

Manufactured (mobile) Home Flood Damage Assessment and Mitigation

Flood damage to manufactured homes in recent years has presented the need for the Minnesota Department of Labor and Industry, Construction Codes and Licensing Division to review the handling of flood damaged manufactured homes within Minnesota.

The following are items CCLD encourages municipalities that have manufactured homes installed in parks and on private property, within their jurisdiction, to use to inform manufactured home residents of possible damages and hazards caused by flooding. These items may also be used by the authority having jurisdiction in determining corrections that may be required to the manufactured homes and the home installation or if the manufactured home should be tagged as uninhabitable.

The three types of pressures caused by flooding are: hydrostatic, hydrodynamic and debris impact. Damages usually associated with flood damage to manufactured homes are:

- Saturation of soils causing footings, piers, and foundations to become unstable or fail,
- floatation may cause support and anchoring systems to become unstable or fail,
- lateral displacement of the homes ceilings, walls and floors,
- cracking of wall and ceiling finishes,
- saturation of insulation materials in floors and walls,
- saturation of floor framing and decking materials (floor decking is typically structural particle board and is adversely affected by water),
- siding, wall sheathing and interior wall finishes.
- mechanical duct work located in belly (floor) area of home (metal or fiberglass or flexible connector),
- gas and oil lines and connections in and under the home,
- plumbing systems of the home (drain/waste/vent and water),
- electrical systems of the home in floors and walls,
- furnace and water heater,
- mold from water damage or sustained high humidity levels.

The following should be inspected and corrective action taken as deemed necessary.

Support system and anchoring

- Remove skirting to allow drying under the home.
- Remove any vapor barriers on the ground under the home to allow drying of soils (replace vapor barrier when soils are dry).
- Check soils in areas of footings/piers for undermining.
- Check anchors for damage to anchor, strapping, or strapping connectors.

- Check anchors to verify that they are solidly in the soil.
- Check pier supports and blocks to verify they are not loose or damaged and verify that shims between pier and home frame are secure.
- If soil erosion has occurred or if lack of soil exists to create positive drainage away from home have it reworked.

Note: All manufactured home installations or re-installations are to be completed by a Minnesota licensed/registered installer in Minnesota. Effective June 26, 2000, all HUD labeled manufactured homes installed or re-installed in Minnesota are required to be anchored.

Electrical systems

It is important that property owners recognize circumstances wherein the integrity of electrical materials and equipment is affected. In many instances, deterioration that affects insulation, current carrying capability and mechanical operation may not develop immediately. In most instances the integrity of electrical equipment and devices is severely impaired by corrosive contaminants and sediments found in or left behind by floodwaters. This equipment and the devices may operate in an unattended or unmonitored state. The operational failure of these devices or equipment exposes occupants and property to possible electrical shock and fire hazard.

- All panelboard interiors, circuit breakers, fuse blocks, disconnect switches, controllers, and similar devices that have been submerged must be replaced.
- All lighting switches and receptacle outlets that have been submerged must be replaced.
- All electrical equipment or components that have been submerged must be replaced. This includes, but is not limited to lighting fixtures, furnaces, baseboard heaters, space heaters, water heaters, pumps, washing machines, clothes dryers, ovens, ranges, cooktops, dishwashers, air conditioning condensing units and other appliances and equipment.
- All electrical wiring, including service conductors, feeder cables or conductors, and branch circuit cables or conductors, must be replaced where they have been either partially or completely submerged.
- A licensed Minnesota electrical contractor must complete all electrical repairs or electrical work on manufactured homes located in a manufactured home park.
- Have a licensed electrical contractor test all circuits and equipment after repairs/replacements have been completed.
- For questions concerning electrical work and repairs to be completed, contact CCLD's Electrical Section at (651) 284-5026, or visit www.dli.mn.gov/CCLD/electrical.asp.

Plumbing systems

- Check drain/waste lines and connections under the home for leaks, proper slope, and support to the home.
- Waste and vent lines should be air tested and able to hold a one-inch water column.

- If water lines have been partially or fully submerged they must be tested (air test to maximum working pressure 80psi, MSPC 4715.1740) for leaks.
- After water lines have passed the working pressure test they are to be flushed with water and chlorine mixture (200 parts per million for 3 hours or 50 parts per million for 24 hours).
- If the tank insulation on the water heater storage tank has been partially or fully submerged in floodwater, the water heater requires replacement.
- If you have questions concerning inspection, testing, and corrections for the plumbing system, please CCLD's Plumbing Section at 651-284-5067, or visit www.dli.mn.gov/CCLD/Plumbing.asp .

Mechanical systems

- Metal ductwork that has been partially or fully submerged is to be removed and cleaned. If ductwork is fiberglass board type it shall be removed and replaced with new ductwork. Appropriate duct insulation shall be replaced or installed (CFR 3280.715 requires R-4 minimum).
- Have gas lines and connections tested for leakage (test as per MSBC 1350.3400).
- Have fuel oil lines tested for leakage.
- If furnace insulation has been partially or fully submerged, replace the insulation in accordance with the manufacturer recommendations. See electrical section for actions if furnace electrical equipment or components have been partially or fully submerged.

Main structure

- If area was partially or fully submerged, remove bottom board (belly paper) to allow inspection and corrections to electrical, plumbing and mechanical systems/materials located in this area.
- Remove and replace all insulation in the belly (floor) area or walls of the home that was subjected to flood water.
- Remove and replace all floor decking that was submerged in floodwaters with materials rated to be used as floor sheathing for joist spans of floor.
- Loosen or remove siding and sheathing allowing drying of construction materials.
- Treatment of flood water soaked construction elements for bacteria and potential mold and mildew growth. Allow areas to dry thoroughly prior to replacement of components such as insulation, vapor barriers, drywall, and decking.
- Remove and replace all drywall (gypsum board) products that have been subjected to floodwaters. A vapor barrier is required to be replaced to the warm side of exterior walls and ceilings.
- When replacing floor decking, no interior walls of the manufactured home may be removed or relocated because of shear wall designs of the manufactured home. Removal or relocating the walls constitutes an alteration and is a violation of MSBC 1350.3800.

Note: Flood water will wick through construction elements, extending the damage beyond the benchmark of the actual floodwater.

Contractor, installer or remodeler requirement

Repairs or corrections to the construction elements of the home by other than the titled owner are required to be completed by a Minnesota license contractor, licensed installer or licensed remodeler as required by Minnesota Statutes 326B.802 through 326B.89. For information concerning licensed contractors or remodelers visit www.dli.mn.gov/CCLD/RBC.asp

Minnesota State Building Code 1350.3800, Alterations; Any alteration of the construction, plumbing, heating, cooling, or fuel burning system, electrical equipment, or installations which bears a seal or label (State seal on homes manufactured from 7/1/72 through 6/14/76 or HUD label on homes manufactured after 6/14/76) shall void the approval, and the seal or label shall be returned to the commissioner.

The authority having jurisdiction, local building officials or DLI staff from the Manufactured Structures Section may inspect the manufactured home and consider it beyond repair and not fit for habitation based on the amount of flood damage or that repairs would constitute remanufacturing of the manufactured home. The local building official will inform you what permits are needed for repairs to ensure that all work is properly completed and inspected. For help with questions concerning the corrections required contact the local building official having jurisdiction or DLI's Manufactured Structures Section at (651) 284-5068. A list of Minnesota building officials and contact information is at www.dli.mn.gov/CCLD/Official.asp.

If the authority having jurisdiction, local building officials or DLI staff, determine that the home is beyond repair and not fit for habitation the following procedures are to be used to salvage/scrap the manufactured home.

1. State construction seals (July 1, 1972 – June 14, 1976) or HUD construction labels (June 14, 1976 to the present) are to be removed and returned to the commissioner (Minnesota Department of Labor and Industry, Construction Codes and Licensing Division, Manufactured Structures Section, 443 Lafayette Road North, St. Paul, MN 55155).
2. Homeowner or owner of title is to return the manufactured home's original Minnesota title to DLI along with a letter indicating why the title is being surrendered. Surrendered titles will be forwarded to the Department of Public Safety for recording.
3. Letter indicating the final disposition of the manufactured home, salvaged, destroyed, sold as salvage (include buyers name and address).

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