



Don't Play With Your Food: The Design And Construction Of Food-Related Properties



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The construction of industrial properties is typically straightforward, as most design-builders and general contractors can attest. Today most projects include the use of precast bearing walls, steel columns and roof structure, similar clear heights, docks, drive-in doors and ESFR sprinkler systems. While each job is designed with the individual user in-mind, many of these industrial properties follow a common template. However, this could not be further from the truth when it comes to designing and constructing an industrial property for a food-related end-user. Food processors, packagers, special production manufacturers, research and development companies and test kitchens all require a high-level of knowledge, experience, communication and teamwork to accomplish successfully.

While the majority of construction projects in the past few years have centered around interior renovation projects, one of the greatest sources for new construction has been specialized users within the food industry. This is particularly the case in the design-build construction market owing to the fact that each project requires extensive and detailed plans that relate specifically to the individual user's business objectives as well as to the myriad of rules and regulations for the food industry. The construction of food-related facilities also requires a greater amount of time from concept through completion than other industrial projects.

The planning stage for a food-related facility, whether it's a processing facility or a repackaging operation, is the most crucial element of the project. The initial design requires consultation from numerous experts all of whom must be coordi-

nated by the design-builder. For example, in a recent design-build project our firm completed on behalf of Greenwood Associates, Inc., a national processor of fruit juice concentrates, essential oils and purees, the planning stage included the services of a food safety auditor, a process equipment specialist, a process piping consultant, a process engineer, a security expert, and a pasteurization expert in addition to the typical list of engineers, architects, ownership representatives, subcontractors, MEP designers, fire protection specialists and equipment providers.

As a design-builder for a food-related project, the involvement of each of these individuals is essential to the construction of a facility that is of the highest-quality; meaning that it is productive, safe and efficient, and meets all of the necessary requirements laid out by the industry's multiple regulating bodies. It is imperative that each of these individuals is involved from the initial planning stage of the project as it necessitates a greater number of requirements than most industrial jobs. The more detailed the design is from the on-set; the more likely it is that all of the regulatory requirements will be met and that the number of complications and change-orders will be minimized.

A food-related facility project also requires a higher level of supervision and coordination by the design-builder than is typically the case in industrial construction. As is customary, the design-builder serves as the main source through which all communication from and between the consultants must be run. This is no small feat when a job involves such a substantial number of consultants and experts. It is therefore vital that the design-builder is a skilled and effective communicator and organizer, as it is then their responsibility to coordinate all of the design and construction elements provided by the consultants into the final concepts and construction process.

Experience and specific construction expertise also serve the design-builder well when designing and constructing

a food-related facility. Food-users are generally considered specialized users requiring a customized design for the specified objective. For example, some facilities may include freezers, cooler space, temperature controlled docks or staging areas, specific wall and flooring treatments, conveyor systems, pasteurization equipment, wash-down areas, test kitchens, laboratories, controlled access, mandatory security or specialized MEP requirements. That said the key element to all food-related projects is the necessity of food safety.

As was mentioned earlier, our firm recently completed a 60,000 square foot build-to-suit food concentrate production facility in Nilus, Illinois for Greenwood Associates. Greenwood required the new space for the blending and processing of food concentrates which they then inventory for distribution to manufacturers of salad dressings, fruit juices, alcoholic beverages, etc. This particular project had to meet the U.S. Food & Drug Administration's Hazard Analysis & Critical Control Points (HACCP) food safety management protocol as well as other compliance agencies.

The newly constructed Greenwood operation is a good example of the intricacies involved in the construction of a food processing facility. This particular job included the construction of an onsite laboratory with microbiology and acid/PH testing capabilities to demonstrate food safety compliance; holding tank and blending tank rooms with concrete containment walls; and 3,000 Amp 480 Volt electrical service with a safety switch for temporary back-up power generation for critical systems. The box-in-a-box cooler and freezer feature metal insulated ceilings and walls, roof-mounted condensing units and ceiling-mounted evaporators, and floor constructed with an in-slab glycol heating system all of which ensure that the temperatures remain 35°F and -10°F respectively.

The property also features production areas constructed with insulated metal

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walls, food-grade drop ceilings with FRP panels, and ¼" epoxy, urethane flooring. The process sanitary system for this facility consists of stainless steel floor drains, CPVC waste piping, and an acid neutralization system which neutralizes acids prior to discharge into the municipal waste water system. Compressed air, stainless steel process piping, centrifugal pumps, a boiler steam system, a clean-in-place system, wash-down stations and hand wash stations are all located throughout the facility. These are just some of the project details which had to be coordinated thoroughly in the planning stages and supervised throughout the construction process in order to meet regulatory guidelines.

A food packaging facility, test kitchen, or food laboratory while still possibly requiring refrigerated storage, temperature control and sanitation systems, by contrast may not necessitate all of the aforementioned design elements. Another food-related industrial project, on which our firm is currently underway for Berkshire Refrigerated Warehouse, demonstrates the wide variance between food-related construction projects and the high-degree of complexity typically


involved.

Berkshire is not a processor, but rather a cold storage warehouse that receives bulk product and repackages it for distribution. In other words already finished goods enter the warehouse in bulk, are placed on a cutting line and then repackaged for distribution to food wholesalers. As a result it is required that the product brought into the warehouse is maintained at a consistent temperature at all times through the handling, cutting, repackaging and loading processes. This particular project features the construction of a 14,000 square addition, with insulated metal wall panels, to an existing property. The user also requires the construction of a USDA meat boxing room with sophisticated temperature control and sanitation systems and 11 new, temperature-controlled dock positions.

These two projects not only demonstrate the necessary level of customization and complexity of such projects, but they are also representative of the majority of new, design-build construction projects in the market today. Specialized users, unlike typical industrial users, have a difficult time relocating to an existing space since it has not been designed to meet their requirements. Therefore, it is necessary that they ei-

ther expand on an existing facility if that is an available option, or build an entirely new building that meets both the needs of their business as well as those required by industry regulators.

Every food-related project is highly customized and unique to the user; however, a single driving force lies behind each one – food safety and sanitation. It is critical in all food-related construction jobs that there is no room for contamination. Both the food, and the food handlers, must be kept clean, safe and secure at all times. The level of sophistication and skill required for food-related industrial construction requires the expertise of a design-builder with both experience and a strong commitment to communication and organization. If this type of project is led by a team without the qualifications for this type of work, the results can be delayed, expensive and potentially hazardous. However, when supervised and coordinated properly from the onset, food-related construction projects will result in a facility that is safe, efficient, technologically advanced and that will serve the user for years to come.

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