

City of Crystal Lake

Community Development Department

100 W. Woodstock Street
Crystal Lake, IL 60014
www.crystallake.org



Phone (815) 356-3605
Fax (815) 404-2107
building@crystallake.org

RTU INSTALLATION NEW OR REPLACEMENT

Inspections:

Inspections shall be scheduled by 4:00 PM the day before the inspection.

The following inspections are required for an RTU:

Final Inspection: (provide roof access)

- Duct smoke detector function test (alarm contractor to be on-site)
- Submit a mechanical system final CFM report for each RTU indicating the minimum outside air setting for the economizers.

Note: A full test and balance report is not required for RTU replacement.

Note: Final inspection approval is required from Building and Fire (if smoke detector is required)

Please provide the following when requesting an inspection:

- Inspection type
- Address
- Date and time frame (am or pm)
- Permit number
- Name and telephone number of homeowner/contractor requesting inspection

General Installation Requirements:

- Gas pipe connection to new RTU shall include an equipment shutoff valve within 6'-0" of the equipment and a sediment trap (dirt leg) downstream of the equipment shutoff valve.
- Smoke detectors shall be provided in the return air system with a design capacity greater than 2,000 CFM.
- The smoke detectors in the return ducts of the RTUs shall be connected to the fire alarm system. If a new duct smoke detector test module is being installed, it shall be no higher than 5 feet above finished floor.
 - **Note:** A separate fire alarm system permit may be required. Contact the Fire Prevention Bureau at 815-356-3640 for additional information.
- Duct smoke detectors shall be connected to the building fire alarm system. If there is no existing fire alarm system:
 - Actuation of a smoke detector shall activate a visible and audible signal in an approved location
 - Smoke detector trouble condition shall activate a visible or audible signal in an approved location and shall be identified as air duct trouble.
- An economizer shall be required for a single RTU with 54,000 Btu/h cooling or a total of 300,000 Btu/h cooling for multiple RTUs.
- Economizers shall be capable of providing 100 percent outdoor air and shall be capable of reducing the outdoor air supply to the minimum required by Chapter 4 of the Mechanical Code.
- Contractor to verify the automatic damper/economizer shall be set to provide the required minimum outdoor air to the spaces served.
- Verify a GFCI protected receptacle within 25 feet of the rooftop equipment
- RTU shall be identified with a permanent label. Identification on label shall match circuit identification in directory of electrical service panel.
- Applicant to verify all required intake/exhaust vent termination and separations comply with manufacturer's specifications. RTU air intake openings shall be shall be 10 feet from exhaust air terminations.
- Supply and return ducts located outside the building envelope shall be insulated with minimum R-12.
- A guard shall be provided for appliances requiring service located within 10 feet of a roof edge. The guard shall extend not less than 30 inches beyond each end of such appliances and shall be a minimum of 42 inches in height. The guard shall be constructed to prevent the passage of a 21 inch diameter sphere.

Screening Requirements:

- All ground and wall mounted mechanical equipment (e.g. air handling equipment, compressors, duct work, transformers, etc.) shall be screened from view. Screening shall consist of plantings, preservative pressure treated wood or other similar materials.
- New rooftop unit(s) shall be screened from view and/or painted by employing the following methods:
 - The visible portion of the rooftop appurtenances shall be painted and maintained in the same color as the roof or top portion of the building. If more than 50 percent of the rooftop appurtenances are still visible then screening shall be provided. All screening shall comply with all building and fire codes for appearance, fire rating, wind load (90 mph) and structural integrity. All screening shall be compatible with the materials used on the exterior of the building, the intent being that the screening system is designed so as to be an architectural component, consistent with the overall building design.
 - Compliance with these screening standards shall be computed within a 150-foot buffer from the property lines, excepting the side abutting a right-of-way, where it shall be computed across the right-of-way.

HVAC System (Equipment Capacity)

Over-sized systems cost more, and do not operate to their optimum efficiency. Higher efficiency equipment will use less energy to meet any given load. Thus high-efficiency equipment, in systems whose capacity matches peak loads, serving a building designed and constructed to the lowest practical loads, will result in the lowest energy use and cost.

[The ASHRAE Advanced Energy Design Guide for Small Office Building provides additional guidance.](#)

Please note that the information provided in this handout is general in nature. If you have specific questions or need additional information, please contact a Community Development Department representative at (815) 356-3605 or building@crystallake.org.