

# Sanitary Design Industries, LLC

Providing Innovative solutions for  
the food processing industry

Food Safety in Small Dairy Operations  
Prepared for the Dairy Practices  
Council – Nov 5<sup>th</sup> 2015



# Planning

- The correct floor plan to support your GMP's
- Write a specification for every space, build to a specification
- Understand Building Materials
- Have the correct air flow all the time Pos & Neg
- Understand the role of equipment Pros and Cons
- Budgets – their role in Food Safety



# Competency of the Planners

## Issues:

- Lack of experience
- Attitude – Still an opportunity for the Rebel operator
- Conflicted regulatory environment
  - Frequently required to encourage industry development and then regulate the same industry



# No Room a Corridor

There must be clear and easy access to all rooms in the facility with a few exceptions:

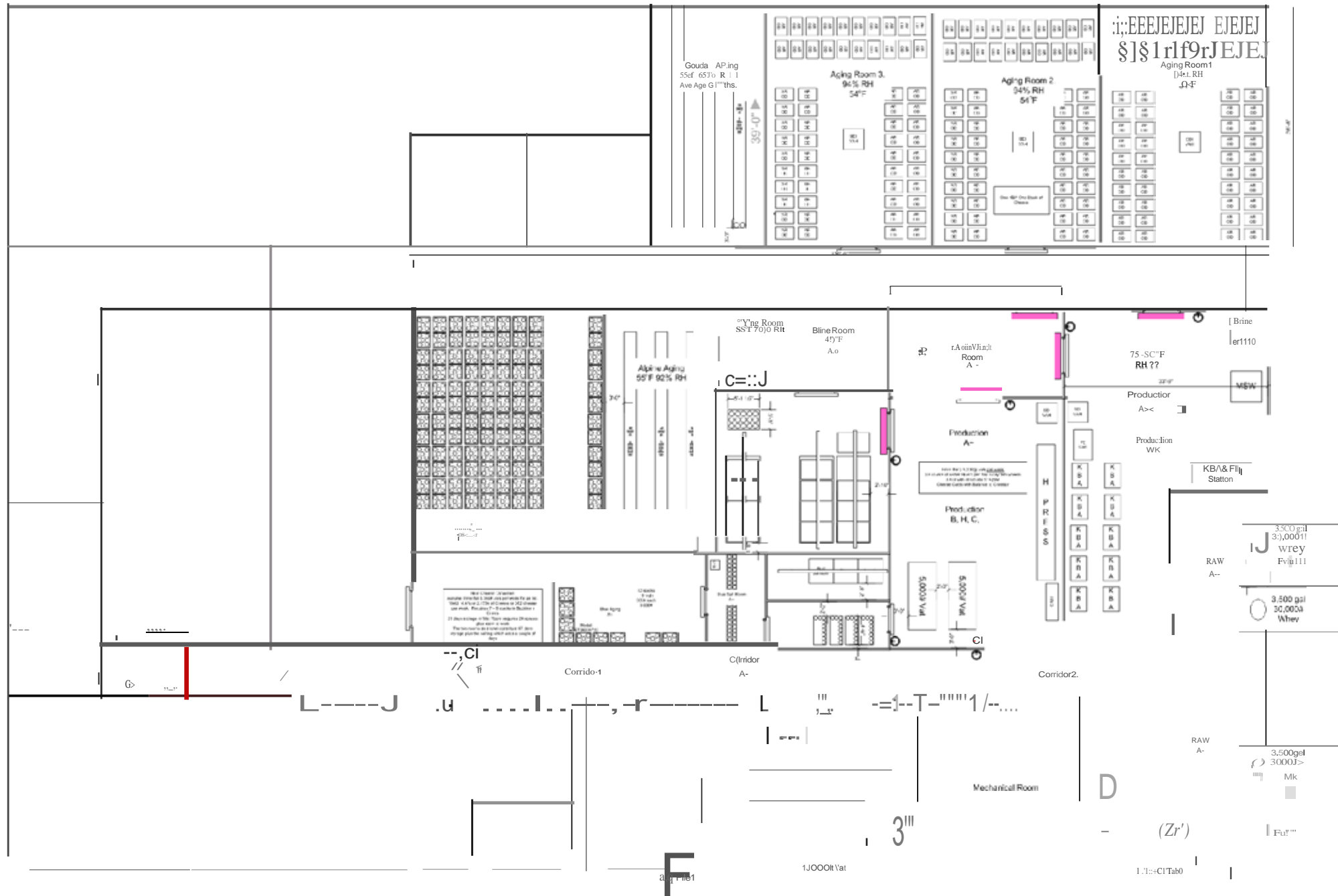
A raw room with pasteurizers

A receiving bay attached to the raw pasteurizer room

There are exceptions, but as a general principle, don't turn rooms into corridors



# Example



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Age Group	Percentage
18-24	10%
25-34	20%
35-44	30%
45-54	25%
55-64	15%

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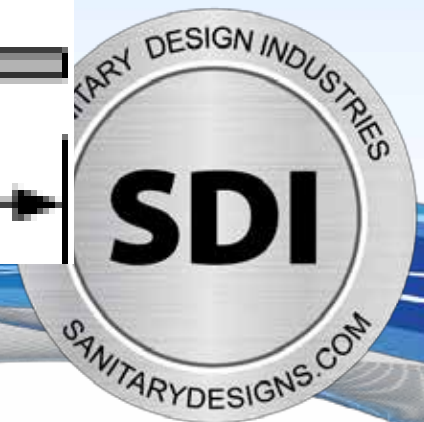
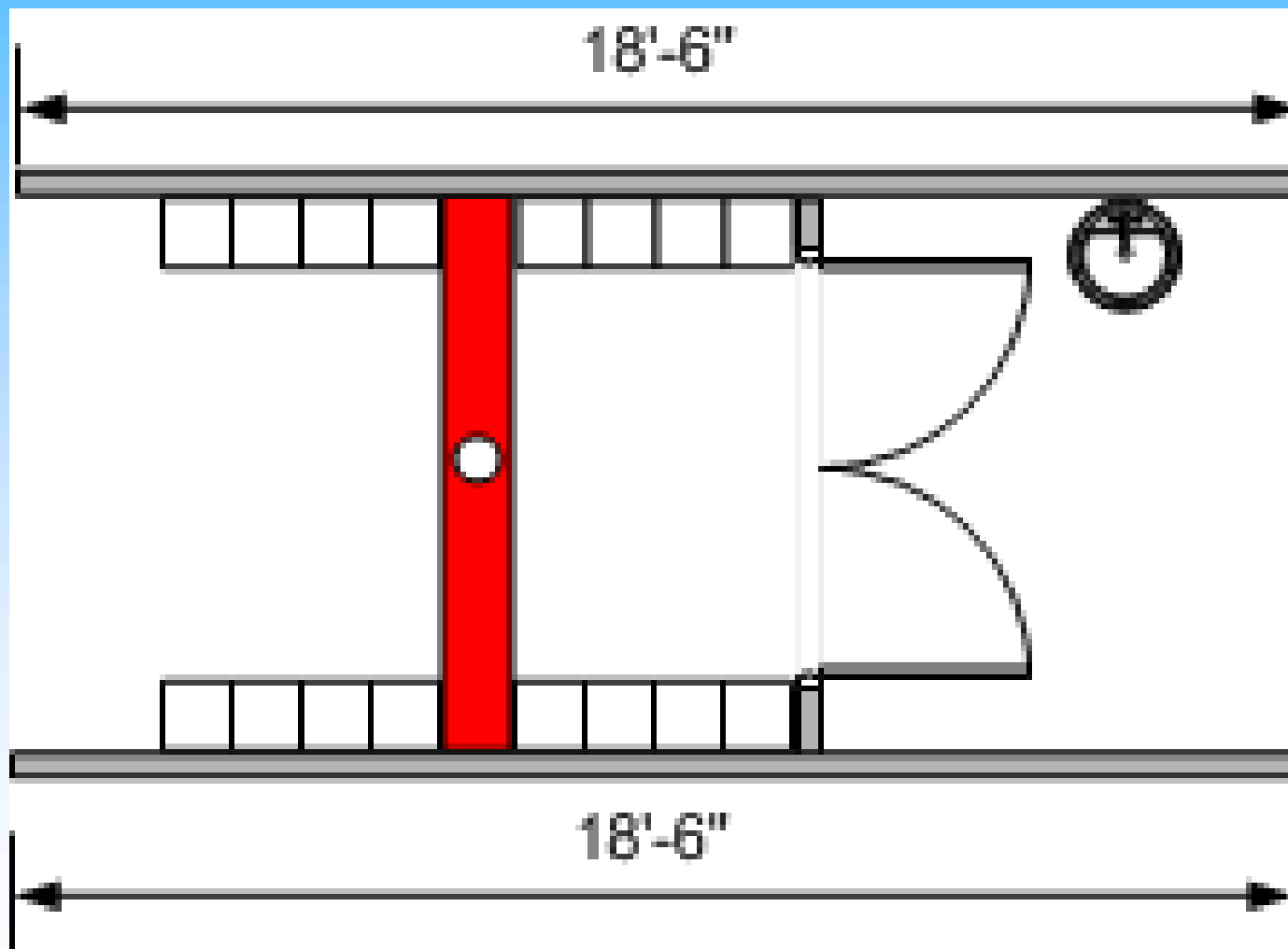
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# Controlled Entry Point





# A Separate Entrance For:

- Employees
- Customers
- Raw milk
- Processing materials, chemicals \* Does not permit access to the controlled area.
- Separate shipping dock
- Direct access to the mechanical room
  - Does not permit access to the controlled area.

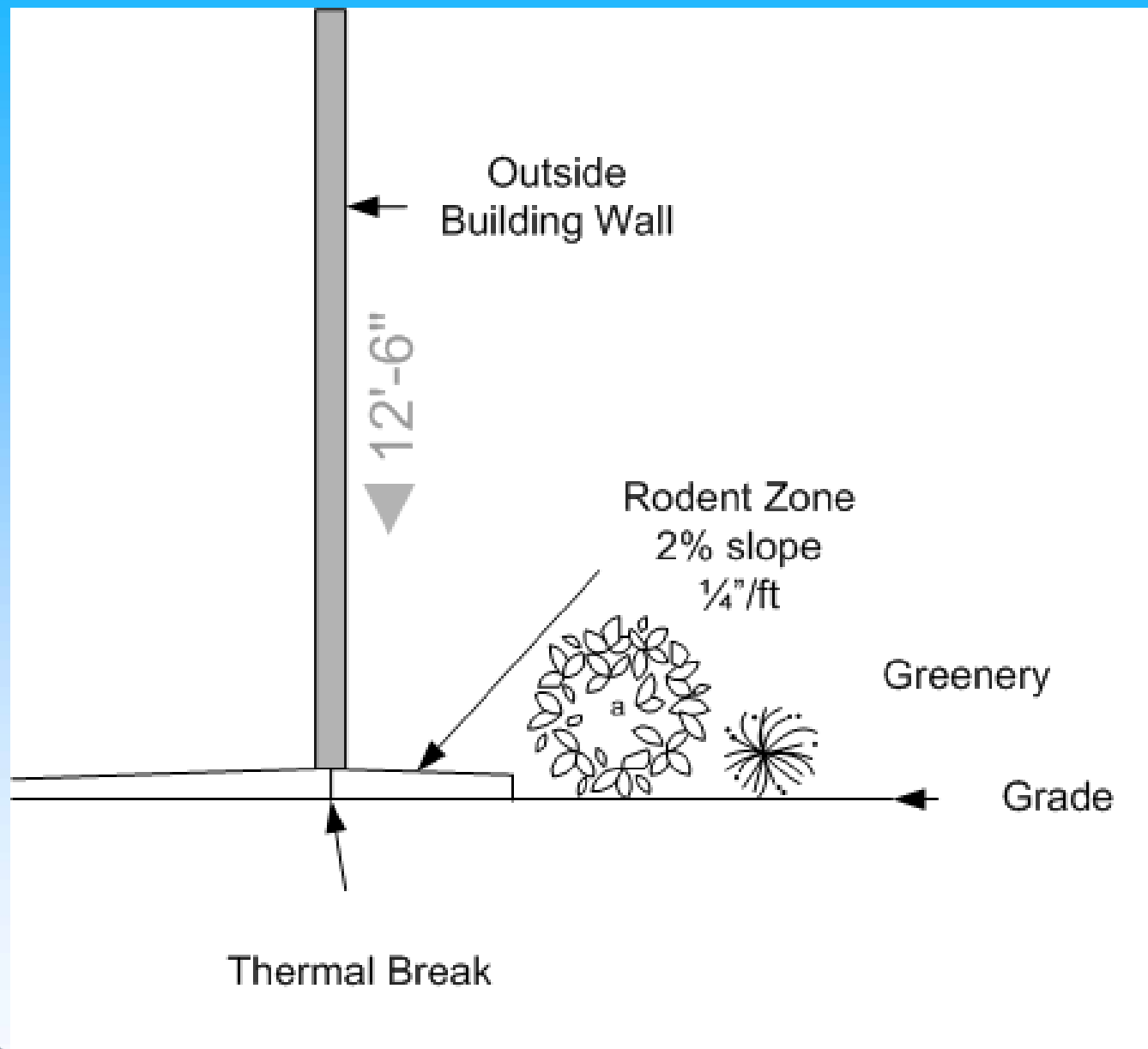


# Construction

When I approach any Food Processing Plant:

- Low dust area surrounding the facility, not always possible \* **Positive Filtered Air** just became a priority (HRV makes this simple)
- Rodent zone around the perimeter, 18" to 36" with no grass or foliage growing near the building. Concrete or Rip Rap
- A generally tidy appearance





Rodent Zones should be part of all planning and construction.

Concrete is best

Riprap works but will require constant maintenance



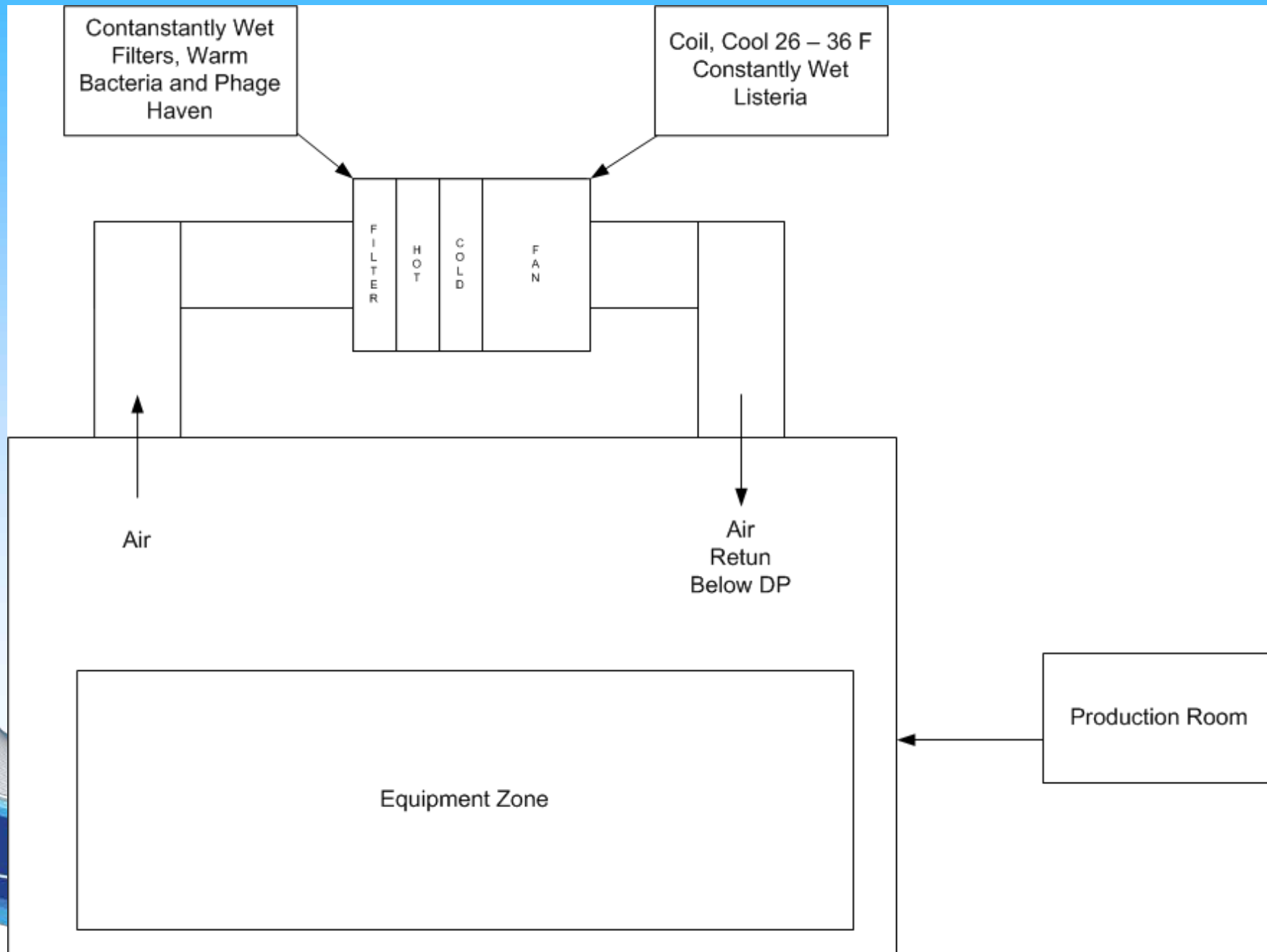
# Recirculated Air

## Food Grade Approach

- i. Commercial building air systems are not designed for food grade applications
- ii. Coils are remote and frequently not designed to be cleaned
- iii. Window air conditioners are not Food Grade
- iv. Mini-splits are not Food Grade



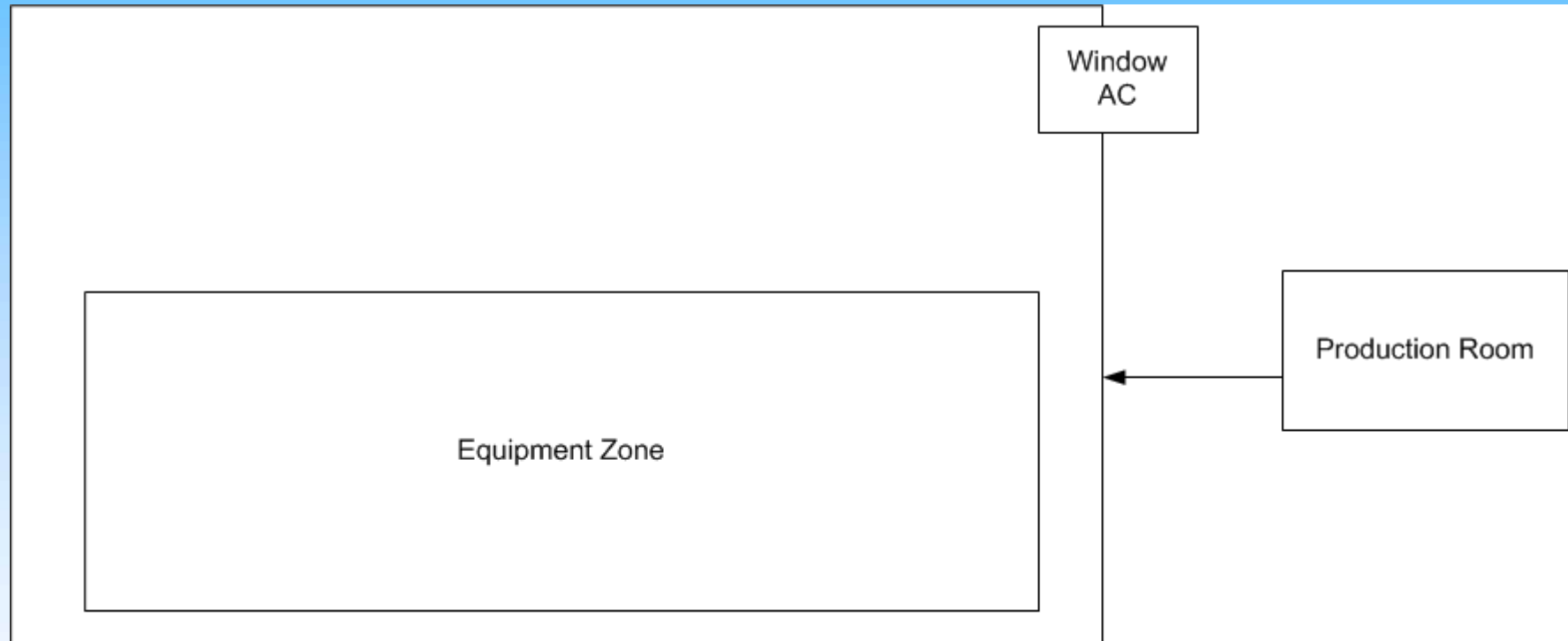
# This is not Food Grade Air





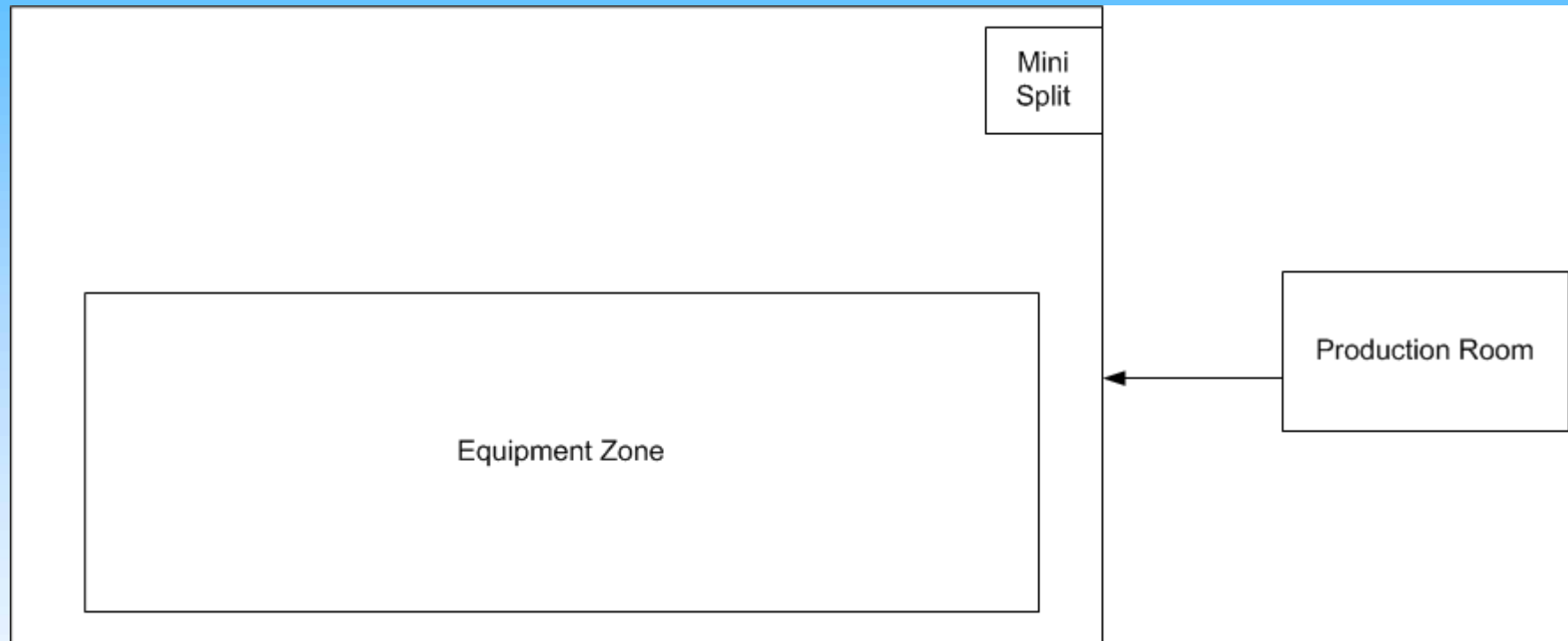


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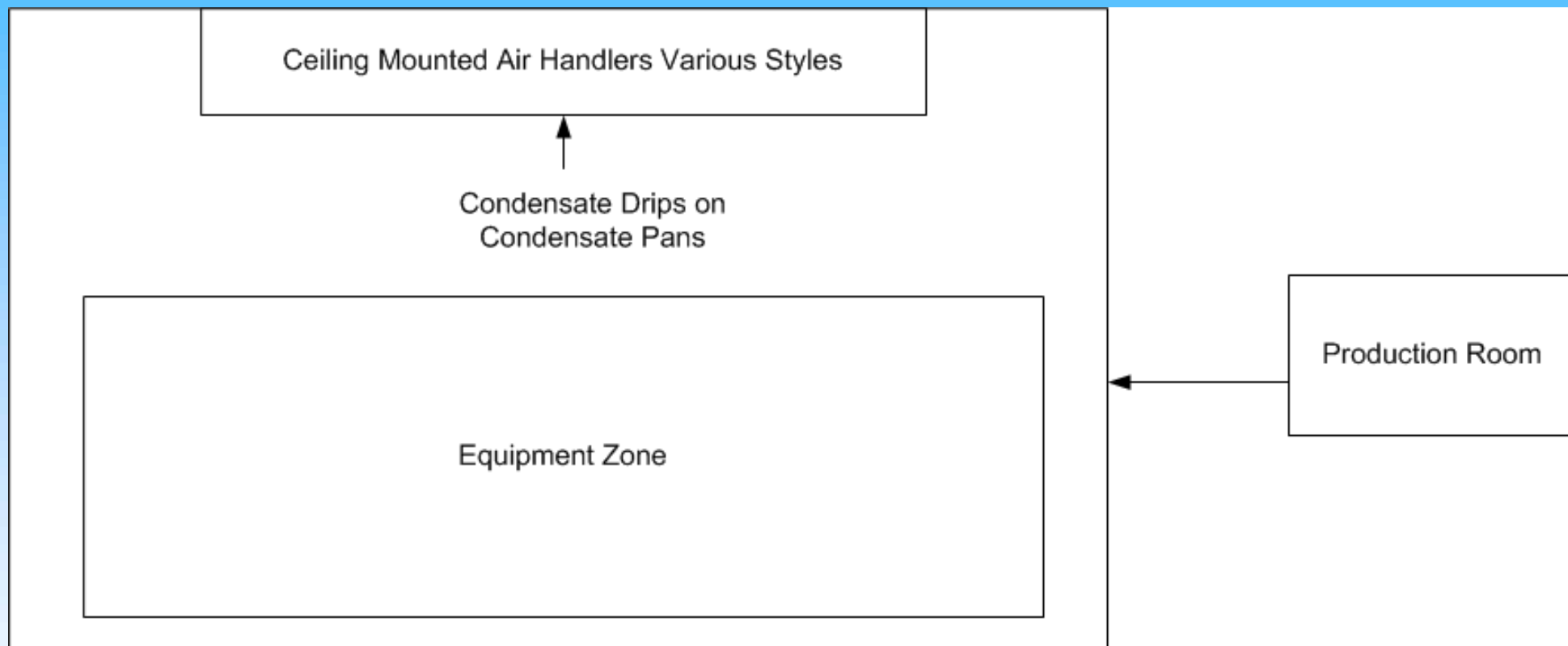




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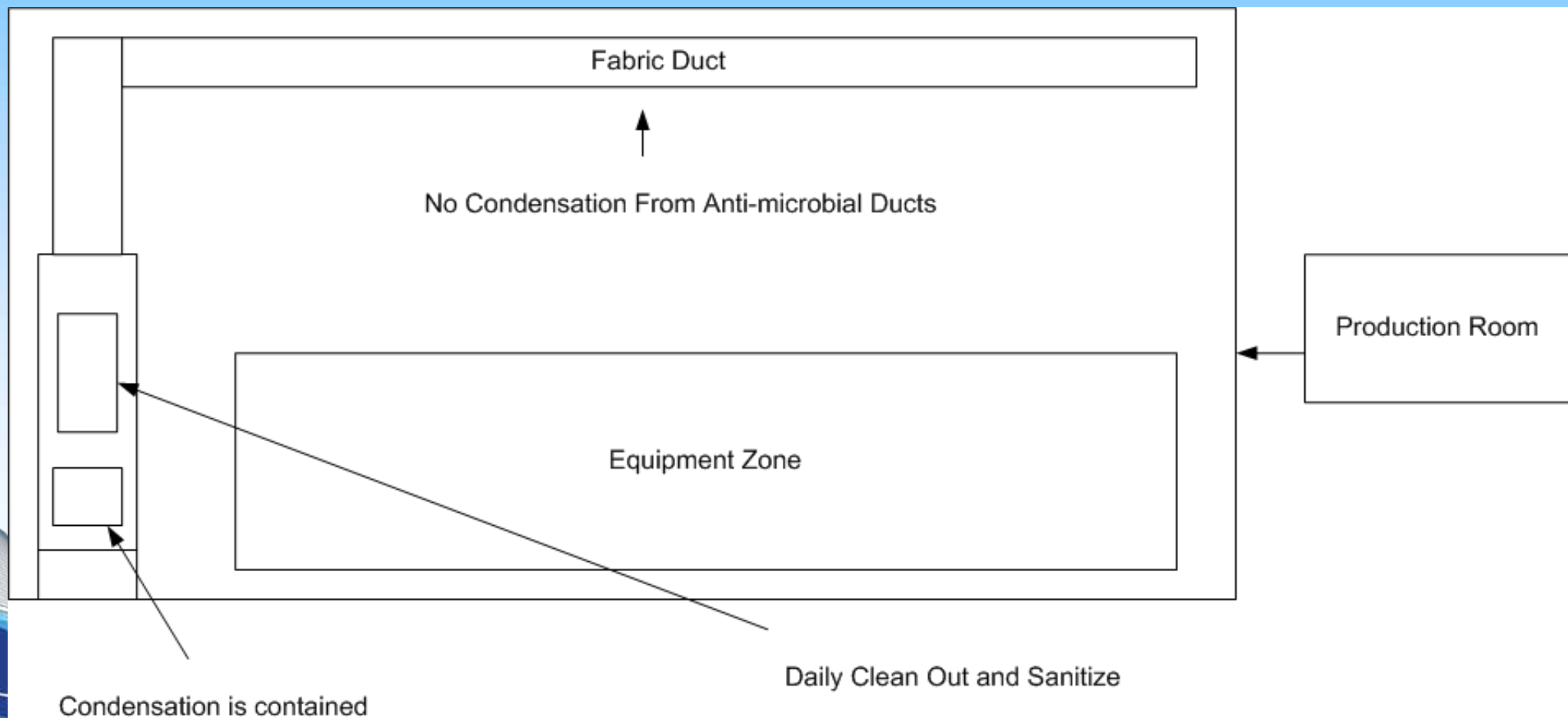


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# Food Grade Air

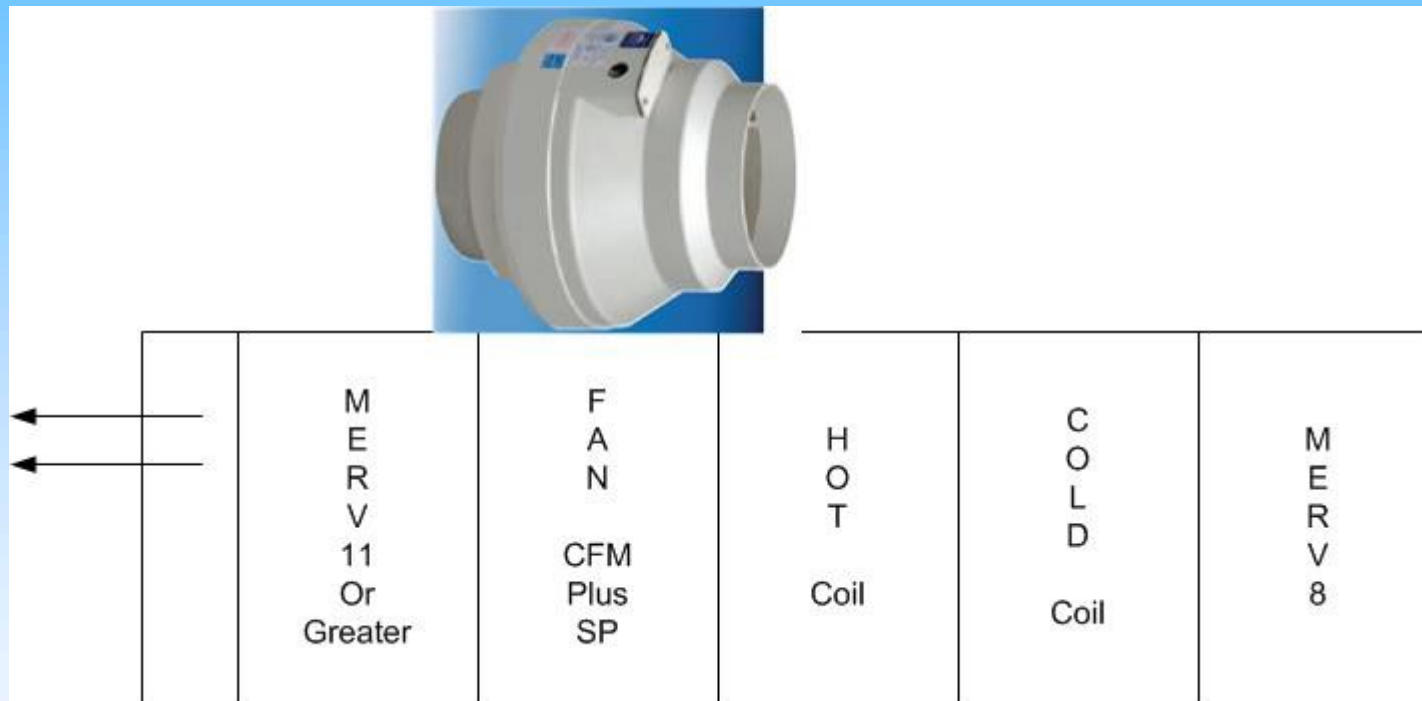
## Floor Mounted Air Handler with Fabric Duct



# SDI Answer to Sanitary Air



# Making your Own Positive Air System



11 years



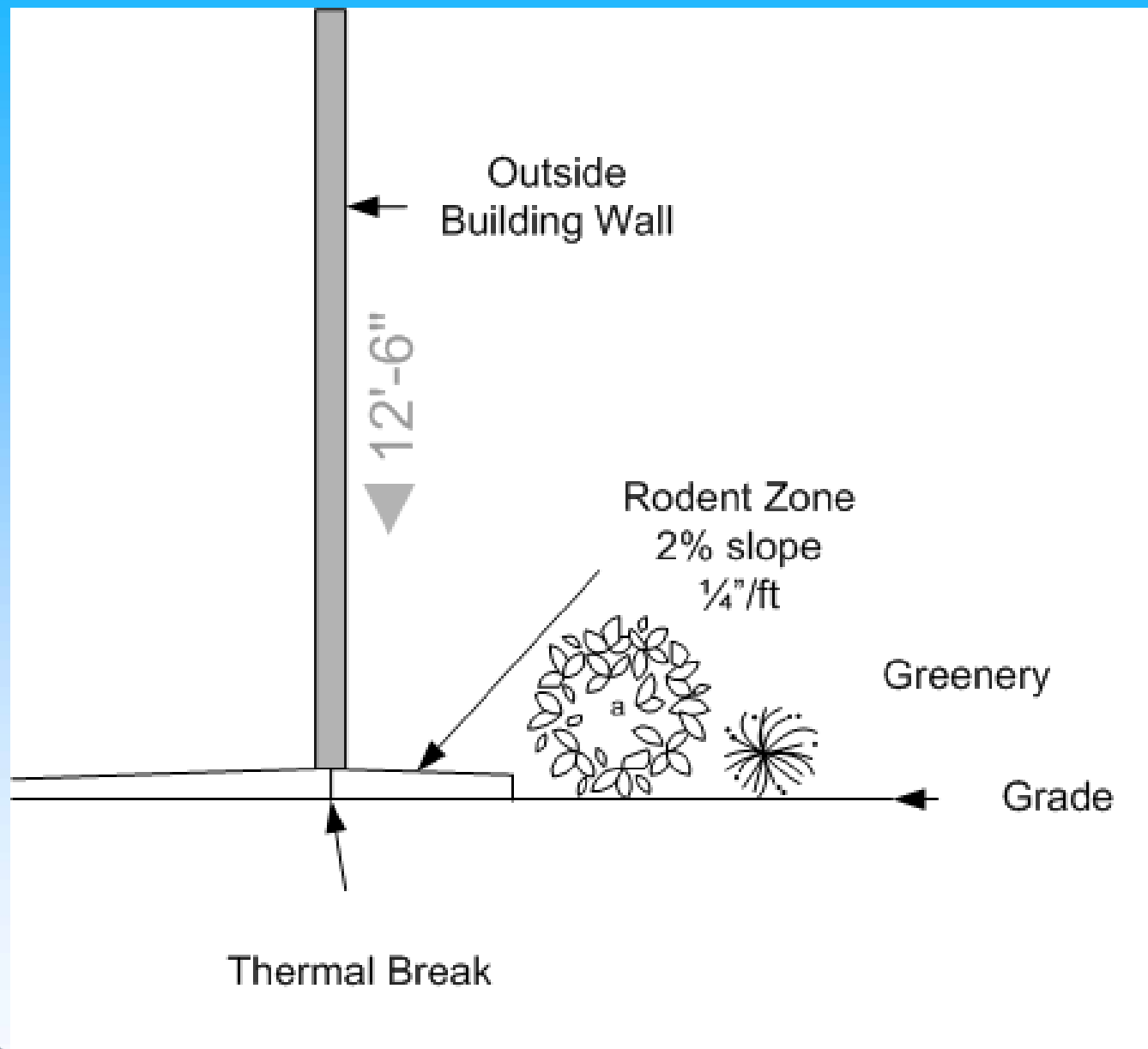
# General requirements for all rooms:

Failure to put thermal breaks beneath cooler walls adjacent to corridors has in effect created a Listeria creation zone:

- Cool
- Damp
- Impossible to clean







Rodent Zones should be part of all planning and construction.

Concrete is best

Riprap works but will require constant maintenance





7 Years



# Full Panel Structure







# Galvalume 8 years



# Galvalume doesn't stand up to wet conditions







# Budget Approach



# Air Handlers

- Ceiling mounted units running on refrigerant or chilled liquids will frequently have encasements that are below the dew point to achieve the cooling function in the room.
- All condensate drains to be vented and trapped before water is removed from the room
  - a. Condensate must not be allowed back onto the floor, it is not potable water



# Sanitary Air Handlers

- | Ceiling Mount Value Series
  - Stainless Housing Construction
  - Multiple Layer Condensate Pan
  - Wide Fin Spacing for Easy Cleaning
  - ECM Fan Motors for Energy Efficiency
  - Chilled Water or Refrigerant



# Air Handlers

a. When cleaning is being conducted it is better to remove product from the room

**Which begs the question, who is going to do this?**

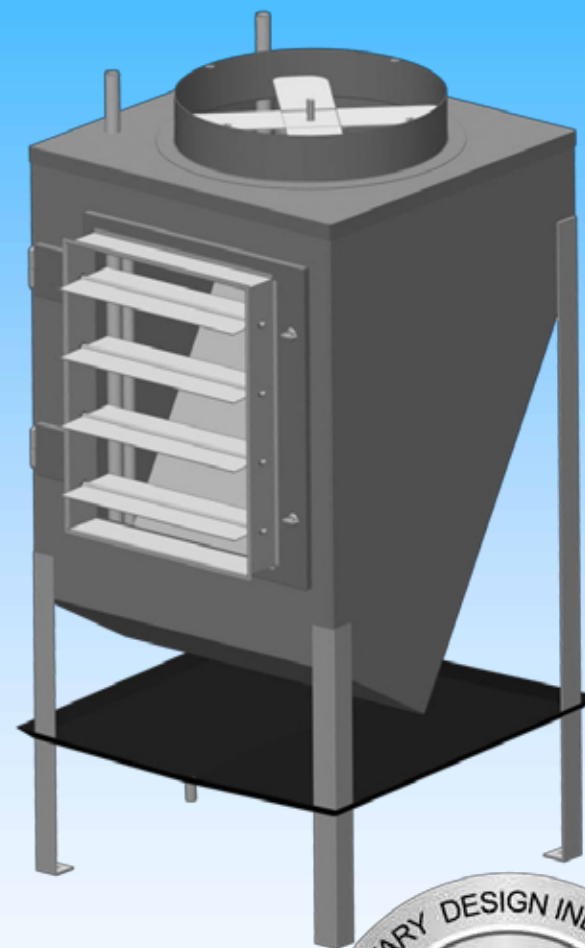
- Floor mounted Vertical Air Handlers remove the condensate drains from above product
- a. Fully washable while product is in the room
- Rooms need good sealing doors with no thresholds
- Air changes in these rooms, small vents, low volumes, large vents create problems



# Sanitary Air Handlers

## Vertical Floor Mount Series

- All Stainless Housing Construction
- Wide Fin Spacing for Easy Cleaning
- Coated coil to endure harsh environments
- Wash down motor
- VFD Fan Motors for Energy Efficiency
- Easy access for sanitary maintenance
- Chilled Water or Refrigerant
- Combined with Fabric Ducts





# Fabric Duct System

- Combines with vertical air handler to create uniform conditions throughout the room
- Easy to install
- Easy to clean and change
- Flexible design
- Does not transmit noise



# Writing a Building Specification

- State the function of the items so the specification can match
- Write the Specification before you talk budget
- When you have to do it twice it is no longer cheap





# Floor Specification

## Floors:

- \* Wet areas 2% slope
- \* Corridors less critical areas 1% slope
- \* Where necessary suitable coatings to protect the concrete. Does not include thin epoxy coatings with poor impact and thermal ratings
- \* Insert thermal breaks beneath walls where needed
- \* Drains





2015/01/20

# Whats wrong

- Not flat floors with drains cut in
- FRP over moisture resistant Sheet Rock, no sealed coves, water is running to the walls reported as 2" deep in one room against one wall, runs to all 4 walls in another, three rooms that require constant squeegee activity
- This facility received its States approval to operate?



# Wall Specification

Walls:

Monolithic

Smooth

Impervious

Correctly placed vapor barriers

Over thermal breaks where needed

No penetrations

All pass-throughs to be sealed and flashed







Steel Door Frames Rust Out







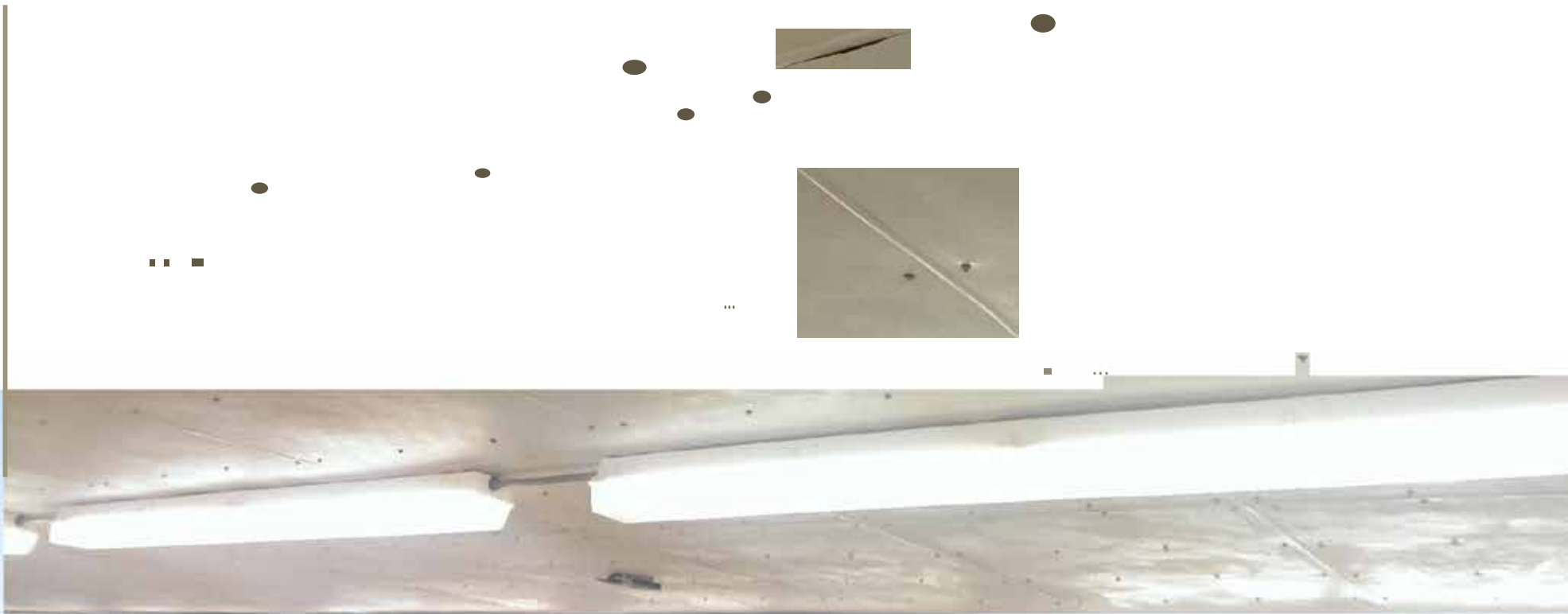
The addition of Wooden Frames  
on Doors to Mount Strip Curtains



# Ceiling Specification

- The Ceiling must protect the product from above
  - It is not there just to look shiny and white?
  - That means it must have the ability to stop what ever falls on the top from coming down into the production space.
- \* Vapor barrier on the appropriate side













# Drains

The purpose of a drain is to conduct liquids off the floor and prevent solids from going down the drain?

- Should seal tightly against the substrate
- Shall not block during the production shift



# Plastic Trench Drains



Plastic Drains expand when hot liquids run into them. The sides of the drains pull away from the substrate. No amount of caulk will solve the problem





# Questions

