Walk-in Refrigerated Rooms

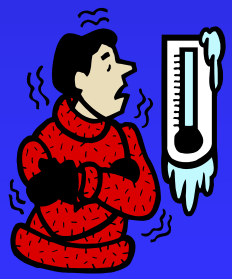
An Overview of Requirements, Options and Construction Details

Definition

- A refrigerated room is a stand alone structure designed to hold products at either a medium temperature (34 to 40 degrees) or a low temperature (-20 to 32 degrees).
- Smaller rooms can be as small as 5X4’ and are often called “step-ins.”
- Larger rooms can be warehouse sized.
- The dimensions can be built to specifications.

Medium Temp Vs. Low Temp

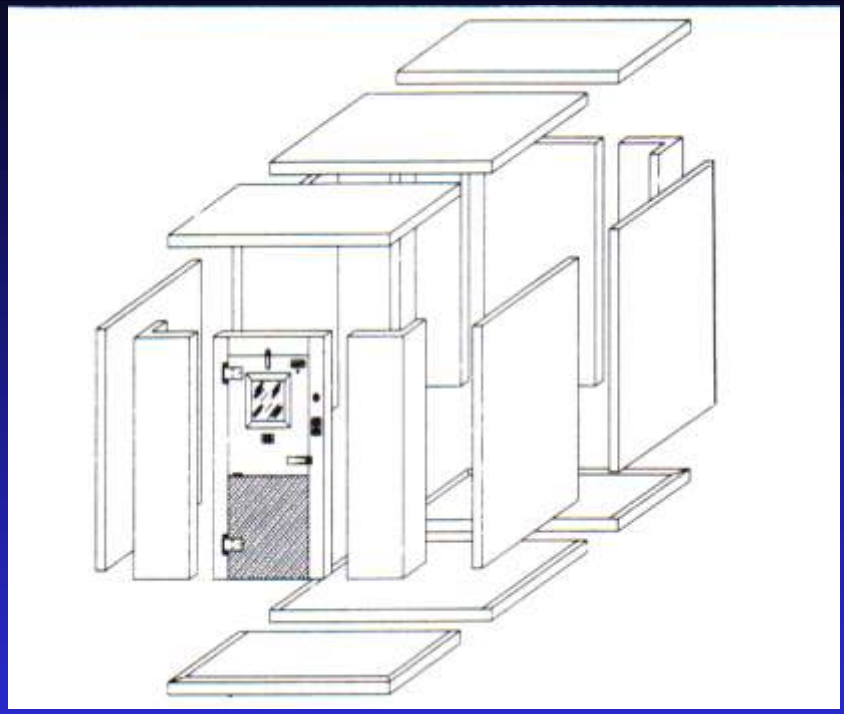
- Medium temp
  - Holds 34 to 40 degrees
  - Designed for holding fresh or packaged products as well as beverages



- Low temp
  - Holds –20 to 32 degrees
  - Designed for holding frozen products
  - Usually the refrigeration is specified to hold zero to -10 degrees

Construction

- Most walk-ins are made of pre-fabricated insulated panels that are assembled on-site.
- The insulation material varies from one manufacturer to another, but insulation that is foamed in place is considered best.



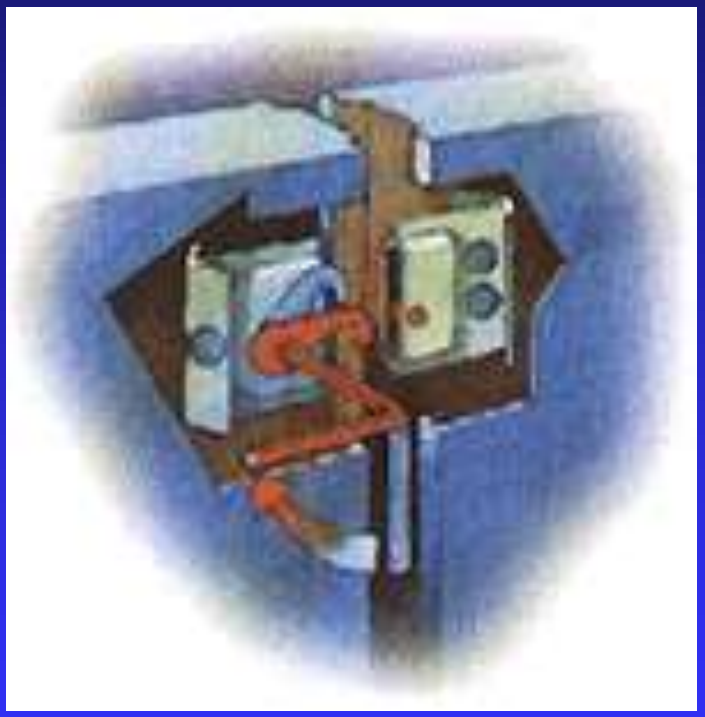
Foamed in Place

- An insulated panel is considered foamed in place if the panel frame and the outer skin are assembled, and then the insulation (in liquid form) is injected into the panel under pressure.
- Foamed in place panels have no voids in the insulation since the liquid expands as it dries, filling every available space.

Panel Frames

- Panels consist of rigid frames with a skin of aluminum. Common size of panels is 47”X 90”, but any size can be produced.
- The frames can be made of 2X4 lumber or light weight, rigid, extruded foam.

Assembly Methods

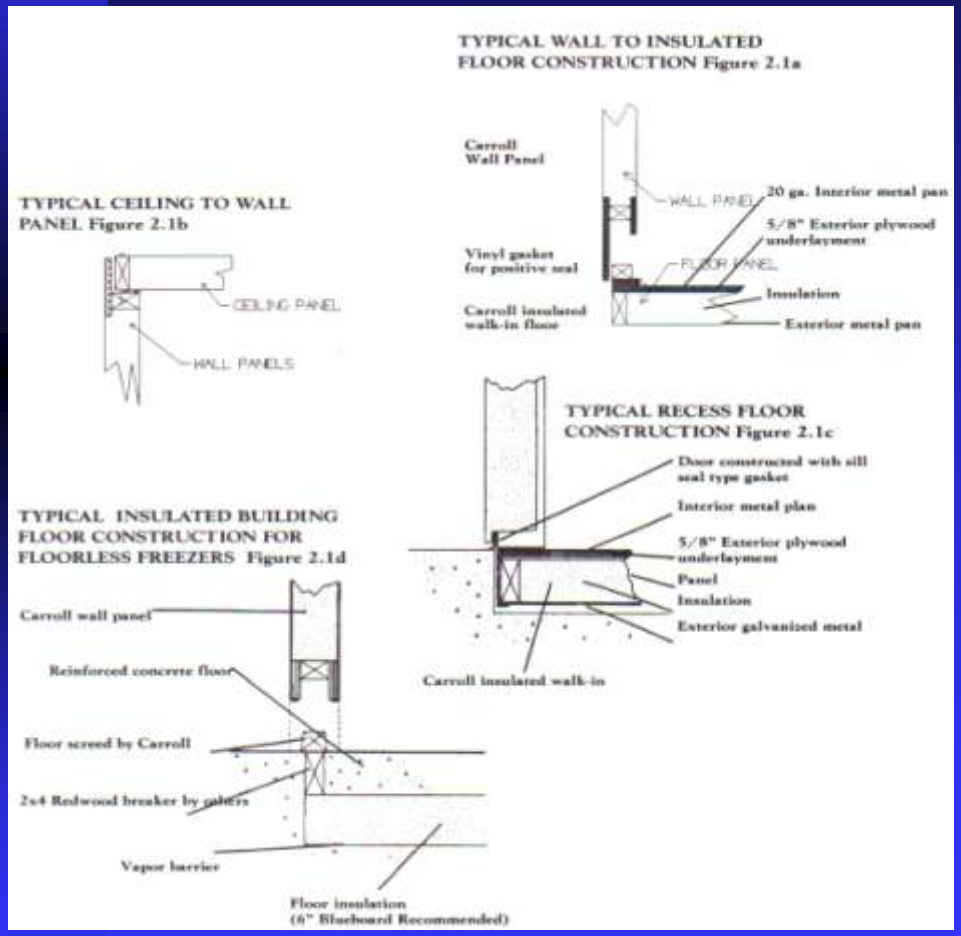


- Most cooler panels use a device known as a cam lock to hold the panels together at the joints.
- A cam lock is built into the frame before the panel is insulated.
- A simple tool engages the cam lock and pulls the two panels close together forming a seal between their gaskets.
- Often, ceiling panels are cam locked to the walls or held down with 8” lag screws into the tops of the wall panels.

Floors

- Insulated floors are optional on medium temperature coolers, but required for low temp rooms.
- The insulated floor may be either a panel manufactured in the same manner as the walls and ceiling, or a specially prepared concrete floor built over insulation materials and with redwood frost breaks installed before the concrete is poured.
- Floors help further seal the room from outside temperatures. In the case of low temp rooms, they prevent frost heave caused by freezing existing moisture in and below the floor material.

Floors



- Low temp rooms require an insulated floor, but a floor is optional on medium temp rooms.
  - If there is to be an insulted floor, is an interior ramp required, or is a step up from the exterior floor level acceptable.
  - Will there be heavy traffic or loads that will require a reinforced floor? Usually reinforced by applying diamond plate.

Finishes

- Most walk-ins come standard with stucco embossed galvanized aluminum on the interior and exterior.
  - Is a white interior required?
  - Is there a need for a different exterior finish: smooth polished, white stucco, stainless etc.

Locations: Walk-in and Refrigeration Package

- Indoor or outdoor installation?
  - Will the room be erected inside a building or outside?
  - Will the condensing unit be located outdoors or on top of / beside the walk-in room indoors?
  - If the walk-in will be indoors, will it be in a tempered (heated and cooled) space?

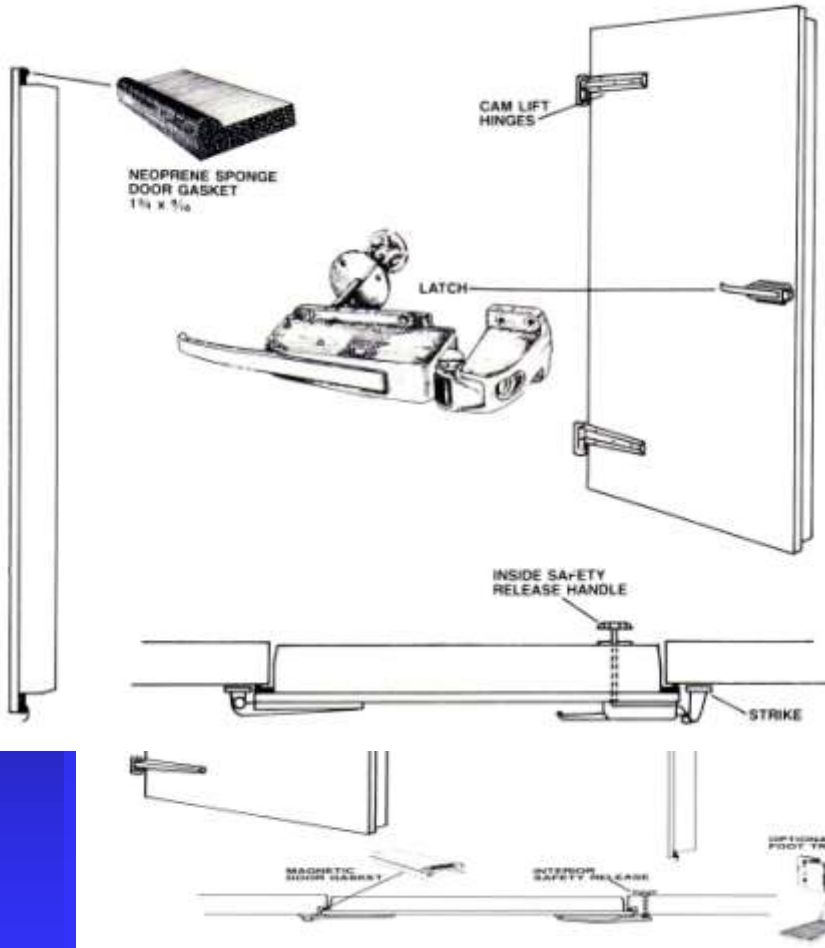
Remote Condensing unit

Outdoor conversion package

Outdoor Installation

- A walk-in room installed outdoors will need a rain cap (waterproof roof) and, depending on possible snow load, a shed roof.
- Condensing units placed outside will require low temperature operation controls. Many condensers come from the factory with these installed, others require purchasing the outdoor conversion kit shown on the previous slide.

Doors



- There are many door styles, but the basic two are flush fit and surface fit.
  - Flush fit doors fully recess into the walls so there is no overlap between the door and the walls.
  - Surface fit doors have a wide flange that overlaps the door opening – generally less expensive than a flush fit.
  - Is there to be a window in the door?

Reach-in Doors

- Convenience stores and grocery stores use glass reach-in doors inserted into the sides of walk-ins to merchandise product for customer self-service.
- Determine the door width desired and the number of doors in the set. This will directly effect the construction and cost of the walk-in room.
- The opening that the doors fit into must be 12 to 16 inches less than the length of the wall into which they are being installed.

Beer Caves

- ‘Beer caves’ have become popular as a way to sell refrigerated beverages.
- A beer cave is a standard walk-in room with a glass passage door so customers can enter the room to select and purchase product.
- The passage door may be a manual swing door or an automatic sliding door.

Refrigeration Components

- Refrigeration components for a walk-in are:
  - Condenser – the exterior unit. It can sit on top of or beside the walk-in, or outside the building altogether.
- The condenser
  - 1) Using a fan, removes heat from the refrigerant gas returning from the walk-in cooler.
  - 2)Compresses the refrigerant gas into liquid.
  - 3) The liquid is then sent through lines to the evaporators inside the walk-in.

Evaporator

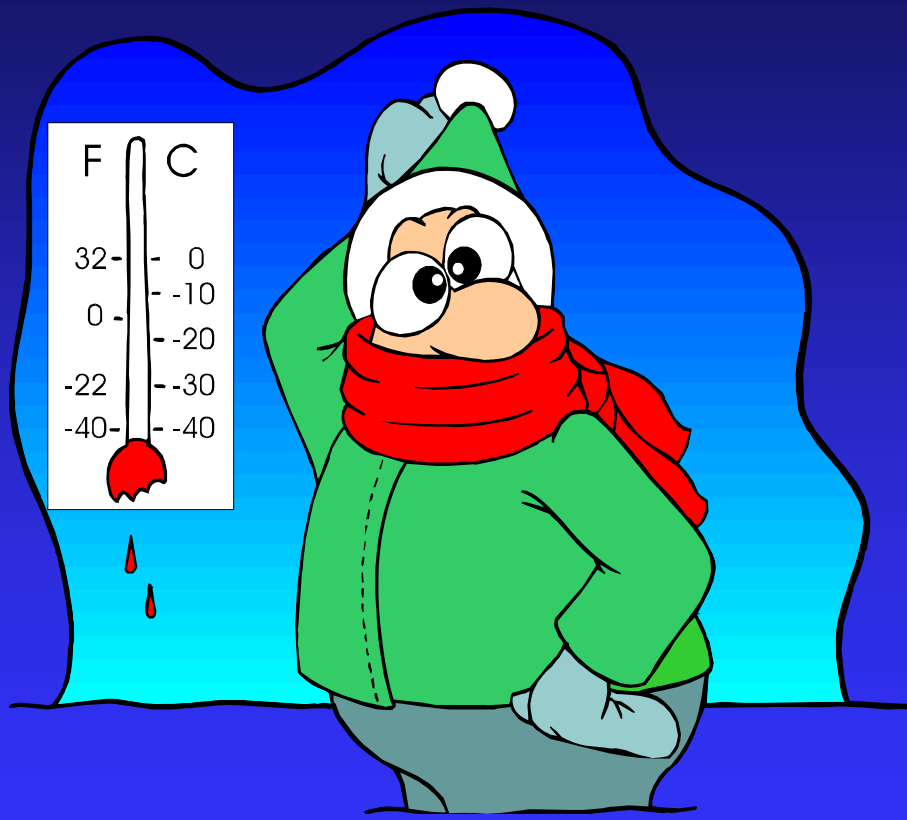
- The evaporator unit is attached to the walk-in interior ceiling. This unit consists of a series of coils containing refrigerant and fans to move air across the chilled coils.
- The number of fans or evaporator units depends on the size and desired holding temperature of the walk-in.
- A floor drain is required to carry off condensation from the coils. The drain MUST be located outside the walk-in room. (The exception is self contained cooling units with their own evaporator pans)

Line Sets

- Line sets are what carry the chilled refrigerant from the compressor to the evaporator.
- Line sets can be solid copper, soldered in place on site, or flexible copper with quick connection ends for speedy and simple field setup.

Refrigeration Sizing

- Correctly sizing the refrigeration package is essential to the proper operation of the walk-in.
- Be sure to include information about usage, anticipated load levels and how often product will be added to the walk-in so the factory technician can accurately size the refrigeration components.
- Indoor or outdoor placement of the condensing unit is vital information!



How To Order a Walk-in

- So far, we have looked at the basic components of any walk-in refrigerated room. There are many options that need to be defined before a quote can be created by the factory.
- The Rapids walk-in sign-off sheet is required for any non-catalog walk-in ordered. The sheet asks the questions the manufacturer will need to have answered before creating a quote.

Door Hardware

- Every manufacturer can apply their own standard door hardware. The components are:
  - Door latch.
  - Cam or spring assisted hinges.
  - Door closures.
  - Heat tape around the perimeter of the door frame*.

* Required on freezer doors

Reinforcement Options

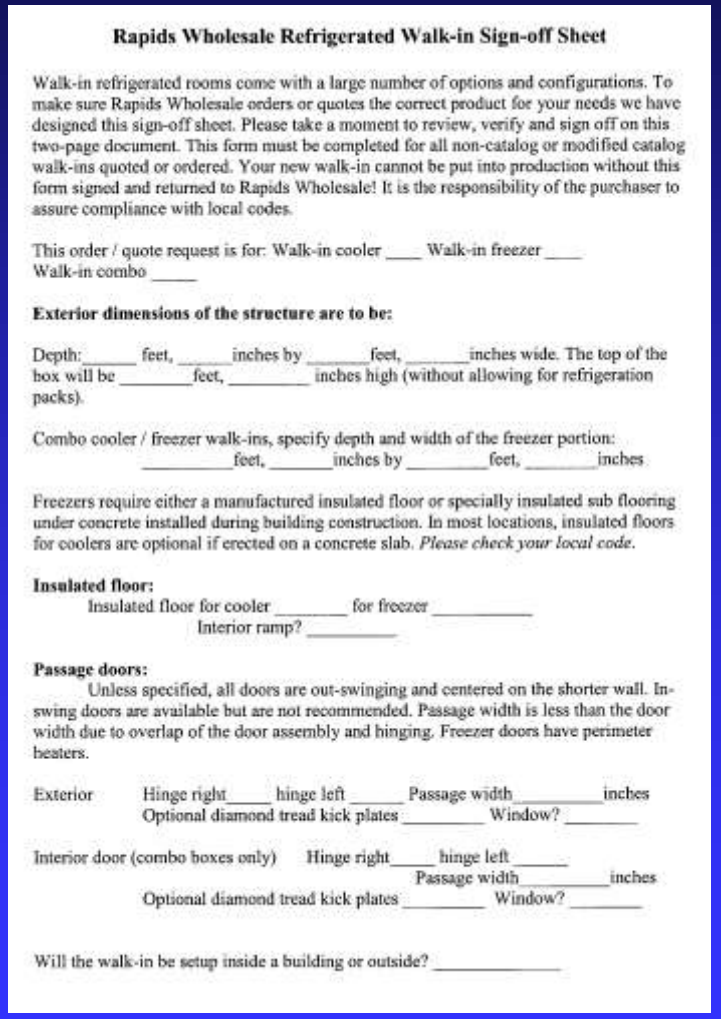
- Diamond tread plates can be applied to interior and exterior walls to help prevent dents and punctures. Usually applied from floor level up to a height of 48”.
- Exterior corner bumpers or caps can be supplied to prevent damage from hand trucks, rolling racks, forklifts and other heavy impact.

Interior Lighting

- The lighting inside a walk-in can be incandescent or fluorescent.
- Incandescent lights are standard, and the manufacturer provides a minimum number of fixtures.

Rapids Signoff Sheet

- Rapids uses a signoff sheet for ordering non-catalog walk-in rooms.
- The signoff sheet is designed to ask all of the questions covered in this presentation, making it possible for the factory technician to create a quote.



Rapids Wholesale Refrigerated Walk-in Sign-off Sheet

Walk-in refrigerated rooms come with a large number of options and configurations. To make sure Rapids Wholesale orders or quotes the correct product for your needs we have designed this sign-off sheet. Please take a moment to review, verify and sign off on this two-page document. This form must be completed for all non-catalog or modified catalog walk-ins quoted or ordered. Your new walk-in cannot be put into production without this form signed and returned to Rapids Wholesale! It is the responsibility of the purchaser to assure compliance with local codes.

This order / quote request is for: Walk-in cooler ____ Walk-in freezer ____
Walk-in combo _____

Exterior dimensions of the structure are to be:

Depth:_____ feet, _____ inches by _____feet, _____inches wide. The top of the box will be _____feet, _____ inches high (without allowing for refrigeration packs).

Combo cooler / freezer walk-ins, specify depth and width of the freezer portion:
_____feet, _____inches by _____feet, _____inches

Freezers require either a manufactured insulated floor or specially insulated sub flooring under concrete installed during building construction. In most locations, insulated floors for coolers are optional if erected on a concrete slab. *Please check your local code.*

Insulated floor:
Insulated floor for cooler _____ for freezer _____
Interior ramp? _____

Passage doors:
Unless specified, all doors are out-swinging and centered on the shorter wall. In-swing doors are available but are not recommended. Passage width is less than the door width due to overlap of the door assembly and hinging. Freezer doors have perimeter heaters.

Exterior Hinge right_____ hinge left _____ Passage width_____inches
Optional diamond tread kick plates _____ Window? _____

Interior door (combo boxes only) Hinge right_____ hinge left _____
Passage width_____inches
Optional diamond tread kick plates _____ Window? _____

Will the walk-in be setup inside a building or outside? _____

Signoff Sheet in Use

- Begin with the signoff sheet and complete all of the questions.
- The sheet will be faxed or mailed to the client for confirmation and signature.
- For an “L” shaped cooler, the client needs to include a measured drawing.
- The sheet is faxed to the manufacturer for quoting.
- The manufacturer will return a quote for approval before producing any drawings. Again, the quote must be signed by the purchaser.
- Please note, the quoting phase of a walk-in is NOT part of the production lead time estimate!

Signoff Sheet in Use (cont)

- After the purchaser has signed the Rapids quote and returned it, the manufacturer will produce a scaled drawing of the walk-in room.
- The scaled drawing must be signed by the client after they have verified all measurements, voltages and other specifications.
- Once the signed drawing is received by the manufacturer, the production lead time begins!

When The Walk-in Arrives

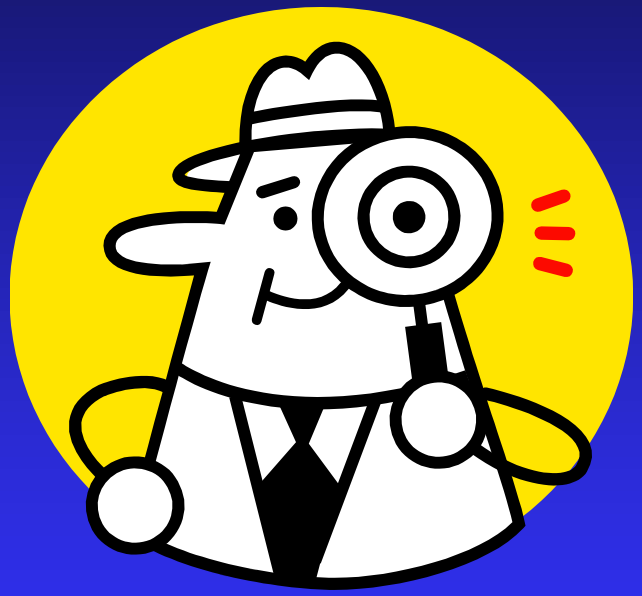
- What you will need on hand:
  - Help to unload the truck – the driver won't unload
  - If the walk-in has no floor, a nail gun will be needed to attach the wall supports to the cement floor
  - A 48" level
  - A framing square
  - Ladder
  - Rubber mallet
  - Drill and various sized bits. (May be needed on larger rooms to attach the walk-in ceiling support hangers to the building's ceiling.)

Installation Precautions Continued

- Additional clear silicone caulk
- It is a good idea to snap lines on the floor outlining the cooler dimensions and position.
- Make sure the snapped lines run true to the building walls and then make sure the cooler's corners are square.
  - Use the "Three, Four, Five" rule. From one corner, measure 3 feet along one wall's length and mark, 4 feet along the other wall's length and mark. A square corner will measure 5 feet between these marks
- Make sure the cooler doesn't cover the floor drain!

Installation and Code Requirements

- Many communities have specific code requirements that govern walk-in refrigerated rooms.
- It is the buyer's responsibility to assure that the walk-in and its installation meet local code requirements.



Conclusion

- Review the options available for walk-in refrigerated rooms frequently
- Whether the walk-in or its condenser is to be placed outdoors is vital information!
- Rapids uses a Signoff sheet for any walk-in that is not a standard catalog item
- Installation requires tools, labor and preparation.
- Every community varies on its codes. Meeting requirements for food safety, building and fire codes is the responsibility of the purchaser.