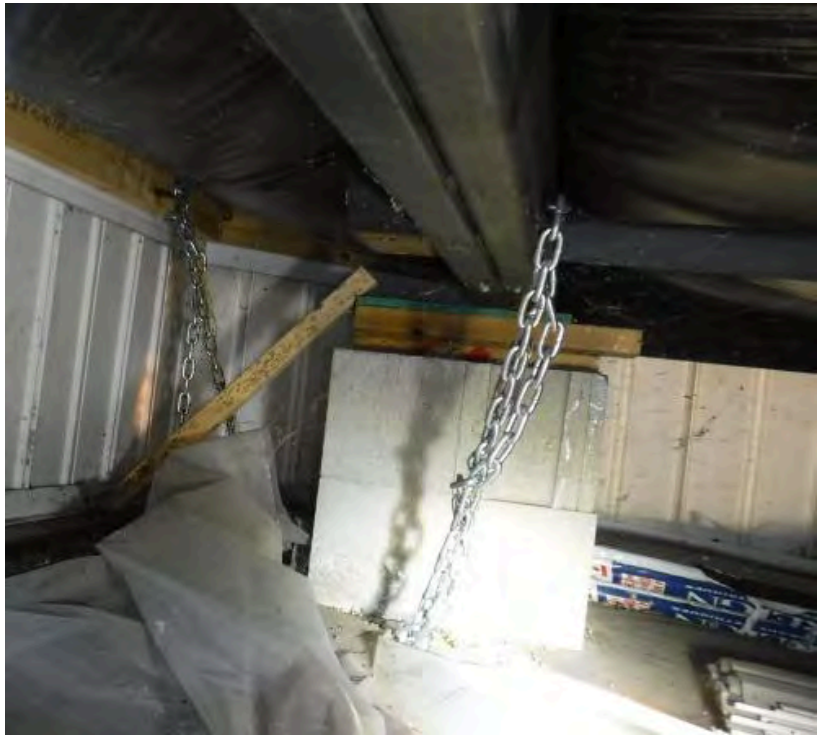
Skirting

- Check the skirting for damage and/or improper installation. Some skirting is installed with wood (OSB is often seen) so check for wood rot. Vermin holes should be sealed up.
- Check for vents. Crawlspaces should be vented on all sides, uniformly spaced with 1 sqft of vent for every 150 sq ft of space.



Vapour Barrier

- There should be a 6 mm poly ground cover sheet with 4” overlaps that are weighted or taped. You often won’t see this or see it poorly installed. Recommend it as an upgrade, it often wasn’t used until the 1990s or later.



Manufactured Home Tie Downs

- Depending on where you live, tie downs may be appropriate. They should be chain or cable and made from non-corrosive material.
- Check in your area to determine if tie downs are necessary.

Exterior

Exterior – what to look for:

- The exterior metal cladding is connected with screws, check for rust and looseness.
- Check that gutters are catching all the water and directing it off the roof. If no gutters are installed, recommend an upgrade.
- Poor flashing details are common, especially where additions have been attached. Look for areas that are totally reliant on sealant and require either repair or maintenance now.
- Engineered wood siding – if this has been added after the fact, then it may be too heavy for the structure. Recommend review by structural engineer to ensure the structural integrity is intact. Extra support may be required underneath.
- Slope of grade should always flow away from the home. Even though there usually isn't a traditional foundation, surface water can cause erosion & moisture issues.

Windows

- Windows are often added after the siding so make sure they are well caulked and sealed.
- Ensure all replacement windows are sealed against the siding and cap flashings should be visible on the top.

Additions, Decks and Stairs

Additions, Decks & Stairs

- All additions, decks and stairs should be **free standing and self-supported**.
- Many homes are built with 3-4’ cantilevered joists that take the weight of the exterior walls and roof. Adding anything scabbed onto the side of the home essentially extends that cantilever by the width of that addition (often 8’-12’) – the structure wasn’t built for that.

Addition added to the right…

- Look underneath to make sure the deck or addition is self-supporting. If not, recommend that it be changed.
- Check to ensure any beam that is used is triple-ply or engineered. 2 ply or single pieces of wood are insufficient support.
- Check for sags and unlevel floors. Units will often get a banana shape (low at the outside edges & high in the middle) due to additional weight being added. Recommend review by structural engineer should you see these issues.

…it was lagged on
(not very well & extra wood was added likely due to over spacing)

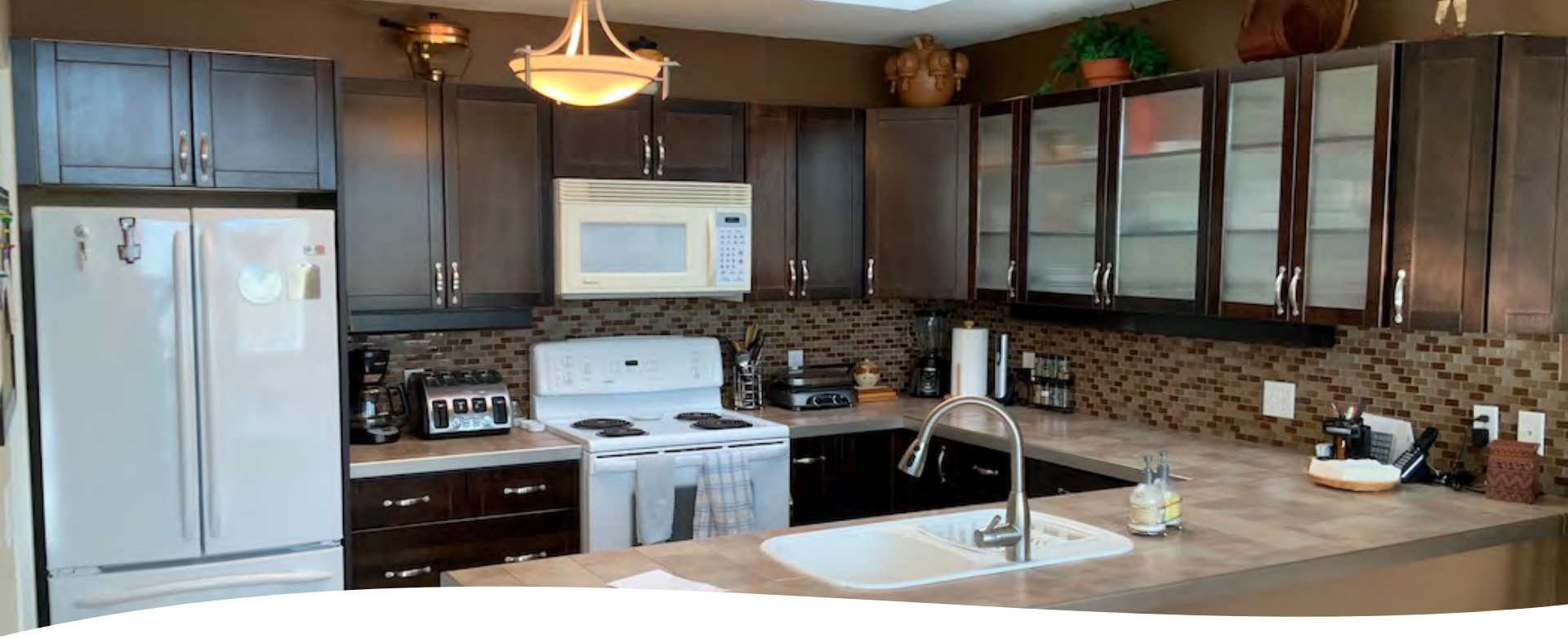
…and joists supported on the exterior by rim board and wood stacks every few joists

Besides the fact that the addition was not built well – there were impacts on the original structure…

…the floor was sloping towards the doors to the addition…

… a 3.25” drop over 8’ (level is 1.25”) was noted using a laser level.

Interiors



Interiors – what to look for:

- You inspect the interior like you would any other home.
- Interior walls vary in their construction materials from panels to drywall. Ceilings can be drywall or compressed wood panels. Check for stains and signs of water intrusion including soft areas (dry rot) around the windows and doors, in the corners and where walls meet ceilings.
- Flooring can vary like any home. Subfloors were often constructed of particle board and very vulnerable to water damage.

Interiors – what to look for:

- Condensation was a big problem in the older units; usually showing up as water staining at the sidewall edges. Often a roof leak is suspected when in fact it is more likely built up moisture trapped in the small attic space (warm moist air contacting the cold metal roof and raining down inside the cavity). These older homes did not use plastic vapour barriers on the outside walls; they did use it on the ceiling.
- With older units there is often water ingress especially around doors and windows. Check with your moisture meter and even if you don't find any moisture, be sure to let your client know there may be hidden damage not visible to you.

- If there is drywall used on the walls of the home (especially for older units), check to see if all the rooms & closets have drywall. If you find any paneling in the home, then you know that during a renovation drywall was added. This can add excessive weight to home that the structure was not originally built for. Recommend review by structural engineer to ensure structural integrity. The base of the home may need extra support. Also note that drywall is more prone to cracking given the amount of movement a manufactured home sees.

Limitations

- The limitations found when inspecting a regular house apply to manufactured homes.
- Attic spaces are usually not accessible (only in newer units).
- Crawlspaces may be blocked by personal property, large venting or inadequate headroom. Note the areas you can't get to.
- Be sure to document all your limitations.

Other Resources

- Technical Safety BC Inspection Check List
- Technical Safety BC bulletin on Electrical Changes
- Technical Safety BC Buying & Selling Manufactured Homes
- Technical Safety BC Manufactured Homes Silver Seal