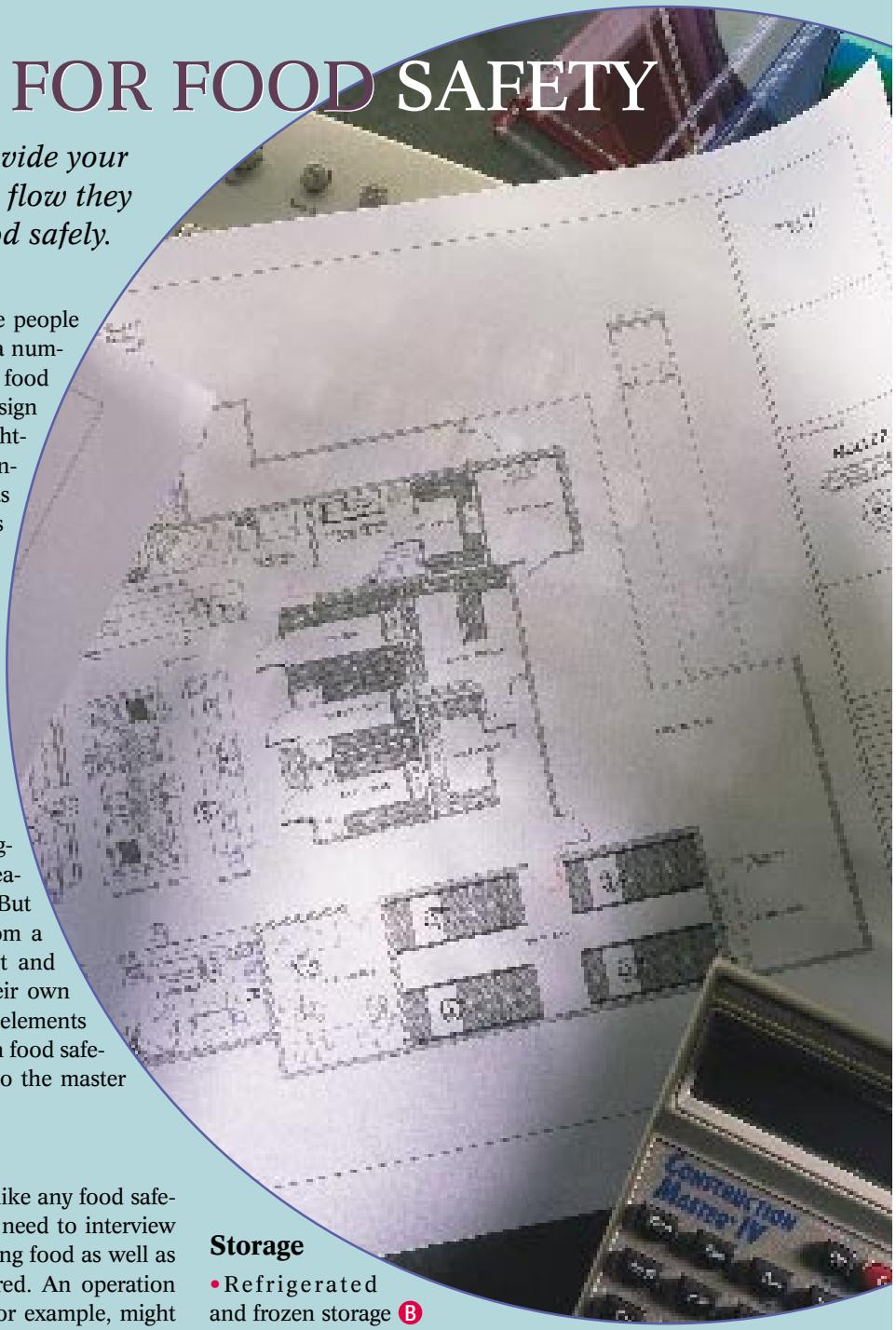
DESIGNED FOR FOOD SAFETY

Smart kitchen design can provide your employees with the tools and flow they need to prepare and serve food safely.



Food safety ultimately depends on the people who prepare and serve it. There are a number of tools, however, that encourage safe food handling and make it easier. Kitchen design is one of them. Often overlooked, thoughtful design can help make safe food handling happen naturally, contributing as much to food safety as the more obvious tools such as color-coded utensils and cooling wands.

Designers who consciously build food safety into their kitchen designs usually take the same approach that a Hazard Analysis Critical Control Point (HACCP) plan does. They follow the flow of food through the operation and rely on a few simple principles (see sidebar at right).

Very few new operations have the budget, space or need for all the food safety features an "ideal" kitchen might have. But even existing operations can benefit from a look at the design elements, equipment and supplies they could incorporate into their own kitchens. Here are some of those design elements a kitchen might have when designed with food safety in mind. The red letters correspond to the master floorplan on pages 10 and 11.

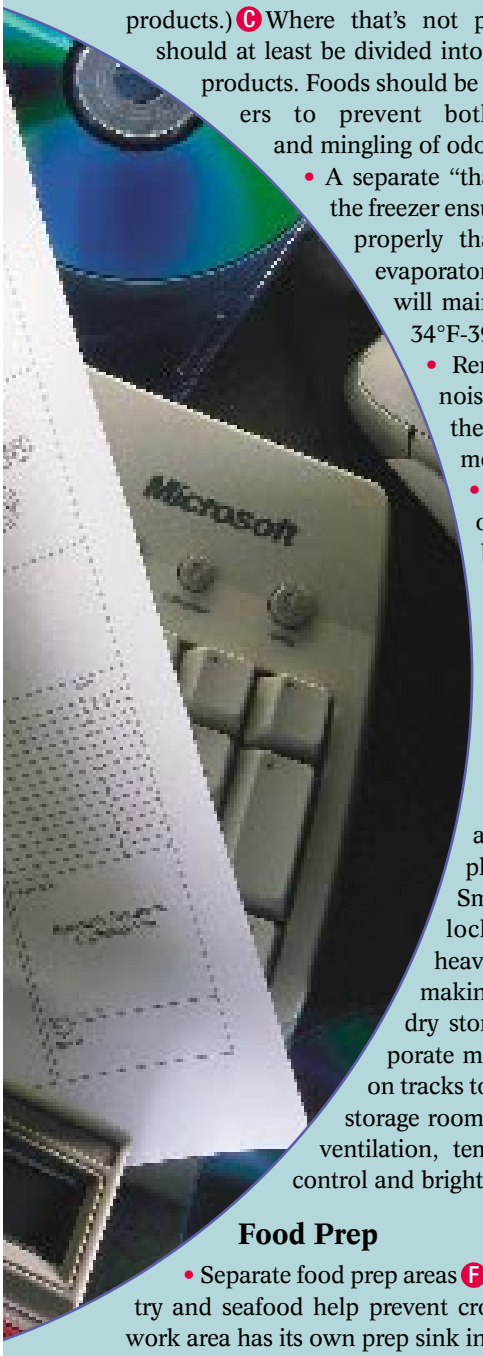
Receiving

Design of the receiving area or dock (A), like any food safety plan, starts with suppliers. Operators need to interview purveyors to find out how they're handling food as well as how and when products will be delivered. An operation buying produce directly from growers, for example, might want a prep area with running water on or near the dock to trim and wash produce before it even enters the premises.

- Receiving areas should have adequate space with good lighting to offload and inspect deliveries.
- The area also should include a station where you can store clipboards, pens, box cutters, and cleaned and sanitized thermometers.

Storage

- Refrigerated and frozen storage (B) should be as close to the receiving area as possible so product can go directly from receiving into storage. A kitchen on an upper floor of a building, for example, should have refrigerated storage at the loading dock in case the freight elevator is tied up.
- Ideally meat, dairy, seafood and poultry should have separate walk-ins. (Prepared food can be stored with dairy



products.) C Where that's not practical, walk-in space should at least be divided into separate areas for these products. Foods should be sealed in closed containers to prevent both cross-contamination and mingling of odors.

- A separate "thaw" walk-in adjacent to the freezer ensures that frozen foods are properly thawed. A unit with an evaporator coil with a defrost cycle will maintain the temperature at 34°F-39°F.
- Remote compressors keep noise, heat and dirt out of the kitchen, and often are more energy efficient D.
- Stainless steel shelves on lockable casters can be removed easily for cleaning. Next best is wall-mounted shelving, which makes it easy to clean the floors, but less easy to clean the shelves themselves.
- Dry storage areas E should have wide aisles, a mix of shelving and platforms for bulk storage. Small shelving segments on lockable casters are less heavy and easier to move, making cleaning easier. Many dry storage rooms today incorporate movable shelves that slide on tracks to optimize the space. Dry storage rooms also should have good ventilation, temperature and humidity control and bright electric lighting.

Food Prep

- Separate food prep areas F for produce, meat, poultry and seafood help prevent cross-contamination. Each work area has its own prep sink in addition to work tables, making it as self-contained as possible.
- Cold rooms G prevent temperature abuse for operations that cut their own meat, poultry or seafood. Cold rooms often are adjacent or connected to walk-ins and usually are cooled to about 55°F. A prep sink here is essential.
- Undercounter or raised rail refrigeration in work areas H keeps product safe while it's being prepped and saves trips to the walk-in.
- Work surfaces are solid stainless with polished welds, and work tables are on casters to facilitate cleaning walls and floors.
- Handsinks I, located at every work station (throughout the kitchen, including prep, cooking line and dish room), encourage handwashing. Sinks have foot pedals or electronic faucets for hands-free operation. (Even existing sinks can be retrofitted with battery-operated auto faucets.)
- A garbage grinder or disposer in the prep area, especially for produce, reduces the amount of trash transported through the kitchen.

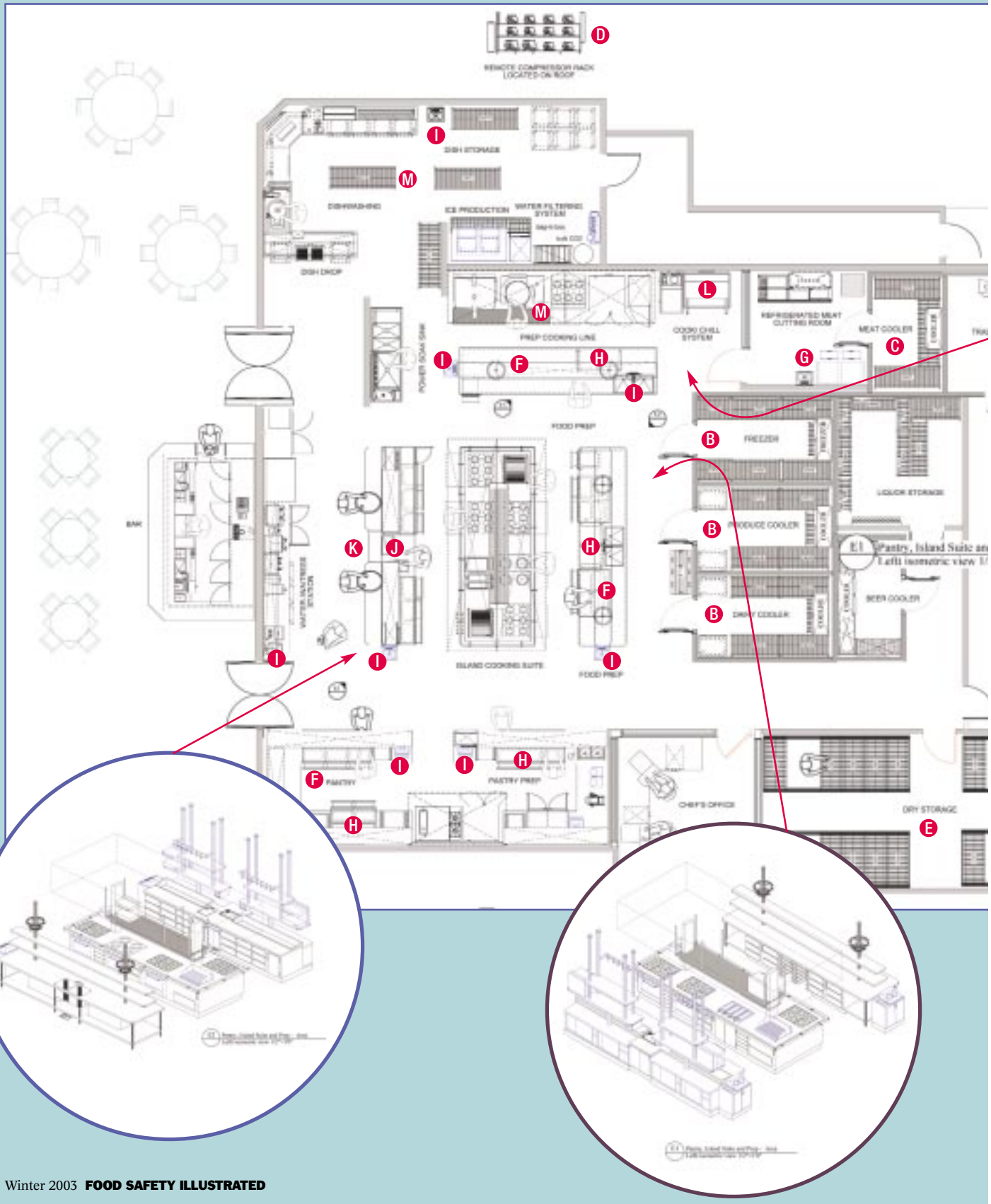
Cooking/Holding

- Cooking equipment is located on the line in a way that minimizes cross-over between stations and keeps food flowing in as straight and short a line as possible. Cooking islands sometimes are used to keep the cooking line compact and facilitate communication between staff.
- To facilitate cleaning, cooking equipment can be mounted on lockable casters and equipped with quick disconnects.
- Refrigerated drawers or undercounter reach-ins on the cooking line keep raw product cold until it's ready to cook.

Five Simple Rules

Designing with food safety in mind is more a matter of common sense than the latest gadgetry. Most "food safety" kitchens are designed using five simple precepts.

- Keep hot food hot and cold food cold. The more refrigeration you have for storage, prep and holding on the line, the better. Make sure there's adequate hot holding, too, on the line and at the expediting station.
- Food should flow in as short and straight a line as possible. From receiving to service, the design should help keep food flowing in the same direction to avoid cross-contamination and be handled as little as necessary.
- Give yourself enough room. A cramped kitchen gets dirty easily, is harder to clean, and encourages cross-contamination.
- Design to the menu. If you cut your own meat, add a cold room. If you buy produce direct from growers put a prep station at the back door.
- Don't skimp. Prioritize your budget. A safe kitchen is more important than fancy decor. Designing food safety features into the kitchen adds only 5% to 10% to the total cost, according to designers.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DISHWASHING
ICE PRODUCTION
WATER FILTERING SYSTEM
DISH DROP
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PREP COOKING LINE
COOK CHILL SYSTEM
REFRIGERATED MEAT CUTTING ROOM
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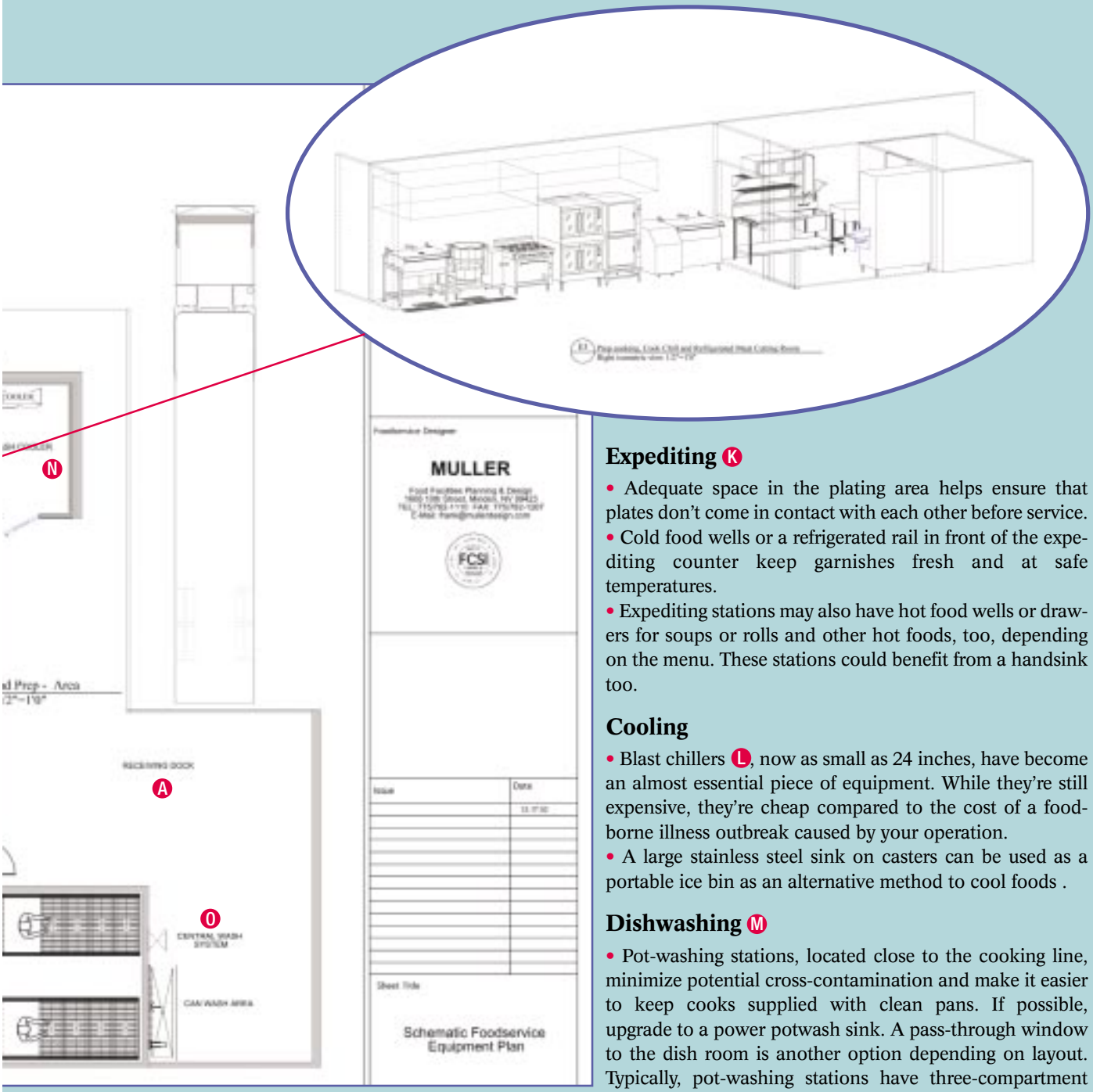

• Steam tables J hold hot foods such as sauces and vegetables at the proper temperatures until they're ready to be served.
• Hot holding cabinets or CVAP units hold foods at proper temperatures in high volume kitchens.
• Adequate ventilation on the line helps remove cooking odors and traps grease, keeping the kitchen cleaner. Operations that do a lot of broiling or frying should consider an auto-wash hood.

Expediting K

• Adequate space in the plating area helps ensure that plates don't come in contact with each other before service.
• Cold food wells or a refrigerated rail in front of the expediting counter keep garnishes fresh and at safe temperatures.
• Expediting stations may also have hot food wells or drawers for soups or rolls and other hot foods, too, depending on the menu. These stations could benefit from a handsink too.

Cooling

• Blast chillers L, now as small as 24 inches, have become an almost essential piece of equipment. While they're still expensive, they're cheap compared to the cost of a foodborne illness outbreak caused by your operation.
• A large stainless steel sink on casters can be used as a portable ice bin as an alternative method to cool foods .

Dishwashing M

• Pot-washing stations, located close to the cooking line, minimize potential cross-contamination and make it easier to keep cooks supplied with clean pans. If possible, upgrade to a power potwash sink. A pass-through window to the dish room is another option depending on layout. Typically, pot-washing stations have three-compartment sinks with a high pressure spray hose. Sinks should be big enough to completely immerse the largest pots, especially in the third sink containing sanitizing solution. Provide adequate counter and shelf space to air-dry pots and pans.
• Dish rooms located closer to the dining room will help prevent dirty dishes from coming back through the kitchen.
• Proper water temperature for both wash and rinse cycles are critical. A booster heater, or even more than one in series, might be necessary to get the best performance from your dish machine.

• Automatic chemical dispensers make sure dish machines are operated with the proper concentration of detergent and sanitizer.
• A garbage disposer reduces the amount of trash, particularly food waste, which can become a bacterial breeding ground and attract pests.

Trash N

• A cold trash room in warm climates helps reduce odors and keeps pests away.
• Keeping trash removal separated from the receiving area will help prevent cross-contamination and avoid attracting pests.
• Set aside space for recycling materials such as aluminum, glass, cans and paper and a container for used oil from fryers.
• All trash and recycling containers should have tight-fitting covers to keep pests out.

Cleaning/Sanitation

• Quarry tile or poured epoxy floors are the most durable and easiest to keep clean.
• Wall surfaces should be either fiber-reinforced paneling (FRP) or stainless steel or ceramic tile.
• High ceilings make a kitchen feel less cramped. Drop-down ceilings, where used, should be made of cleanable materials such as Mylar-clad gypsum board. An aluminum grid, instead of steel, won't rust.

Bells & Whistles

Design addresses the basic flow of food through an operation. Food safety in the kitchen also can be enhanced greatly with the use of the right tools. Many are relatively inexpensive and can be used in your existing kitchen.

- Color-coded cutting boards and utensils: When prep space is cramped, color-coded utensils can help prevent cross-contamination. Color coded labels are essential for storage safety.
- Temperature monitoring devices: Alarms on walk-ins can alert you to problems. Hand-held recording devices with thermometers help staff check and keep track of food temps.
- Plastic ice buckets.
- Sanitizing solution buckets.
- Cooling wands and paddles.
- Antimicrobial disposable cleaning rags.
- Cleaning solution systems that dispense the proper concentrations.

• Recessed floors or troughs in prep and cooking areas with plenty of drains can accommodate non-slip mats. The floors are easier to clean and the mats can be cleaned in place.
• A portable pressure washer O facilitates cleaning equipment, floors and workstations. If the budget permits, a centrally located steam generator with hose outlets in each work area is another option.

The Designers

Our thanks to Frank Müller, FCSI, Müller Design Associates, Minden, Nev., and Harry Schildkraut, FCSI, vice president, Cini-Little International, Schaumburg, Ill., for their input on this article.

Müller Design Associates provides a full array of kitchen design services for a wide variety of clients including Chevy's, Niebaum-Coppola Winery, Virgin Atlantic Airways, Balboa Café@Squaw Valley, and Thomas Gallo, to name a few. Müller also offers his clients 3D virtual walk-through tours of the facilities he designs and is responsible for creating the "ideal" safe kitchen floorplan and elevations you see here.

Harry Schildkraut, an award-winning designer with Cini-Little for 33 years, counts among his clients Lambeau Field in Greenbay, Wis., Soldier Field, Chicago, Four Seasons Hotels overseas, as well as the employee dining facilities for such clients as Hewitt Associates, Ameritech and Allstate.

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