MNSPECT LLC
HELPING YOU COMPLY WITH THE CODE

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RESIDENTIAL MECHANICAL/FIREPLACE

- Mechanical permits are required when replacing or installing such items as furnaces; boilers; cooling equipment; geothermal equipment; fireplace units (non-masonry only – masonry fireplaces require a building permit); air exchangers; unit heaters; and dryer, kitchen and bathroom exhaust vents. Mechanical permits are also required for new homes. Residential mechanical permits can be issued over the counter at the municipality office.
- The manufacturer's installation and specification manual must be available at all inspections. Exhaust vent clearances at the exterior of the structure shall be in compliance with manufacturer's specifications.
- All materials and the installation of all materials must comply with the Minnesota State Mechanical and Fuel Gas Codes and the manufacturers' installation specifications for each product.

PERMIT CARD (throughout the project) shall be:

POSTED prior to start of work - **VISIBLE** from street or driveway - **ACCESSIBLE** to the inspector

INSPECTION REQUIREMENTS:

- **MUST** schedule during office hours **AT LEAST** one business day prior to required inspection. If a specific date and/or time will be required, more notice may be needed – please plan ahead. A re-inspection fee may be charged for failure to cancel an inspection for which you are not ready, or for failure to pass an inspection.
- **Office Hours:** Monday - Friday • 8:00 a.m. - 4:30 p.m.
- **Phone:** (952) 442-7520 or (888) 446-1801

Inspections: The required inspections are dependent on the project type. Someone 18 years or older must be present.

- **Mechanical rough-in:** After all the supply/return air ducts and bath/kitchen fans and vents are installed (if applicable). No work shall be covered until the rough-in inspection is approved. NO rough-in inspection is required for projects such as a furnace or air conditioner replacement. The manufacturer's installation instructions MUST be on site at the rough-in inspection.
- **Gas Line Air Test:** A gas line air test is required on all newly installed gas lines when all the gas lines are installed, gas lines are capped off, and the air test is on the system line.
  - ✓ Test pressure shall be no less than one and one-half times the proposed maximum working pressure, but not less than 25 psi irrespective of design pressure.
  - ✓ Test pressure shall be within the middle 50 percent of the test gauge pressure range.
  - ✓ Test duration shall not be less than 10 minutes for residential gas lines.
- **Mechanical final:** After mechanical equipment is installed; supply/return air grilles are on; HRV or ERV is balanced; bath/kitchen exhaust fan(s) are operational; all intake and exhaust piping is complete. Manufacturer's installation instructions MUST be on site.
- **Gas line/fitting leak test:** A gas line fitting/leak test is required on all newly installed gas lines after the installation has been completed. You may perform a manometer test on site at the time of the final inspection, or provide a completed Certification of Final Testing on Gas Line and Fittings form at the time of the final inspection. The test shall be by means of an approved combustible gas detector, manometer, a noncorrosive leak detection fluid, or an equivalent nonflammable solution.

Warning: The inspector may issue an order to remove materials to verify compliance with the MN State Building Code and manufacturer's installation requirements.
If a re-inspection is required, a re-inspection fee will apply. The permit holder (the signing applicant) or the permit holder's representative must meet the inspector at the site to provide access. The re-inspection will not be conducted if the re-inspection fee is not paid.

Note: The State of Minnesota requires that all residential building contractors, remodelers, roofers, plumbers, and electricians obtain a state license unless they qualify for a specific exemption from the licensing requirements. Any person claiming an exemption must provide a copy of a Certificate of Exemption from the Department of Labor & Industry to the Municipality before a permit can be issued. To determine whether a particular contractor is required to be licensed or to check on the licensing status of individual contractors, please call the Minnesota Department of Labor & Industry at 651-284-5065 or toll free 1-800-342-5354.

Note: For specific code requirements, please contact the Building Inspection Department at 952-442-7520 or 888-446-1801 or e-mail: info@mnspect.com.

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PROJECT CHECKLIST (for remodeling and lower level finishes):

The following is a guideline to assist in the compliance with the requirements of the Code.

BATHROOMS:

☐ The required bathroom ventilation rate for toilet, shower/bath, and similar rooms is 50 cubic feet per minute (cfm) intermittent or 20 cfm continuous. Bathroom ventilation requirements can also be met by installing an operable window, in which case the minimum openable area to the outdoors shall be 4% of the floor area being ventilated.

BATH FANS:

☐ Ducting material must be an approved material. Flexible duct is allowed, but must be listed and labeled class 0 or class 1 duct that is tested in accordance with UL 181.

☐ Termination of exhaust ducting must be at least 3' from openings into the building (such as non-mechanical air intakes, windows and doors).

☐ Exhaust fans must discharge outdoors. Termination must be equipped with a backdraft damper. (This is in addition to the damper at the fan.) Air must not be exhausted into the attic or crawl space.

☐ Insulation with a thermal resistance of R-3.3 and a vapor retarder with all joints sealed is required 3' back from the exterior wall/roof sheathing on exhaust ducting inside conditioned space, and continuous in attics/unconditioned space.

VENTILATION OF UNINHABITED SPACE:

☐ Crawl spaces under rooms and stairways with exterior walls or installed sump baskets require mechanical ventilation of .02 cfm per square foot. This ventilation may be provided by a supply duct or a mechanical fan and humidistat. Supply and return must be separated by one half of the diagonal room dimension.

☐ Unconditioned crawl spaces shall be ventilated per Section 408 of the Minnesota Residential Code.

DRYER VENT:

☐ Exhaust vents for clothes dryers shall be constructed of metal and have a smooth interior finish.

☐ The duct shall be a minimum size of 4".

☐ The maximum length shall not exceed 35' with a deduction of 5' for each 90-degree elbow (may use specific requirements provided by dryer manufacturer).

☐ No screws or rivets may be used to secure the duct. The interior of the pipe must have no obstructions. Dryer duct must be secured in place; joints are to be sealed with tape. Tape should be marked 181A-P (foil-faced tape is approved).

☐ Male ends of joints shall extend in the direction of airflow.

☐ Transition ducts may be used to connect the appliance but must not be concealed or exceed 8' in length, and must be tested and labeled in accordance with UL 2158A.

☐ Dryer duct must terminate on the outside of the building and shall be equipped with a backdraft damper (screens on discharge are not allowed).

SUPPLY DUCTING:

☐ Supply duct sizing considerations include heat loss due to room size, exterior walls and floors, window and door openings to the exterior and distance from the furnace.

☐ Supply duct is required in all habitable space; bathrooms, closets and storage areas may not require supplies but may require ventilation.

☐ Rule of thumb is approximately one 6" supply per 100 square feet of floor space.

RETURN DUCTING:

☐ A return path for air back to furnace is required for the supplies to work correctly. A door restricts this path if a room does not have a return duct. For each cubic foot of air delivered to a space, a return path to the furnace is required.

☐ Return ducts are not allowed in kitchens and bathrooms – all other habitable spaces require a return path to the furnace.

☐ Return outlets are typically located in interior walls.

☐ Return ducts are typically sized one size larger than the supplies, in most installations 7" round or equivalent.

☐ Building framing cavities shall not be used as ducts or plenums.

DUCT CONSTRUCTION SPECIFICS:

☐ Approved supply ducts may be constructed of metal, fibrous glass or flexible air ducts, either metallic or nonmetallic. Flexible duct, both metallic and nonmetallic shall be tested in accordance with UL 181 and shall be listed and labeled as Class 0 or Class 1. (Labels must be attached to ducts and visible at the time of inspection.) Return ducts may use the above materials. Construction is required to be substantially airtight.
Note: Conversion or alteration of existing spaces may require additional combustion and/or makeup air and verification of property operation.

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DUCTS OUTSIDE CONDITIONED SPACE:

- ☐ All ducts shall be sealed.
- ☐ A pressure test (25 pascals) is required on all duct systems that leave the building's thermal envelope.
- ☐ 1322.R403.2.1: All exhaust, supply and return air ducts and plenums shall be insulated according to

TABLE R403.2.1 MINIMUM REQUIRED DUCT AND PLENUM INSULATION FOR DWELLING UNITS

DUCT TYPE/LOCATION	REQUIREMENTS
Exterior of building	R8, V, and W
Attics, garages and ventilated crawl spaces	R-8 and V

V means the vapor retarder in accordance with IMC Section 604.11. When a vapor retarder is required, duct insulation required by this section shall be installed without respect to other building envelope insulation.
W means an approved weatherproof barrier.

FIREPLACES – FACTORY BUILT: (Masonry fireplaces require a building permit.)

- ☐ The installation of a gas fireplace requires a separate permit. This permit should include the fireplace and the associated gas line to this appliance only. Installation of the fireplace and gas line (with pressure test) is required at the rough-in inspection.
- ☐ The installation must conform to manufacturer's instructions and these instructions must be available at the time of inspection.
- ☐ It is strongly advised that instructions be read and understood before installation of fireplace begins. Most inspection failures are as a result of not reading or understanding the instructions. Manufacturer's installation instructions must be onsite at all inspections.
- ☐ Outside wall construction should be weather-tight and complete before the appliance is set.
- ☐ At the time of the rough-in inspection, the appliance must be set and vented; in addition, framing, draft, and fire stopping must be installed and accessible. The rough-in inspection is required prior to installation of drywall or plywood.

GAS PIPING:

- ☐ Gas piping to the appliance should be installed and visible at the time of the rough-in inspection of the fireplace.
- ☐ Gas piping must be of approved materials and installation methods.
- ☐ Corrugated Stainless Steel Tubing (CSST) installations must follow manufacturer's installation instructions for the specific brand of CSST installed.
- ☐ CSST installations require a qualified installer. (Certification is available to homeowners.)
- ☐ A 25# air pressure test is required on all newly installed gas lines before final connection to the house gas distribution system. This can be achieved by closing gas valves and/or capping and isolating the line from the house gas supply and the appliance regulator. (Under no circumstances should pressure be applied to the appliance regulator or the house distribution system.)
- ☐ CSST installation also requires bonding as detailed in the specific manufacturer's installation instructions.
- ☐ At the final inspection all finish materials must be installed including mantel and surrounds, the gas line connected, and any related electrical inspected and approved (if applicable). The manufacturer's installation instructions must be available at the final inspection.

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