

*Practical insights from the leaders in bakery design and construction*

## Bakery Plant Design for Food Safety

In the last issue, we examined opportunities where employee safety can be integrated into Bakery Plant Design. In this issue, our focus shifts to areas where food safety can be integrated into Bakery Plant Design.

### **Safe food from the receiving dock to the shipping dock:**

1. Allow no places for standing water within 100 feet of the building.
2. Do not plant any shrubs or trees within 30 feet of the building.
3. Provide a minimum 24-inch-wide paving or vermin strip along outside perimeter walls.
4. Know who is on site – fence the property perimeter, install security gates.
5. Minimize entrances for employees – two should be all that are needed.



6. Provide security cameras with full exterior coverage.
7. Provide system with positive employee identification for entry.
8. Finish exterior wall surfaces to be smooth and easily washable, minimizing places for birds and insects to nest. (see photo to the right)
9. Provide an isolated area with bathroom for truck drivers, both receiving and shipping, so no drivers enter the plant.



### **Safe food in the production space:**

1. Design the building structure to have smooth, wipe-down or washable walls, epoxy paint or prefinished metal walls.
2. Cover wall-to-floor junctions for proper cleaning.
3. Overhead, provide a smooth roof structure or walkable ceiling, as bar joists and decks are dirt traps. Cost may be higher up-front, but low maintenance.
4. Run electrical underground where possible – what is under the floor cannot collect dust and will not need cleaning. This approach has a lower installation cost, too.
5. Seal floors with proper hardeners.
6. Avoid floor toppings where possible. If they are necessary due to corrosion from sugars or other ingredients, use high-grade epoxy, appropriately rated for temperature and with adequate thickness.
7. Watch the dew point on utilities to avoid condensation.
8. Provide PVC or aluminum-wrapped utility insulation for ease of cleaning.
9. Avoid utility runs above open product whenever possible.
10. Use floor scrubbers where possible, and wipe-down surfaces above the floor.
11. Fill floor joints with food-grade caulking with adequate bond strength and flexibility.
12. Install overhead utilities in “managed pathways,” clear of equipment for ease of sanitation and maintenance.

13. Design utility hangers for ease of cleaning. This means: no threaded rods, no unistrut, no slotted angle, and no back-to-back channel supports, as the gap cannot be properly cleaned. Use nylock nuts that won't vibrate loose.



14. Do not allow any exposed glass in the production area. Use polycarbonate or similar windows, and enclose fluorescent tubes or glass bulbs in plastic sleeves or similar.

15. Transfer incoming ingredients to bakery pallets before storage.

16. Provide organized storage to separate allergens.

17. Provide a minimum 18-inch area between stored product and walls.

18. Provide a white, 18-inch strip against the walls to show traces of vermin.

19. Provide 18-inch open space under stored products for visibility and cleaning.

20. Locate all tanks, except silos, inside the bakery to eliminate sabotage or natural contaminants, such as birds or dirty water.

21. Isolate the storage area from the scaling area. Keep storage room pressure slightly lower than scaling area, but slightly positive to outside. Provide a fast-acting door between areas.

22. Automate wet and dry ingredient systems, if possible. This provides improved tracking and reduces opportunities for contamination. Use super-sacks and totes, rather than 50-lb bags and pails.

23. Provide fast-acting doors with air curtain between areas.

24. Provide a reliable separation space or barrier between allergens and similar in mixing and makeup areas.

25. Provide space pressurization to match scaling.

26. Install isolation walls between lines to simplify allergen separation.

27. Ensure that ovens can be cleaned under – if on legs, at least 8-inch clearance is needed, or if not on legs, provide a 4-inch minimum pad with coved base.

28. In packaging, design the supply of packaging materials to feed from the discharge end of the line.

29. Design baskets and similar to feed from the discharge end of the line

30. Install a wall separating the shipping dock from open product. The separation should be after wrapping and before basket loading, or immediately after basket loading. Basket feed conveyors should be located in the shipping dock area

31. Store packaging materials in a separate room with a room pressure slightly below packaging space pressure and slightly above shipping dock pressure.

32. Maintain shipping dock pressure to be slightly lower than packaging room pressure.

33. Close off the exterior environment from the interior with vertical storing shipping docks. These eliminate the individual pits of traditional levelers and provide a recess that is easily cleaned.

34. Design dock seals to completely close the exterior from the building interior, when the truck is in position for loading.

35. Isolate support spaces for locker rooms, bathrooms, cafeteria, offices, maintenance shops, and mechanical and electrical rooms, from production areas, preferably by a corridor that allows efficient movement of people between support spaces. The entire support space area should be at a slightly lower pressure than production spaces.

36. Equip sanitation rooms between the circulation corridor and production with suitable hand wash sinks and dryers, in addition to hair net stations.

