

Hartford Regional Market Shared-Use Food Processing Center



Final Report December 2014

*Design and Business Assistance for Installation of Kitchen and
Food Processing Center at the Hartford Regional Market*

Prepared by:



FOOD INNOVATION CENTER

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1.0 SITE VISIT AND REVIEW

On June 19, 2014, the Rutgers Food Innovation Center (FIC) project team, represented by Lou Cooperhouse, Acting Director, and George Sansiveri, Engineering Consultant, visited the Hartford Regional Market Facility. The FIC team met with Steven Reviczky, Commissioner, Connecticut Department of Agriculture (CTDOA); Stephen Anderson and Linda Piotrowicz of the CTDOA; and Mark Brodeur, Building Superintendent from the CT Marketing Authority.

During this meeting, an overview of the project scope and review of the objectives of the Specialty Crop Block Grant were provided by the CTDOA team, and a PowerPoint overview of the Rutgers Food Innovation Center model and best practices in business incubation were provided by Lou Cooperhouse of the FIC. Following these introductions and further discussions, a tour of the Hartford Regional Market occurred, including a visit to possible locations for the kitchen and food processing facility. In addition, visits of other food processing operations at the Hartford Regional Market occurred, as some of these can potentially serve in a partnership role on this project. At the conclusion of the tour, a meeting occurred to discuss next steps for this project, and Lou Cooperhouse indicated that he felt that the Rutgers FIC portion of this project could be completed prior to the end of September 2014.

In order to complete the requirements for this project as best as possible, a specific building size and location need to be identified. Several locations were evaluated during this visit. It was discussed that the likely location of the kitchen and food processing facility will require 4 “units” within the Hartford Regional Market and a proposed location would be at an existing business called “The Farmer’s Cow”. As a result, the Farmer’s Cow location has been the subject of the analysis for this project. Photos of the Farmer’s Cow location follow below:



Exterior of Farmer’s Cow building, showing shipping and receiving bays and employee entrance



***L- Interior of building, showing office and shipping and receiving area
R- Exterior back of building, showing adjacency of rail spur***



L and R – Existing processing and cold storage areas

2.0 CLIENT FOCUS

Consistent with the objectives of the Specialty Crop Block Grant and with primary and secondary market research that has been conducted, it is suggested that the Hartford Regional Market Facility should focus on the needs of the following types of clients within the food industry

- A. **Farmers and Other Agribusinesses** desiring to create new businesses, enter new markets, and enhance their profitability with value-added and differentiated specialty crop agricultural products.
- B. **Agricultural Cooperatives** seeking to improve the livelihoods of local communities through the efficiencies and economies of collaborative operational, organizational, marketing and selling practices, and enhance their profitability with value-added and differentiated specialty crop agricultural products.
- C. **Startup and Established Food Entrepreneurs** desiring to create new prepared food business ventures from local specialty crops, that lack a food processing facility and equipment that will enable production under sanitary conditions and under government inspection.
- D. **Retail and Foodservice Establishments, including food trucks, farm-to-table restaurants and specialty food stores** seeking to produce and/or market locally-produced value-added specialty crop agricultural products.

3.0 PRODUCT FOCUS

The market potential for clients of the Hartford Regional Market Facility will be significant, and will present many opportunities for the development, commercialization and sales of value-added specialty crop products.

It is recognized that Section 101 of the Specialty Crops Competitiveness Act of 2004 (7 U.S.C. 1621 note) and amended under section 10010 of the Agricultural Act of 2014, Public Law 113-79 (the Farm Bill) defines specialty crops as “fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture),” in which eligible plants must be cultivated or managed and used by people for food, medicinal purposes, and/or aesthetic gratification to be considered specialty crops. Processed products shall consist of greater than 50% of the specialty crop by weight, exclusive of added water. A number of categories of specialty crops would be very appropriate for food industry clients of the Hartford Regional Market Facility. Consistent with examples of the most common specialty crops identified by the USDA, this would include the following five categories of food products:

A. Fruits and Tree Nuts

| | |
|---------------------|--------------------------|
| Almond | Grape (including raisin) |
| Apple | Guava |
| Apricot | Kiwi |
| Avocado | Litchi |
| Banana | Macadamia |
| Blackberry | Mango |
| Blueberry | Nectarine |
| Breadfruit | Olive |
| Cacao | Papaya |
| Cashew | Passion fruit |
| Citrus | Peach |
| Cherimoya | Pear |
| Cherry | Pecan |
| Chestnut (for nuts) | Persimmon |
| Coconut | Pineapple |
| Coffee | Pistachio |
| Cranberry | Plum (including prune) |
| Currant | Pomegranate |
| Date | Quince |
| Feijou | Raspberry |
| Fig | Strawberry |
| Filbert (hazelnut) | Suriname cherry |
| Gooseberry | Walnut |

B. Vegetables

| | |
|---|--------------------------------------|
| Artichoke | Mustard and other greens |
| Asparagus | Okra |
| Bean Snap or green, Lima Dry, edible | Pea Garden, English or edible pod |
| Beet, table | Onion |
| Broccoli (including broccoli raab) | Opuntia |
| Brussels sprouts | Parsley |
| Cabbage (including Chinese) | Parsnip |
| Carrot | Pepper |
| Cauliflower | Potato |
| Celeriac | Pumpkin |
| Celery | Radish (all types) |
| Chive | Rhubarb |
| Collards (including kale) | Rutabaga |
| Cucumber | Salsify |
| Edamame | Spinach |
| Eggplant | Squash (summer and winter) |
| Endive | Sweet corn |
| Garlic | Sweet potato |
| Horseradish | Swiss chard |
| Kohlrabi | Taro |
| Leek | Tomato (including tomatillo) |
| Lettuce | Turnip |
| Melon (all types) | Watermelon |
| Mushroom (cultivated) | |

C. Culinary Herbs and Spices

| | | |
|-----------------------|--------------------------|--------------------|
| Ajwain | Clary | Malabathrum |
| Allspice | Cloves | Marjoram |
| Angelica | Comfrey | Mint (all types) |
| Anise | Common rue | Nutmeg |
| Annatto | Coriander | Oregano |
| Artemisia (all types) | Cress | Orris root |
| Asafetida | Cumin | Paprika |
| Basil (all types) | Curry | Parsley |
| Bay (cultivated) | Dill | Pepper |
| Bladder wrack | Fennel | Rocket (arugula) |
| Bolivian coriander | Fenugreek | Rosemary |
| Borage | Filé (gumbo, cultivated) | Rue |
| Calendula | Fingerroot | Saffron |
| Chamomile | French sorrel | Sage (all types) |
| Candle nut | Galangal | Savory (all types) |
| Caper | Ginger | Tarragon |
| Caraway | Hops | Thyme |
| Cardamom | Horehound | Turmeric |
| Cassia | Hyssop | Vanilla |
| Catnip | Lavender | Wasabi |
| Chervil | Lemon balm | Water cress |
| Chicory | Lemon thyme | |
| Cicely | Lovage | |
| Cilantro | Mace | |
| Cinnamon | Mahlab | |

D. Medicinal Herbs

| | |
|---------------|-----------------|
| Artemisia | Marshmallow |
| Arum | Mullein |
| Astragalus | Passion flower |
| Boldo | Patchouli |
| Cananga | Pennyroyal |
| Comfrey | Pokeweed |
| Coneflower | St. John's wort |
| Fenugreek | Senna |
| Feverfew | Skullcap |
| Foxglove | Sonchus |
| Ginkgo biloba | Sorrel |
| Ginseng | Stevia |
| Goat's rue | Tansy |
| Goldenseal | Urtica |
| Gypsywort | Witch hazel |
| Horehound | Wood betony |
| Horsetail | Wormwood |
| Lavender | Yarrow |
| Liquorice | Yerba buena |

E. Horticulture Crops, which are food-related

| | |
|-------|-------------|
| Honey | Tea Leaves |
| Hops | Maple Syrup |

4.0 POTENTIAL SERVICE OFFERINGS

Clients of the Hartford Regional Market Facility will need assistance in a variety of areas, which will require staff support from employees or other resources. Assistance will be needed in the following types of areas:

A. Business and Technical Mentoring

I. Business Development

- Business Plan Development Guidance
 - Customer Segmentation
 - Value Proposition, and Unique Selling Proposition
 - Channels of Distribution
 - Market Analysis and Marketing Plan
 - Management Team, Resource Partners, and Strategic Alliances
 - Product Costing and Financial Projections
- Subject Matter Expertise in Food Industry Trends and Technologies
- Market Research and Competitive Intelligence
- Qualitative and Quantitative Consumer Research, e.g. focus groups
- Marketing, Sales and Distribution Channel Strategy
- Access to Resources on Legal Matters such as Corporate Governance, Intellectual Property, Employment Law, Brokerage Agreements, etc.

II. New Product Development

- Concept Generation and Prototype Development
- Ingredient Sourcing and Evaluation
- Formula Optimization and Least Cost Product Development
- Packaging Selection for Cups, Trays, Pouches, Jars, etc.
- FDA and USDA Regulations Counseling
- Nutritional Analysis and Labeling Determination
- Sensory Analysis
- Product Preparation Directions

III. Technology Commercialization

- Process Assessment
- Equipment Assessment
- Packaging Technology Assessment

IV. Quality Assurance and Food Safety

- Shelf Life Testing
- Analytical Standards Development
- Food Safety and Food Security Strategy
- Crisis Management Support
- Quality Assurance Documentation, including Raw Material and Finished Product Specifications, GAP's, GMP's, SOP's, SSOP's and HACCP
- Preparation for Third Party Audit, and Assistance with GFSI standards

B. Workforce Development and Training

Staff or associates of the Hartford Regional Market will ideally provide ongoing training and education programs for food industry entrepreneurs, in areas such as:

- Food Trends and Food Marketplace Overview
- Food Technology and Product Development Process
- Quality Assurance and Food Safety Principles
- Good Manufacturing Practices for Food Producers
- HACCP (Meat/Poultry, Seafood, Juice)
- Legal Considerations for Food Business Ventures
- Sales and Distribution Strategy
- Business Planning

C. Shared-Use Food Processing Space

The Hartford Regional Market kitchen and food processing facility will enable a broad range of value-added agricultural products that can be produced on a shared-use basis, with rental/usage fees based on a hourly or daily rental of space. The processing space and equipment selected will be designed to meet the sanitary requirements of the US Food and Drug Administration (US FDA), and potentially also the US Department of Agriculture (USDA).

It is proposed that the processing segment of the facility will include the following four components:

- 1) “Produce Prep Room” area designed for preparation and processing of fresh-cut fruits and vegetables, including post-harvest preparation, sanitation, peeling, size reduction, microbial reduction technologies and extended shelf-life packaging, all in a controlled environment.
- 2) “Wet process” area designed for an extensive range of thermal processing capabilities including hot-fill quick-chill technologies, blanching, steaming, cooking, roasting, and inclusive of a bottling line and cup/tray filling line allow for automated production. Products will include Fruit and Vegetable Purees and Beverages, Soups or soup concentrates, Sauces, Salsas, Jams and Jelly, Grilled and Roasted Vegetables, and Fruit or Vegetable Entrees.
- 3) “Dry process” area, devoted to equipment used for producing items such as dehydrated fruits, vegetables, and herbs
- 4) “Packaging” area, which allows for packaging of refrigerated, frozen or ambient products, under refrigerated or ambient conditions.

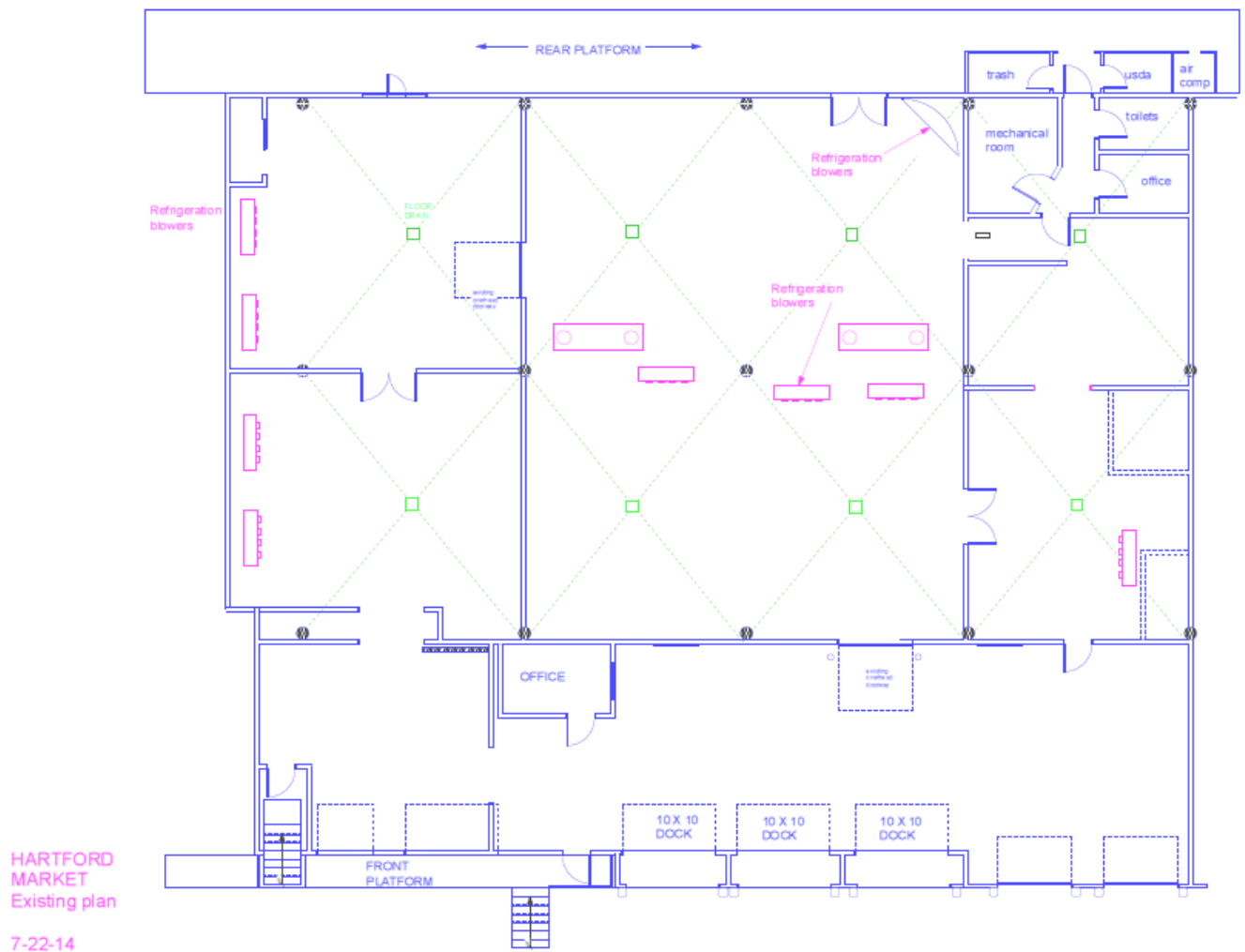
The processing area will be described in further detail in section 5.0 that follows.

5.0 CURRENT FACILITY LAYOUT

As described in Section 1.0, several locations at the Hartford Regional Market were evaluated during the site visit. It was discussed that the likely location of the kitchen and food processing facility will require 4 "units" and a proposed location would be at an existing business called "The Farmer's Cow". As a result, the Farmer's Cow location has been the subject of the analysis for this project.

Compared to other locations at the Hartford Regional Market, the Farmer's Cow location has a layout that is conducive to the flow that would be ideal for a shared-use food processing facility. It also contains a total of seven bay locations – some of which are sealed docks, and some roll-up doors – which offers advantages too as some of these bay locations can be used for storage of raw materials, finished products, or equipment.

A CAD drawing of the current Farmer's Cow facility, in its current format, is as follows:



6.0 PROPOSED FACILITY LAYOUT

The Hartford Regional Market kitchen and food processing facility will need to provide great flexibility given the varying needs of clients, while being “best in class” in terms of sanitary design, fit and finish, and operating protocol. This facility will need to be multi-dimensional and address the following:

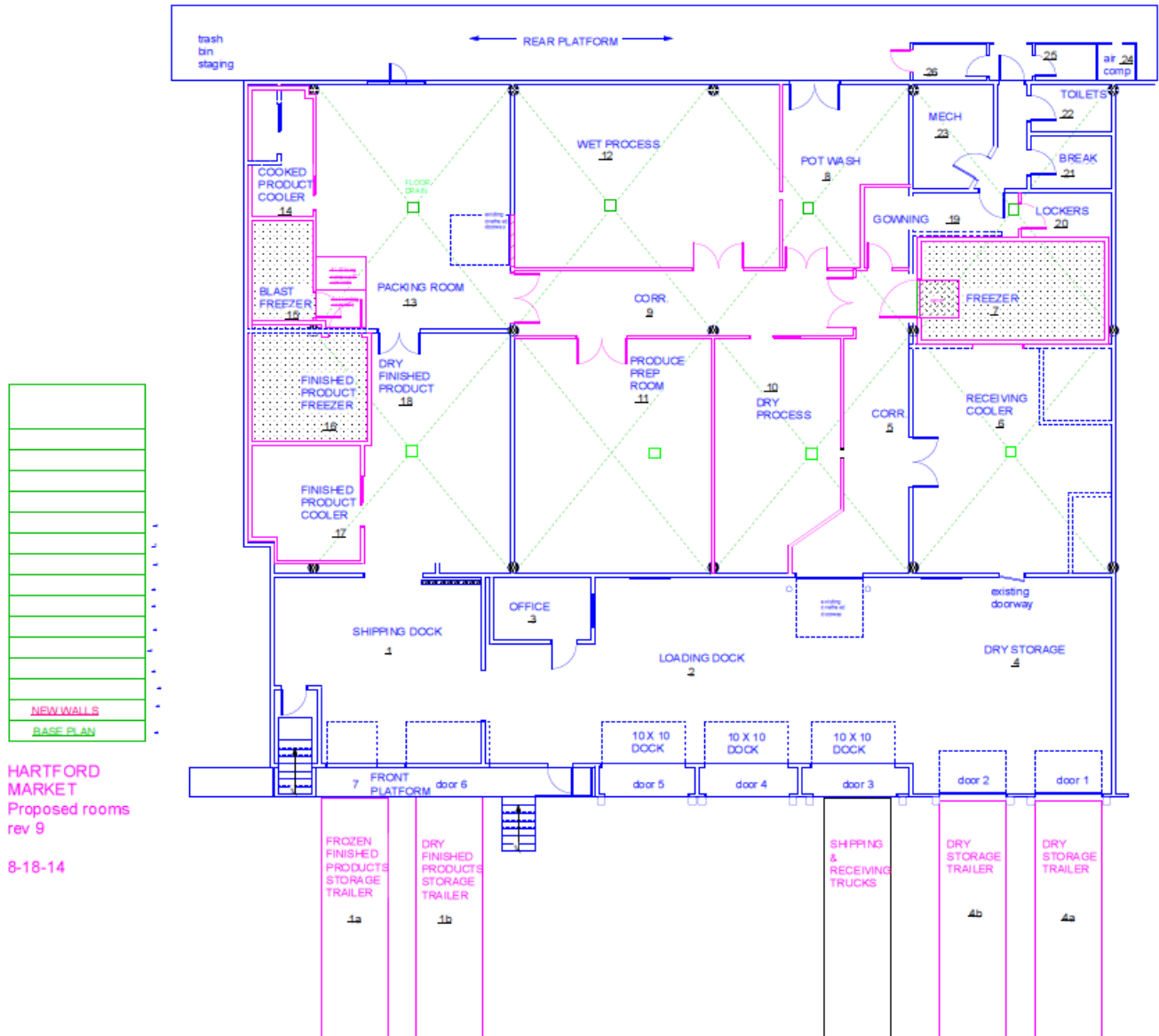
- *Equipment:* Versatile equipment will be needed to help a client from bench-top to scale production, with some degree of automation to enable least-cost manufacture.
- *Products:* A diverse array of value-added processes will be required by clients that choose to produce ready-to-eat, ready-to-heat, and ready-to-cook products.
- *Packaging:* A diverse array of packaging will also be needed including semi-automatic filling of bottles, cups, bags, etc., for retail and foodservice applications.
- *Regulatory:* The sanitary facility design and personnel Standard Operating Procedures (SOP's) will need to minimize potential for microbial cross-contamination, and meet/exceed the needs of FDA and USDA for commercial sale
- *Storage:* Capabilities to store both raw materials and finished products in the ambient, refrigerated and frozen states will exist.
- *Special Certifications:* Products may need to be packaged with specialized quality standards, such as Organic, Kosher, non-GMO and/or Gluten-Free.

The current facility has been redesigned, as shown on the CAD illustration that follows, to incorporate the following processing rooms and supporting areas:

1. Administrative Needs
2. Employee Gowning Area and Locker Room
3. Wet Processing Area
4. Dry Processing Area
5. Produce Prep Area
6. Packing Room
7. Sanitation/Potwash Area
8. Raw Material and Finished Good Storage
9. Equipment Storage
10. Shipping and Receiving Dock(s)

The activities that will occur within each of these ten functions are described in the section that follows

Hartford Regional Market kitchen and food processing facility Proposed Facility Layout – Illustrating Room Locations



Revision 9b – Hartford Market Process Plan, showing new wall locations, and room identification and number

7.0 FACILITY FUNCTIONAL REQUIREMENTS

The Hartford Regional Market kitchen and food processing facility will need to provide a variety of functional and space requirements for sanitary operation of a shared-use food processing facility, as well as the administrative and educational needs and other services that will be needed. A summary of 10 of these functional needs is as follows, and each of these is addressed on the proposed facility layout illustrated in the previous section of this report:

1. Administrative Needs

- Office for Director
- Office and File Storage
- Break Room
- Men's and Women's Rest Rooms

2. Employee Gowning Area and Locker Room

A dedicated locker room and employee gowning area will be required. In addition, it is imperative that there be a controlled access point into the processing areas to minimize potential contamination by employees. They will need to walk through a footbath and/or an area that is sanitized with a doorway foamer (see picture below). A handwash station (hands-free with knee valve or electronic) must also be provided prior to entering the processing areas.

Example of washing/gowning area on left, Entryway foamer installed in a hallway shown in middle picture and outside door on right picture



3. Wet Processing Area

- **Room Temperature:** Ambient, air conditioned
- **Process Capabilities:** Designed for an extensive range of thermal processing capabilities including blanching, steaming, cooking, roasting, and hot-filling followed by quick-chilling, and includes a bottling line and cup/tray filling line allow for semi-automated production.
- **Product Capabilities:** Soups, sauces, jams, jellies, salad dressings, beverages, fruit and vegetable purees, etc.
- **Potential Equipment Needs:** 6-burner range(s) with oven, tilting kettle, kettle with scraped surface agitation, combi-oven(s) for dry and/or wet heat application, stainless steel tables/work-surfaces, scales, bottling line for hot-filling liquids, labeler, etc.

Example of small-scale bench-top equipment shown on left, larger kettles and commercialization equipment shown in middle, and bottling line shown on right



4. Dry Processing Area

- **Room Temperature:** Ambient, air conditioned
- **Process Capabilities:** Devoted to equipment used for blending, mixing, dehydrating, cooling, etc.
- **Product Capabilities:** Seasoning blends, and dehydrated fruits, vegetables, and herbs utilizing a variety of food technologies.
- **Potential Equipment Needs:** Mixers, oven, stainless steel oven racks, stainless steel work tables, shrink wrap machine, tubular frame rolling racks and sheetpans, dehydrator, metal detector, etc.

Example of small-scale bench-top mixing equipment shown on left, double rack oven (as example of commercialization equipment) shown in middle, and convection/combi oven shown on right



5. Produce Prep Area

- **Room Temperature:** Refrigerated (33°-40°F)
- **Process Capabilities:** Devoted to equipment used for washing, peeling, cutting, dicing, and slicing fresh-cut fruits and vegetables, using microbial reduction technologies in a controlled environment
- **Product Capabilities:** Fresh cut fruit; fresh cut vegetables, purees, and other value-added produce products. This would also include applications for culled, undervalued, and surplus agricultural commodities in order to create value-added products from lower grade raw materials that may otherwise be destroyed
- **Potential Equipment Needs:** Washing system (used to wash fruits and vegetables to remove surface dirt and debris, utilizing chlorine or PAA solution, with an associated water chiller to cool down wash water), mechanical peelers, Spin Dryer (used for vegetables to remove excess moisture after washing), slicing equipment, dicing equipment, stainless steel tables, metal detector

Example of refrigerated processing room, with sanitary design (e.g., FRP Wall Panels and epoxy or similar floor surfaces) shown below, and a fresh-cut produce operation.



6. Packing Room

- **Room Temperature:** For refrigerated (33°-40°F) packaging of perishable or frozen products, that can also be used as an air-conditioned area for packaging of shelf stable products.
- **Process Capabilities:** Devoted to equipment used for assembly and packaging of raw or pre-cooked and chilled, frozen or ambient components into finished packaging.
- **Product Capabilities:** All product categories
- **Potential Equipment Needs:** Machine for packaging products into thermoformed pouches with vacuum/MAP capabilities with variety of tooling options, vertical form-fill-seal machine for rollstock bags and/or bag sealer for preformed bags with vacuum/MAP capabilities, double chamber rotary tray sealing machines for heat sealing preformed trays with MAP capabilities with variety of tooling for cups/bowls/trays (photo below), stainless steel tables with conveyors and product picking stations for assembling products, etc.

Example of refrigerated packaging equipment and processes shown below



7. Sanitation/Potwash Area

- Consists of tray washer and/or three-compartment sink for washing equipment and small wares. Room can also serve as storage location for cleaned equipment.

8. Raw Material and Finished Good Storage

- Raw material and finished product storage will be required for all three product states:
 - Ambient Storage
 - Ambient-stored Ingredients
 - Packaging Storage
 - Ambient-stored finished products
 - Refrigerated Storage
 - Raw materials
 - Finished products
 - Blast chilling capabilities
 - Frozen Storage
 - Raw materials
 - Finished products
 - Blast freezing capabilities

9. Equipment Storage

- Cleaned equipment and small wares that is used on regular basis can be stored in the Potwash Area and throughout the facility. A trailer can potentially be used for storage of infrequently used equipment as well.

10. Shipping and Receiving Dock(s)

- Receiving and shipping areas will enable the receipt of goods in a sanitary fashion.

8.0 PRODUCT AND PROCESS CAPABILITIES

The following product and process capabilities are recommended for the Hartford Regional Market kitchen and food processing facility, which will enable great flexibility:

1. Fresh-Cut Fruits and Vegetables

- a. Products
 - i. Fresh-cut fruits
 - ii. Fresh-cut vegetables
- b. Process
 - i. Bactericidal solution for rinsing and scrubbing fruits and vegetables
 - ii. Mechanical and/or manual peeling system
 - iii. Slicer, dicer, choppers, needed for raw material preparation
 - iv. System for infusing flavor, marinade and any pre-treatment
 - v. Mixing system for making blends
 - vi. Filling, typically by hand
 - vii. Blast chiller or blast freezer
- c. Packaging
 - i. Plastic rigid containers, that may contain film seal and possibly also plastic lid for items like cut fruit, carrot sticks, etc.
 - ii. Preformed bulk trays with heat seal film and MAP
 - iii. Preformed pouch and seal with single or double chamber with vacuum/gas
 - iv. Foam trays for vegetable side dishes, with overwrap shrink film
 - v. Poly-lined box, if frozen vegetables

2. Brined and/or Fermented Fruits and Vegetables

- a. Products
 - i. Brined dill pickles, sauerkraut, and other vegetables such as cabbage, broccoli, green or yellow beans, cucumbers, cauliflower, onions, green tomatoes, artichokes, and carrots (that are fermented for about 6 weeks or longer)
 - ii. Fresh pack pickles and other vegetables (not fermented, and brined for several hours or overnight), such as refrigerator dill pickles, sweet gherkins, and dilled green beans.
 - iii. Relishes made from fruits and/or vegetables that are cooked with seasonings and vinegar and are either hot and spicy or sweet and spicy, and include horseradish, chutneys, corn relish, catsup, etc.
 - iv. Fruit pickles – are usually prepared from whole fruits that are heated in a spicy, sweet-sour syrup, and include pears, peaches, and watermelon rind

- b. Process
 - i. Bactericidal solution for rinsing and scrubbing fruits and vegetables
 - ii. Peelers, Slicer, dicer, choppers, needed for raw material preparation
 - iii. Fermentation drums or pails and holding location for extended periods
 - iv. Kettles for cooking of certain items, e.g. relish
 - v. Boiling water bath system for traditional processing
- c. Packaging
 - i. Glass rigid containers, that may contain film seal and plastic lid
 - ii. Pouch packaging in
 - 1. Thermoformed pouch via horizontal form-film-seal machine, vacuum-skinpack machine, etc. that can pull a vacuum and/or gas flush
 - 2. Preformed pouch via single or double chamber vacuum or gas packaging machine

3. Pasteurization and Hot Fill Line for Liquids and Viscous Products

- a. Products
 - i. Jams and jellies
 - ii. Soups – Vegetable or fruit based
 - iii. Sauces and Stews – Vegetable or fruit based
 - iv. Syrups
 - v. Dessert sauces
 - vi. Condiments – ketchup, mustards, relishes, etc.
 - vii. Wet marinades
 - viii. Beverages (e.g. fruit juices)
- b. Process
 - i. Kettles that provide heat treatment and swept surface agitation (for pasteurization and not commercial sterilization)
 - ii. Choppers, grinders, and/or vertical cutter mixers for raw material preparation
 - iii. Ovens, steamers, rice and pasta cookers, draining systems for raw material preparation
 - iv. Fill temperatures of about 185F.
 - v. Potential filling of particulates that will require agitation at filling stage
 - vi. Capping or lidding
 - vii. Rapid chilling
 - viii. Finished products stored either ambient, refrigerated or frozen
- c. Packaging
 - i. Glass bottles in varied sizing, 4 oz. – 32 oz. typically, capped and torqued ideally in a semi-automated fashion via at least 2-up filler
 - ii. Plastic rigid containers, that may contain film seal and possibly also plastic lid

4. Cold Fill Processing Line for Liquids and Viscous Products

- a. Products
 - i. Salad dressings
 - ii. Pesto
 - iii. Salsa
 - iv. Vegetable or Fruit Purees
- b. Process
 - i. Kettles that provide swept surface agitation
 - ii. May require high speed agitation (~3,500 rpm, with Likwifier or Robot Coupe), and/or choppers, grinders, and/or vertical cutter mixers for raw material preparation
 - iii. May require homogenization, unless accomplished with high speed agitation
 - iv. Potential filling of particulates that will require agitation at filling stage
 - v. Capping or lidding
 - vi. Rapid Chilling
 - vii. Finished products stored either refrigerated or frozen
- c. Packaging
 - i. Glass Bottles in varied sizing, 4 oz. – 32 oz. typically, capped or torqued ideally in a semi-automated fashion via at least 2-up filler
 - ii. Plastic rigid containers, that may contain film seal and possibly also plastic lid
 - iii. Foodservice or Industrial Usage
 - 1. Plastic Pouches/Bags,
 - a. Heat sealed with vertical form film seal machine or vertically-oriented bag sealer (e.g., CVP machine)
 - b. “Tipper tied” with metal or plastic clip
 - 2. Pails – 5 lb. or 10 lb., with lid
 - 3. Drums – up to 55 gallon, with poly-liner (e.g. purees)

5. Grilled/Roasted Fruits, Nuts and/or Vegetable-Based Entrees and Sides

- a. Products
 - i. Whole, sliced or diced vegetables or fruits that have been cooked, grilled, steamed, roasted, baked, fried, braised or seared
 - ii. Nuts that have been roasted, baked, braised, etc.
- b. Process
 - i. Preparation
 - 1. Vacuum tumbler and/or infusion device
 - 2. Steamer
 - 3. Grill marker or Searing machine
 - 4. Convection ovens
 - 5. Kettles
 - 6. Braiser
 - 7. Fryer
 - 8. Batter/breading system and/or coating system
 - 9. Kettles that provide heat treatment and swept surface agitation (for pasteurization and not commercial sterilization)

- 10. Potential post-pasteurization in steam or water (sous vide)
- 11. Choppers, grinders, and/or vertical cutter mixers for raw material preparation
 - ii. Filling, with manual system but using conveyor system
 - iii. Blast chiller or blast freezer
- c. Packaging
 - i. Plastic microwaveable or ovenable trays, with heat seal and secondary packaging (sleeve or carton)
 - ii. Pouch packaging in
 - 1. Thermoformed pouch via horizontal form-film-seal machine that can pull a vacuum and/or gas flush
 - 2. Preformed pouch via single or double chamber vacuum or gas packaging machine
 - iii. Foodservice or Industrial Pack
 - 1. Plastic pouches/bags, with heat seal
 - 2. Poly-lined box

6. Dehydrated Ingredients and Jerky

- a. Products
 - i. Dehydrated vegetables
 - ii. Dehydrated fruits
 - iii. Dehydrated nuts, seeds, etc.
- b. Process –
 - i. Slicer, dicer, choppers, needed for raw material preparation
 - ii. System for infusing flavor, marinade and any pre-treatment
 - iii. Dehydrator – Multi-rack with capabilities for relatively rapid dehydration time, and potentially usage of steam/dry heat capabilities and humidity control
 - iv. Smoke house with natural smoke and flavor infusion capability
 - v. Blender for making blended dehydrated products
 - vi. Filling process
- c. Packaging
 - i. Plastic bags or pouches, with heat seal
 - ii. Possibly stand-up pouches
 - iii. Plastic rigid containers, that may contain film seal and possibly also plastic lid

9.0 REGULATORY REQUIREMENTS OVERVIEW

The Hartford Regional Market kitchen and food processing facility will operate under state and federal regulatory guidelines, and will be under US FDA inspection. Some further information about the requirements of the FDA and the state are as follows:

FDA

The US FDA, an agency within the Department of Health and Human Services, oversees much of the nation's food supply as well as drugs, and medical devices. The FDA is the regulatory agency that enforces the laws enacted by the U.S. Congress and is the agency charged with protecting consumer health, safety, and welfare. The Federal Food, Drug and Cosmetics Act of 1938 (FCDA) (21 U.S.C. 301-392) is the basic food and drug law of the United States. The FDA is responsible for interpreting the law and writing regulations concerning specific food products and processes. This law applies to foods and drugs for human or animal consumption, cosmetics, and medical devices.

Rules and regulations established by the FDA are published in Title 21 of the Code of Federal Regulations (CFR). Title 21 of the CFR, in Parts 1-99, covers the general regulations for the enforcement of the Federal Food, Drug, and Cosmetic Act and the Fair Packaging and Labeling Act. Parts 100 to 169 address the food labeling, food standards, good manufacturing practices for foods, low acid canned foods, and acidified foods. Parts 170 to 199 is concerned with food additives. Parts 800 to 1299 include regulations under the Federal Import Milk Act, and regulations for control of communicable diseases and interstate conveyance sanitation. These laws are intended to assure that foods are safe to eat, pure and wholesome, and produced under sanitary conditions.

FDA inspectors are given authority to inspect any establishment where food is processed, packaged, or held for shipment in interstate commerce. Inspection can also be done on products after shipment, on vehicles used to transport food in interstate commerce, equipment, finished products, containers, and labeling. The FDA provides specific definitions for adulterated and misbranded foods.

FDA is also the agency specifically charged with inspection and registration of shelf-stable or canned foods. By definition, canned foods include those preserved in glass jars and not requiring refrigeration prior to opening. In many areas inspection of canning establishments is contracted to state agencies to administer.

The FDA requires a Hazard Analysis and Critical Control Points (HACCP) program for seafood products and certain others as well. More and more distributors and retailers are requiring HACCP plans for all products they purchase so the facility operator may well consider having all producers work under HACCP. Utilization of HACCP programs in all areas of the kitchen operation will also help demonstrate to regulators that safeguards exist to prevent cross-contamination among the different producers using the facility at the same time.

Low acid or acidified food processing must be done under the supervision of an individual who has attended and passed one of the Better Process Control Schools (BPCS.) The course is broken down into two days of acidified foods and two days of low acid foods and retorting. While only the acidified food part is required for a facility that is not retorting, the training is valuable in working with producers and preparing them to use other retorting facilities. As for all FDA processing, the state requires all plants to operate under the provisions of Code of Federal Regulations, Title 21, Parts 108, 110, 113 and 114. These sections are covered in great detail in the Better Process Control Schools.

FDA requires that a “processing authority” review recipes and procedures for all low acid or acidified foods. The process authority has scientific training and facilities that allow him or her to submit a “process schedule” that the FDA deems valid and safe. All food-processing facilities must be designed to comply with 21CFR, Part 110, Good Manufacturing Practices.

The FDA does not approve, license, or issue permits for domestic products shipped in interstate commerce. The agency, will however, provide endorsement on export certificates that the plant has passed FDA inspection.

State and Local Health Agencies

The Department of Consumer Protection in the State of Connecticut provides oversight over foods and standards, and this Food and Standards branch is led by Frank Greene, Director.

The Food Program regulates persons and businesses that manufacture or sell food products; inspects retail and wholesale food manufacturers that operate, transport or store food; oversees bakery, non-alcoholic beverage/cider, wholesale frozen desserts, retail frozen desserts and food vending machine licenses, laws and regulations, and conducts food manufacturing inspections under FDA contract.

10.0 GOVERNANCE RECOMMENDATION AND ORGANIZATION

A key initial strategy for the Hartford Regional Market shared-used food processing operation will be to determine its optimal operating and organizational structure.

Based on best practices at similar shared-use food processing facilities in the US, and other business incubation centers throughout the nation serving other industry sectors, it is recommended that the ultimate legal structure for the Hartford Regional Market shared-use facility be established as a stand-alone, 501(c) (3) – Non-Profit Corporation. It may make sense for this non-profit, however, to be affiliated with the Connecticut Marketing Authority, Connecticut Farm Bureau, University of Connecticut (via their Foundation, or another appropriate legal structure) and/or another regional partner, university or college in order to leverage their resource capabilities, fundraising potential and economic impacts.

This organizational structure will provide the following benefits to the shared-use food processing program:

- Allows operation as a business, and speed, decision-making and efficiency with clients, which are critical for creating impacts and providing excellent customer service
- Allows for greater independence and flexibility in hiring, scheduling, salaries, staffing, logistics and administration
- Allows for maximum goodwill in community with a stand-alone, separate identity that can potentially capitalize on parent organization identity, with focus on greater needs of the community
- Allows for tax benefits for donors
- Appealing structure for fundraising efforts, and may facilitate options and eligibility for certain grants
- “Open Records Act” or “Freedom of Info Act” type provisions are not applicable
- Allows a strategy of confidentiality from third parties to be implemented, maintained and preserved, which is of extreme importance to for-profit client companies
- Allows for leveraging of operational infrastructure and associated costs of parent organization, yet enables greater efficiency and cost management, with potentially reduced headcount needs for finance and administration
- Can potentially have flexible operating hours and be open on weekends, holidays, second shift or as needed, which may be quite important to client needs
- Can be more resistant to changes in administration of parent organization
- Allows for independent Advisory Board and independent credibility in the local business community
- Allows parent organization to remain distant from any negative publicity, but to deliberately capitalize on any positive publicity with press releases, etc.
- Procurement of goods and services may be subject to discounts, due to non-profit nature of entity and possible tax benefit from in-kind donations
- Maintains a separate financial structure from the parent organization
- Parent organization is subject to minimal risk from incubator business activities

Staffing Strategy, Structure and Position Descriptions

The resources that will need to be developed by the Hartford Regional Market shared-use food processing program will consist of three components:

- **Hartford Regional Market Team**, which will include a dedicated but lean organization that has broad food industry, entrepreneurial and/or community service experiences.
- **An *Internal Network of Resources*** throughout the parent institution(s) and/or strategic partners composed ideally of a diverse array of departments and centers
- **An *External Resource Network*** composed of federal, state, and community agencies, venture capital associations and investor groups, commodity and trade associations, service providers, industry consultants, etc.

In implementing this three-component strategy, the Hartford Regional Market team will serve as the *aggregator and integrator* of these resources.

When determining the level of expertise and skills required by the Hartford Regional Market team, it is also beneficial to review the type of Service Offerings that will need to be provided. As described previously in this report, these service offerings are quite broad and include:

- Business and Technical Mentoring (including Business Development, New Product Development, Technology Commercialization, Quality Assurance and Food Safety, and Ongoing Business Mentoring)
- Workforce Development and Training
- Management of a future Incubator facility that will be fully equipped and will provide a shared-use food processing space
- Community Engagement

As such, the Hartford Regional Market team will need to bring together a broad set of resources and capabilities to meet the needs of its clients, and excellent communication and coordination skills will be needed to develop the many alliances that will be required.

It is recommended that the following team members form the core for the Hartford Regional Market shared-use food processing operation:

- Executive Director, Hartford Regional Market
- General Manager and/or Manager, Facilities and Operations
- Manager, R&D and Quality Assurance

A description of some of the roles and tasks for each of these positions is as follows:

Executive Director, Hartford Regional Market shared-use food processing operation

This individual will provide overall management and strategy development for the Hartford Regional Market shared-use food processing operation, and will oversee full-time and part-time staff associated with facility operations, business and technology programs, and financial and administrative management.

The individual that will serve as Director will ideally have the following qualities: food industry expertise; a track record of leadership, innovation, and entrepreneurship; strong interpersonal and communication skills and the ability to effectively form collaborations; the ability to manage multiple projects simultaneously and efficiently; and exceptional character, integrity and respect for others.

The Director will be the primary decision maker charged with overall management and strategy development for the Hartford Regional Market program, and will be empowered to make decisions subject to oversight by an Advisory Board and/or state leadership or other reporting structure that will be created. The Director will be responsible for day-to-day operations of the incubator as well as assisting business start-ups in the incubator. Roles of the director will include:

- Strategic planning and milestone tracking
- Develop a series of services that will be provided
- Developing a local resource network of service providers, including potential strategic alliances with government agencies, university partners, service providers, consultants, mentor programs, etc.
- Develop a contact and customer management software program which can be used for tracking activities for all clients and results in a robust database that can be used for marketing and client administration
- Market the Center and its programs, and develop a robust website that includes local, state, national and international resources that can assist client companies
- Develop and implement formalized client recruitment and screening process in order to determine optimal client candidates and to maximize the aggregate economic impact of the Center
- Actively and selectively identify and engage clients, focused on providing excellent customer service, outcomes and company impacts
- Develop experiential learning opportunity for students, that can gain experiences working on specialized client projects, and potentially work in cross-functional teams that can create specified deliverables
- Identifying and diversifying income-generating activities, and development and implementation of a fee system for incubator services.
- Budgeting for the incubator and its programs
- Provide local oversight regarding the design and equipping of the new Hartford Regional Market processing facility

- Create networking and linkages opportunities for clients, retail and foodservice companies, etc. through industry events
- Grant writing support for the Hartford Regional Market, and for clients
- Ensure compliance with SOP's for the facility, and continually revise and update SOP's and develop new procedures as needed
- Evaluate and report operational and financial performance and impacts of the Center and all of its operations and services, and prepare needed financial reports, budget forecasts and proforma statements
- Ensure that Center follows best practices as outlined by the National Business Incubation Association (NBIA). The NBIA provides resources on incubator management, including a large publications library, an annual conference that draws more than 600 attendees, an annual training institute, and a network of thousands of incubators worldwide.

General Manager and/or Manager, Facilities and Operations

Prior to facility construction, this position will be needed and will be the key contact on operational and infrastructure aspects of the Incubator facility and will provide equipment scheduling, allocation of running time to clients, identification and recommendation of necessary technical skills, etc. Some of the roles of this individual are as follows:

- Provide oversight to the development, establishment and operation of the Food Incubation and processing facility
- Once facility has been constructed/renovated, manage its day-to-day activities and requirements, including the scheduling and management of processing rooms and equipment, and the oversight of production operations, engineering, maintenance and sanitation staff to ensure that the clients' needs are appropriately and responsibly managed
- Interface with clients on daily basis, and personally manage operations and engineering projects as needed
- Ensure compliance with SOP's for the Hartford Regional Market, and continually revise and update SOP's and develop new procedures as needed
- Establish and/or maintain the center's operating structure and protocol, and the incubator's building regulations, tenant agreements, schedule of rents and other needed policies
- Oversee and manage the training of all employees who will work in the incubator facility (including full-time, part-time, or seasonal employees that may be employed), contracted employees, and/or employees of client companies
- Manage and interact with all incubator-related equipment suppliers, service providers, contractors, and employment agencies utilized, and other relevant vendors
- Develop Maintenance program for the Center, and compliance with MSDS
- Oversee Sanitation program for the Center, and quantitative and verifiable method to ensure efficacy via environmental microbiology program

Manager, R&D and Quality Assurance

Once the facility has been constructed, this position will be the key contact on research and development and quality assurance aspects of the Incubator facility and will provide a variety of services to clients of the Center. Roles of this individual include the following:

- Develop, implement and maintain research and development, sanitation, QA and training programs for the Hartford Regional Market facility and program
- Provide personalized & customized technical support to Center clients in the areas of product & process development, ingredient and finished product specifications support, QA, food safety, regulations & compliance
- Develop protocol & manage day-to-day operations related to QA, sanitation activities, and microbiological and analytical testing
- Develop and implement policies and procedures needed for obtaining 3rd party certifications for the operations, including GFSI Certification.

Advisory Board

In accordance with best practices identified by the National Business Incubation Association, it is strongly recommended that an Advisory Board be created for the Hartford Regional Market food processing operation, unless an existing Advisory Board (e.g., for the Connecticut Marketing Authority) is determined to be appropriate. This will be strictly advisory in nature and not a Board of Directors or other requirement for the entity itself (e.g., governance for a non-profit). The Advisory Board should comprise members from the parent institution(s), allied agencies and institutions, and from relevant members of the community and private sector. The major purpose of the Advisory Board will be to provide guidance to the Hartford Regional Market program, and the Center's Executive Director, in assessing the strategic direction and impacts. It is proposed that the Advisory Board meet quarterly, unless more frequent meetings are requested. The Advisory Board may also take on other roles, which may include:

- Support and/or leadership in fundraising activities
- Strategic partner development and impact enhancement
- Interview of applicants to key management positions
- Review and recommend policy and guidelines for Center operations
- Review annual operations plans and budgets and advise Director
- Conduct annual assessment of incubator programs and its impacts, and opportunities for greater emphasis and improvement.

It should also consist of representation from the agricultural and food organizations with the greatest number of members in the State of Connecticut and entities that represent the highest grossing commodities produced based on annual cash sales (e.g. fruit, vegetables, etc.). It can also include a number of strategic partners that the Center has developed, including Connecticut Marketing Authority, State of CT Department of Agriculture, CT Farm Bureau, CT Office of Economic Development, Chamber of Commerce, USDA Rural Business Services, CT Small Business Development Center, etc.

11.0 OPERATIONAL AND SAFETY BEST PRACTICES

It is important that the Hartford Regional Market adopt best practices regarding its operational, safety and quality systems. Some of these processes are described below:

Client Impacts, Screening and Selection Process

Impacts for the Hartford Regional Market shared-use food processing operation can be substantial, and it is important to measure these impacts from the outset of the program. These impacts can include:

- Number of active clients
- Number of graduate clients
- Number of employees currently employed by clients and graduates
- Aggregate revenues of client companies
- New businesses created
- Businesses sustained
- Direct and indirect jobs created
- Direct and indirect jobs retained
- Increased client revenue/profits
- Equity capital (including angels and venture capital financing), secured by clients
- Debt capital secured by clients
- Grant funds secured by clients (including USDA RD, SBIR, foundations, etc.)
- Public-Private partnerships and industry joint ventures
- Student experiential learning and internship/employment
- Number of formal training events/seminars and persons trained
- New locally produced foods introduced by clients and reduced dependence on imports
- More affordable foods observed in marketplace
- Companies that move to the State of Connecticut as a result of Center's efforts
- Commercial space taken in community from graduates

It is important for the Hartford Regional Market program to utilize a contact and customer management software program, such as IncuTrack, ACT or SalesForce, which can be used for tracking activities for all of its clients. Data can be collected for company name, type, address, contact person, minority and women ownership, primary product, years in business, number of employees, and annual revenue. This database will enable ongoing program evaluation, while also enabling continual targeted mailings and customer service to clients of the Center. In addition, it will assist greatly in determining the impacts of the program.

NBIA suggests that all incubators collect these basic data points on an annual basis for all clients, and annually for graduates for at least five years after they leave the program. It is also suggested that an annual report be provided each year, as a means to demonstrate impacts.

The Hartford Regional Market is also strongly encouraged to implement a formalized client screening process in order to determine optimal client candidates and to maximize the aggregate economic impact of the Center. This methodology identifies high growth, high quality clients (“gazelles”) that are driven to succeed and have an increased potential to generate profit for themselves, as well as economic growth for the region and the state.

Suggestions for criteria for ranking clients include:

- Idea/Project potential: Market demand for business/concept and its feasibility
- High Impact Initiative: Number of participants/beneficiaries; revenue and job creation potential
- Ability to Finance: Cash availability of client, and access to funds
- Commitment: Client authority, availability, ability to deliver; passion for business
- Management Team and Capability: Client command of necessary skill sets, experiences, resourcefulness

Clients can then be prioritized and “admitted” to utilize the resources of the Hartford Regional Market program. Those not admitted could be suggested to enroll in food industry training and entrepreneurship classes on “Food Business Basics” or “Food Industry Fundamentals” that can be offered. They may also be referred to other resources, such as the Small Business Development Center (SBDC) and other agencies, based upon their needs.

In addition, it is recommended that all applicants complete a short survey/questionnaire that asks questions, such as:

- Presence of a business plan or business model canvas
- Unique Selling Proposition (USP), mission and vision, and goals and tactics
- Anticipated growth of business and financial projections/objectives
- Project idea (e.g. product/service offered, brand, package design, and the need being fulfilled)
- Description of target customer
- Description of competition and what will differentiate client’s product or make it superior to the products or services that competition may offer
- Obstacles that would impact or prevent others from entry
- State and/or federal regulations that apply to business concept
- Proposed distribution channels
- Sources and uses of funds required, if needed
- Current and projected number of employees, annual revenue and annual expenses

Client Scheduling and Fees Strategy

It is recommended that the facility operate and be scheduled like a “hotel,” with scheduling to be done on a “first come, first serve basis” and clients utilizing rooms or modules for a minimum period of at least one day. During busy periods it is critical that clients plan ahead to prevent larger users from monopolizing certain hours. This policy will force clients who use the kitchen on a seasonal basis not to wait until the last minute to schedule anticipated usage.

It is proposed that the Hartford Regional Market program initially operate during a first shift, that may be extended to 10 hours and occur from 7 a.m. – 5 p.m. This would allow sanitation to occur during part of a second shift, from 5 p.m. – 9 p.m. or thereabouts. Longer-term, it may be desirable to operate the facility for 2 - 3 shifts per day. In this instance, clients may prefer to use the processing facility during peak hours, from 6 a.m. to 6 p.m. However, many incubation programs have found that clients would prefer to use the kitchen during the evening (10 p.m. - 5 a.m.) in order to have more room and use of the kitchen during periods of less activity. If this were the case, one way to encourage off-peak usage is by setting a graduated rate schedule. This will need to be determined as actual and potential facility users provide feedback, and the staffing is available to provide the appropriate levels of service.

Scheduling of clients will be determined by a variety of factors, such as products and processes being used, need for organic, kosher, non-GMO or other requirements, etc. If an operation is under USDA inspection, then it should be produced during the time period that has been established for USDA oversight (or an overtime fee will be charged, assuming the USDA inspector is available during this extended period).

It is proposed that a daily rate for each room/module of the facility be utilized, and not an hourly rate, consistent with a “hotel” model. It is also proposed that it be consistently demonstrated to the client the amount of units of product that can be produced in a given day and the amortized unit cost that would result. For example, if 3,000 units can be produced in a day, and a day’s rental fee is \$600, then the cost of manufacturing each unit would be twenty cents.

A common approach when scheduling rates is to develop a sliding scale based on usage. In true business fashion, it would benefit the incubator to reward substantial users of kitchen hours by adjusting the rate downward as more hours are rented. Other “out of pocket” costs incurred by the facility should be charged to the client, such as direct labor personnel (unless included in basic rate), sanitation personnel (unless included in basic rate), USDA inspection overtime (if applicable), etc.

Also, a start-up fee may be charged to address the one-time expenses of setting up a new client. This might be for a security deposit, initial consultation requirements, mandatory training requirements, registration fees that may be imposed, etc.

"Anchor" clients are highly desirable and should be aggressively sought, and these clients may be given a discounted rate for a commitment to long-term usage of the facility.

A separate financial plan for the facility is strongly recommended, to determine base rates and fee structures that will provide affordable rates to the community but also provide the necessary income required for Center sustainability.

Food Safety and Quality Systems, and Standard Operating Procedures

The Hartford Regional Market will need its clients to employ food technologies in order to enhance product safety and extend product shelf life. A number of food technologies have been developed aimed at preventing food pathogens from contaminating and/or growing on food products. These technologies are identified as “hurdles” or “barriers” and have varying effects on the safety and shelf life of food products. Their level of effectiveness is dependent in part on *which* technology is used, the *degree* to which these technologies are applied, and whether *multiple* hurdle and barrier technologies are used. Just as their name implies, “hurdle” technologies can in fact be “overcome” by food pathogens. Nevertheless, deployment of these technologies can make foods increasingly resistant to growth by pathogens.

Hurdle technologies used in the manufacturing of value-added fresh-cut produce products include the following:

- **Good agricultural practices** - including GAP certification, rapid cooling, and sanitary on-farm harvesting and post-production processes
- **Formulation technologies** - including utilization of abrasive scrubbing and antimicrobial systems used in vegetable/fruit washing, bactericidal agents used in product sauces or marinades, pH control, water activity control, etc.
- **Packaging technologies** - that include film materials that affect oxygen transmission rate, light transmission, condensation, and product respiration; modified atmosphere packaging which alters the gas environment within a package; and active and intelligent packaging systems that provide an array of benefits such as the scavenging of oxygen or release of carbon dioxide, or indicators that mimic temperature abuse or the ripening of produce.
- **Thermal or non-thermal processing hurdles**, which may include the heating of product either before or after the packaging process, and include techniques such as hot-fill processing and sous vide post-packaging pasteurization; or non-thermal “cold pasteurization” techniques such as ultra high pressure processing
- **Distribution systems** – that can maintain “superchill” temperatures, just a few degrees above the freezing point of the product and on a consistent basis throughout as much of the life cycle of the product as possible.

In the design of this facility, a “clean room” environment must be incorporated within the ready-to-eat (RTE) area, which must:

- Ensure that there is separation of Raw and Ready-to-Eat Areas, Equipment and Personnel in these Areas and
- A filtered air system with positive air pressure in RTE rooms is utilized. This can be accomplished with a MERV 8 or higher room filters which will remove a great percentage of bacteria and airborne particulates, or a HEPA (High Efficiency Particulate Air) system can be used in higher risk situations. In addition, air purification wall-mounting systems can also be added, which typically utilize UV, photocatalytic

oxidation (PCO) and/or ozone. Positive air pressure is critical in RTE rooms, in which air flow must proceed from packaging to processing to raw material preparation to raw material receipt in one direction and positive to the outside. Makeup air is one of the central issues maintaining clean airflow in the processing plant, and should be appropriately designed into the air handling system. Furthermore, air quality microbial testing should occur in RTE rooms on a regular basis, and should be part of the environmental monitoring program.

The Hartford Regional Market shared-use food processing operation will need to develop standardized operating forms for usage, which will require continual updating, and include items such as the following:

Client Standard Operating Procedures

- Client Protocol and Guidebook (How to Work With Us)
- Visitor Guidelines
- Client Interest Questionnaire
- Client Intake Form
- Client Agreement Template – Business Mentoring
- Client Agreement Template – Facility Usage
- Client Agreement Template – Confidentiality

Quality Assurance Documents

- Hartford Regional Market Commitment to Food Safety
- GMP Policy for Plant Personnel
- GMP Policy for Visitors
- GMP Policy for Sanitation Personnel
- Adverse Health Policy Statement
- HACCP Plan Templates
- Allergen Program
- Emergency Preparedness and Recall Procedure
- Food Defense, Bioterrorism and Facility Safety Plan- this food security system should also address secured storage for raw and finished product, the alarming of fire egress doors, etc.
- Foreign Materials Policy (Metal Detection, Glass, and Brittle Plastic)
- Self-Inspection Policy and Procedures for Food Safety
- Receiving and Storage Policy
- Hold and Release Practices
- Listeria Prevention Policy
- Coding and Traceability Policy
- Blood-borne Pathogen and Bodily Fluids Policy
- Chemical Policy
- Facility Maintenance and Construction Policy
- Policy and Procedure Change Process
- Record Retention Schedule
- Regulatory Information and Updates

- Lock-out Tag-out Policy
- Sanitation Program, and Sanitation Standard Operating Procedures
- Pest Control Program
- Truck Inspection Procedures
- Storage & Handling of Inedible Meat Materials
- Thawing Frozen Ingredients
- MSDS Policy and Log

Quality Assurance Forms

- GMP Training Signature Document
- Adverse Health Policy Signature Document
- MSDS Training Signature Document
- Batch Sheet Form
- Change / Revision to a Policy or Document
- Quality Hold Log
- Metal Detector Log
- Certificate of Analysis
- Pre-Op Inspection Form for Processing Rooms
- CCP-1 Meat & Poultry Cooked Temperature Template
- CCP Meat & Poultry Temperature Stabilization Record Template
- CCP Presence of Allergen Statement on Box/Package
- Filling & Sauce Cooked Temperature Record Template
- Finished Product Weight Checks Template
- Formula and Label Verification Form
- Shipping and Receiving / Inventory Tracking
- Inverted Jar Time Record

Potential Grant sources

The following are some grants that the Connecticut Marketing Authority, State of CT Department of Agriculture, and/or other strategic partners may consider for capital and operating costs towards the development of the Hartford Regional Market shared-use food processing facility. Most grants listed are currently closed, but become available throughout the calendar year. The first 5 grants listed below are overseen by USDA Rural Development and others programs by other USDA agencies. The tenth program listed is administered by the US EDA and supports business incubator facility construction.

1. USDA Rural Business Enterprise Grants (RBEG)

http://www.rurdev.usda.gov/bcp_rbeg.html

- Amount: Generally grants range \$10,000 up to \$500,000
- Purpose: The RBEG program provides grants for rural projects that finance and facilitate development of small and emerging rural businesses help fund distance learning networks, and help fund employment related adult education programs. To assist with business development, RBEGs may fund a broad array of activities. There is no maximum level of grant funding. However, smaller projects are given higher priority.

2. USDA Rural Business Opportunity Grants (RBOG)

http://www.rurdev.usda.gov/bcp_rbog.html

- Amount: Maximum Grant Amount: \$100,000
- Purpose: Grant funds must be used for projects in rural areas and they can be used for:
 - Community economic development
 - Technology-based economic development
 - Feasibility studies and business plans
 - Leadership and entrepreneur training
 - Rural business incubators
 - Long-term business strategic planning

3. USDA Rural Development Distance Learning and Telemedicine Grant (DLT)

http://www.rurdev.usda.gov/utp_dlt.html

- Amount: Awards can range from \$50,000 to \$500,000.
- Purpose: The DLT Grant Program is specifically designed to assist rural communities in acquiring distance learning and telemedical technologies so that local teachers and medical service providers who serve rural residents can establish interactive video conferencing links to teachers, medical professionals, and other needed expertise located at distances too far to access otherwise. (Note, we received this at Rutgers by linking the incubator to remote rural sites for educational training, similar to what can be done on neighbor islands – see <http://foodinnovation.rutgers.edu/pdfs/DLTGrantRLS.pdf>)
- Purposes Eligible for 100% Grant include
 - Acquisition of eligible capital assets:
 - Interactive video equipment
 - Audio and video equipment
 - Terminal equipment
 - Data terminal equipment
 - Inside wiring
 - Computer hardware and software
 - Computer network components
 - Other facilities that further DLT services
 - Acquisition of instructional programming that is a capital asset
 - Acquisition of technical assistance and instruction for using eligible equipment

4. USDA Rural Cooperative Development Grant (RCDG)

http://www.rurdev.usda.gov/bcp_rcdg.html

- Amount: Maximum Grant Amount: \$200,000 (*note: currently received annually by Kohala Center*)
- Purpose: The primary objective of the RCDG program is to improve the economic condition of rural areas by assisting individuals or entities in the startup, expansion or operational improvement of rural cooperatives and other business entities.

5. USDA Value-Added Producer Grants (VAPG)

http://www.rurdev.usda.gov/bcp_vapg.html

- Amount: Maximum Grant Amount: \$75,000 for planning grants; \$200,000 for working capital grants, with cost sharing requirement of cash or eligible in-kind matching funds equal to at least the amount of grant funds requested. *(note: this grant supports agricultural producers directly, however the beneficiary of the work can be the Maui FIC)*
- Purpose: The primary objective of the VAPG program is to help agricultural producers enter into value-added activities related to the processing and/or marketing of bio-based value-added products. Generating new products, creating and expanding marketing opportunities, and increasing producer income are the end goals of this program. You may receive priority if you are a beginning farmer or rancher, a socially-disadvantaged farmer or rancher, a small or medium-sized farm or ranch structured as a family farm, a farmer or rancher cooperative, or are proposing a mid-tier value chain, as defined in the Program Regulation.

6. USDA NIFA-AFRI (Agriculture and Food Research Initiative)

<http://www.nifa.usda.gov/funding/rfas/afri.html>

- Amount: This is an extremely broad program, with a very diverse set of research-driven programs, and funding is typically multi-year with very varied funding levels.
- Purpose: The primary objective is to fund research, education, and extension grants and integrated research, extension, and education grants that address key problems of National, regional, and multi-state importance in sustaining all components of agriculture, including farm efficiency and profitability, ranching, renewable energy, forestry, aquaculture, rural communities and entrepreneurship, human nutrition, food safety, biotechnology, and conventional breeding.

7. USDA AMS LFPP (Local Food Promotion Program)

<http://www.ams.usda.gov/AMSV1.0/lfpp>

- Amount: see below
- Purpose: LFPP offers grant funds to support the development and expansion of local and regional food business enterprises to increase domestic consumption of, and access to, locally and regionally produced agricultural products, and to develop new market opportunities for farm and ranch operations serving local markets.
LFPP Planning Grants are used in the planning stages of establishing or expanding a local and regional food business enterprise. Activities can include but are not limited to market research, feasibility studies, and business planning. A minimum of \$5,000 and a maximum of \$25,000 will be awarded
LFPP Implementation Grants are used to establish a new local and regional food business enterprise, or to improve or expand an existing local or regional food business enterprise. Activities can include but are not limited to training and technical assistance for the business enterprise and/or for producers working with the business enterprise; outreach and marketing to buyers and consumers; working capital; and non-construction infrastructure improvements to business enterprise facilities or information technology systems. A minimum of \$25,000 and a maximum of \$100,000 will be awarded for any one proposal

8. USDA AMS FSMIP (Federal-State Marketing Improvement Program)

<http://www.ams.usda.gov/AMSV1.0/fsmip>

- Amount: typically between \$50,000 and \$100,000, and done in collaboration with the State Department of Agriculture
- Purpose: The Federal-State Marketing Improvement Program (FSMIP) provides matching funds to State Departments of Agriculture, State agricultural experiment stations, and other appropriate State agencies to assist in exploring new market opportunities for U.S. food and agricultural products, and to encourage research and innovation aimed at improving the efficiency and performance of the marketing system.

9. USDA SBIR (Small Business Innovative Research Program) – Phase 1

<http://www.nifa.usda.gov/fo/sbir.cfm>

- Amount: Funds may be awarded up to \$100,000 for a Phase I project.
- Purpose: Proposed Phase I projects should prove the scientific or technical feasibility of the approach or concept. Projects dealing with agriculturally related manufacturing and alternative and renewable energy technologies are encouraged across all SBIR topic areas. USDA SBIR's flexible research areas ensure innovative projects consistent with USDA's vision of a healthy and productive nation in harmony with the land, air, and water.

10. United States Economic Development Administration (US EDA)

<http://www.eda.gov/programs.htm>

<https://www.cfda.gov/programs/11.300>

- Amount: Funds amounts vary, but can be at least \$2 million.
- Purpose: Investments for Public Works and Economic Development Facilities (CFDA Number 11.300) and Economic Adjustment Assistance (CFDA Number 11.307): Grants made under these programs will leverage regional assets to support the implementation of regional economic development strategies designed to create jobs, leverage private capital, encourage economic development, and strengthen America's ability to compete in the global marketplace. Through the EDAP FFO, EDA solicits applications from rural and urban communities to develop initiatives that advance new ideas and creative approaches to address rapidly evolving economic conditions. Public Works grants support the construction or rehabilitation of essential public infrastructure and facilities necessary to generate or retain private sector jobs and investments, attract private sector capital, and promote regional competitiveness, innovation, and entrepreneurship, including investments that expand and upgrade infrastructure to attract new industry, support technology-led development, accelerate new business development, and enhance the ability of regions to capitalize on opportunities presented by free trade. Characteristic projects include investments in facilities such as water and sewer systems, industrial access roads, business parks, port facilities, rail spurs, skill-training facilities, business incubator facilities, brownfield redevelopment, eco-industrial facilities, and telecommunications and broadband infrastructure improvements necessary for business creation, retention and expansion.

12.0 FACILITY DESIGN, EQUIPMENT NEEDS, AND ESTIMATED COSTS

Consistent with the facility design which was described earlier in this report, the location for the shared-use food processing facility has been redesigned, as shown on the CAD illustrations that follow, to incorporate the following processing rooms and supporting areas:

- Administrative Needs
- Employee Gowning Area and Locker Room
- Wet Processing Area
- Dry Processing Area
- Produce Prep Area
- Packing Room
- Sanitation/Potwash Area
- Raw Material and Finished Good Storage
- Equipment Storage
- Shipping and Receiving Dock(s)

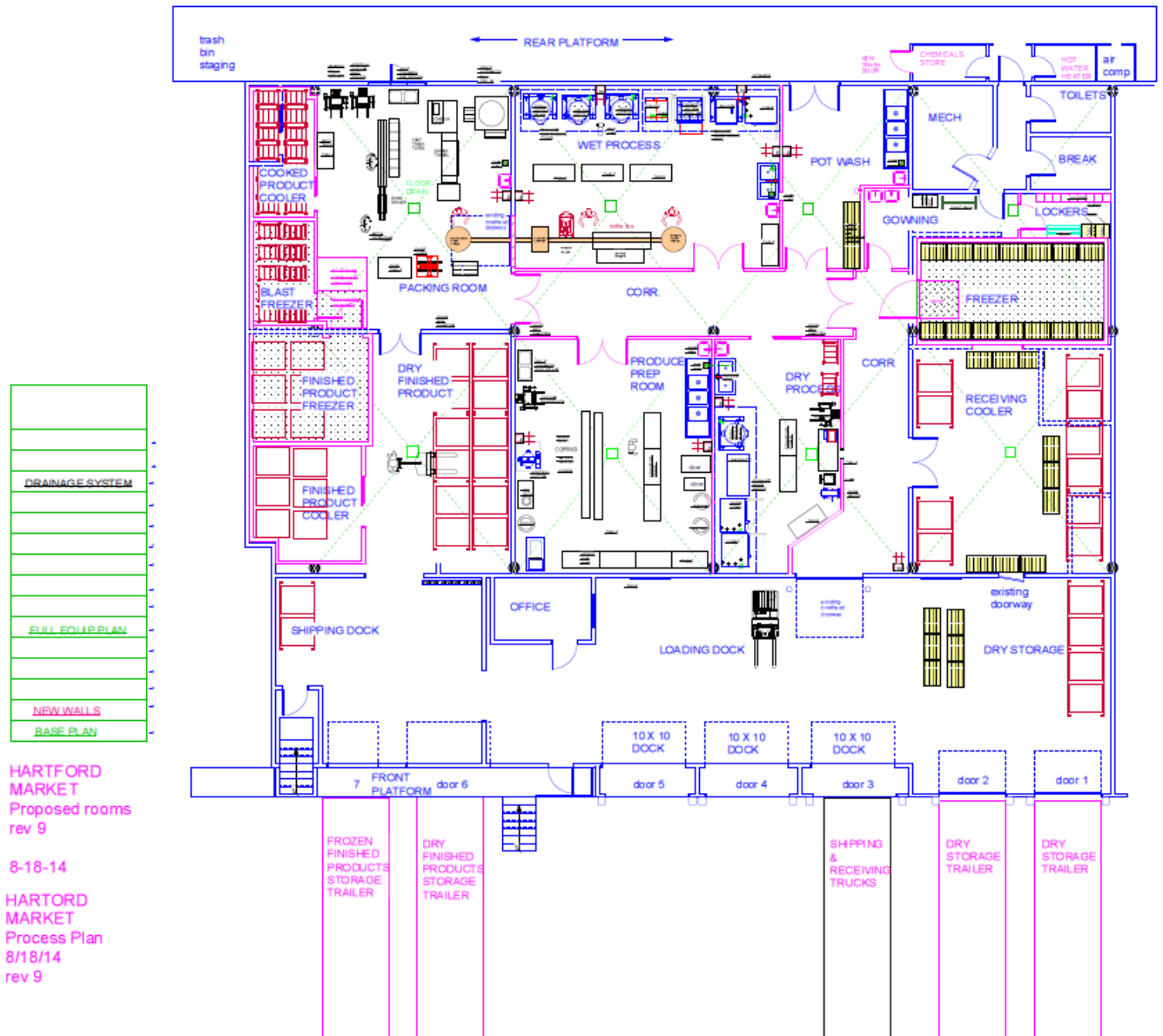
On the pages that follow, the following information is provided:

- The facility design, showing equipment locations, equipment ID numbers, lighting plan, refrigeration plan, roof plan, door schedule, demolition plan, and construction details.

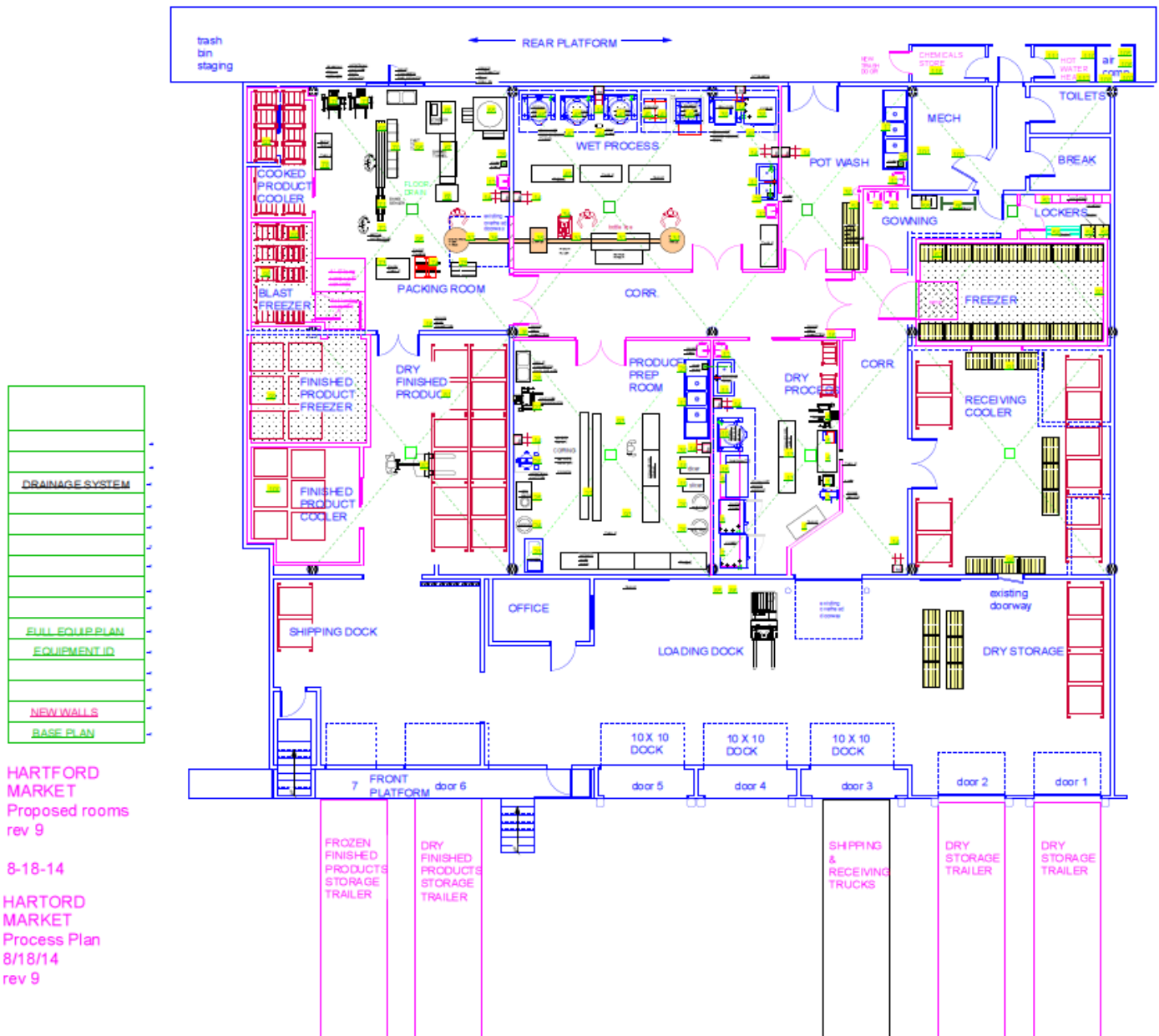
A complete listing of equipment needs is provided in the Project Cost Estimate as well, along with the associated estimated costs and installation. In addition, items are noted that could be considered as part of a “phase 2” purchase, which would expand capacity and flexibility of the operations. In summary this cost estimate is as follows:

| | |
|--|-------------|
| Project Grand Total estimate | \$1,833,195 |
| Project Grant Total estimate without Phase 2 options | \$1,407,045 |
| Facility square footage | 8000 |
| <u>Facility</u> cost per square foot | \$ 127 |
| <u>Project</u> cost per square foot (including Phase 1 and 2 eqpt) | \$ 229 |
| <u>Project</u> cost per square foot (including Phase 1 eqpt only) | \$ 176 |

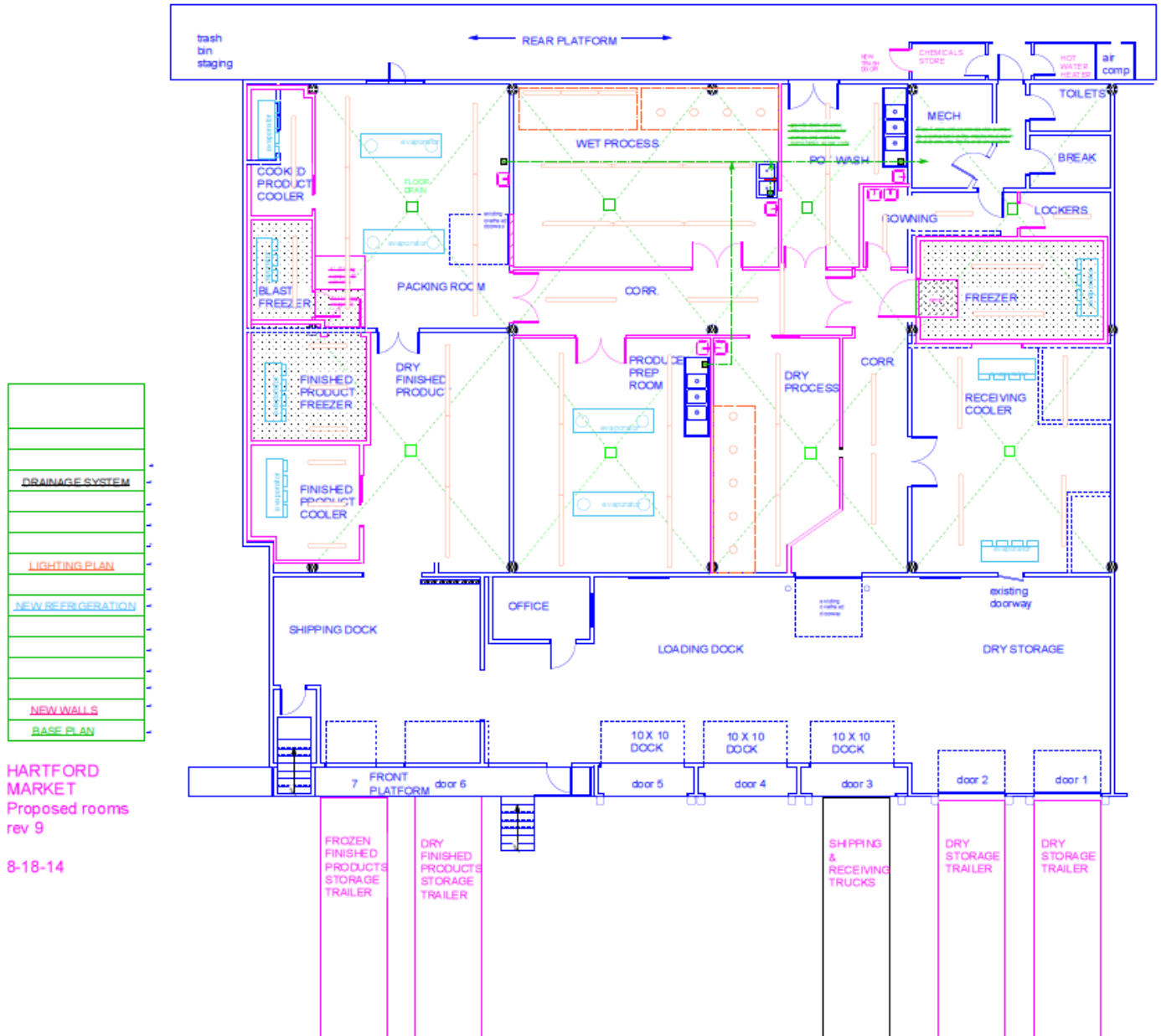
Hartford Market Process Plan, detailing complete equipment layout Revision 9c



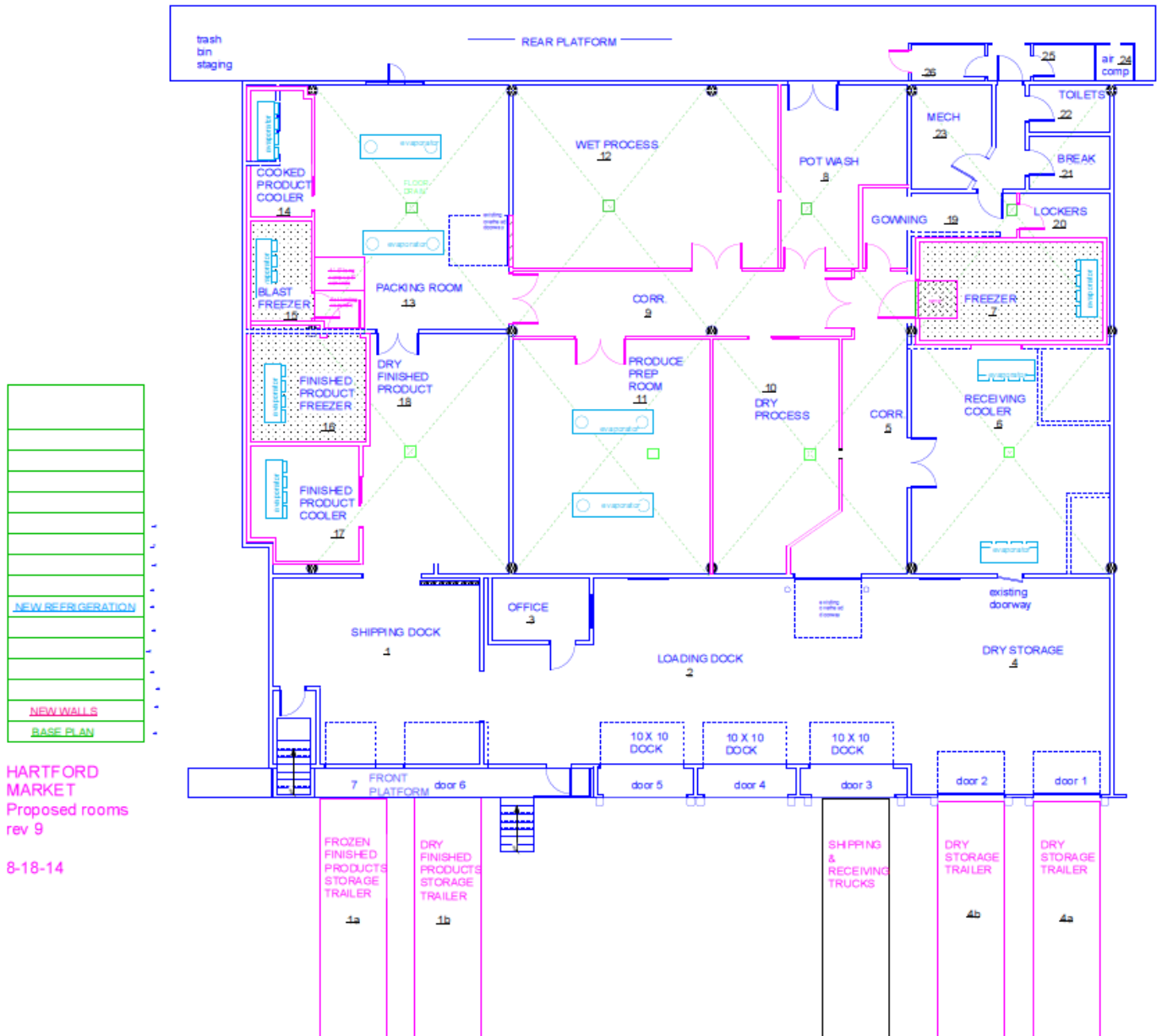
**Hartford Market Process Plan, detailing complete equipment layout with equipment ID number
Revision 9d**



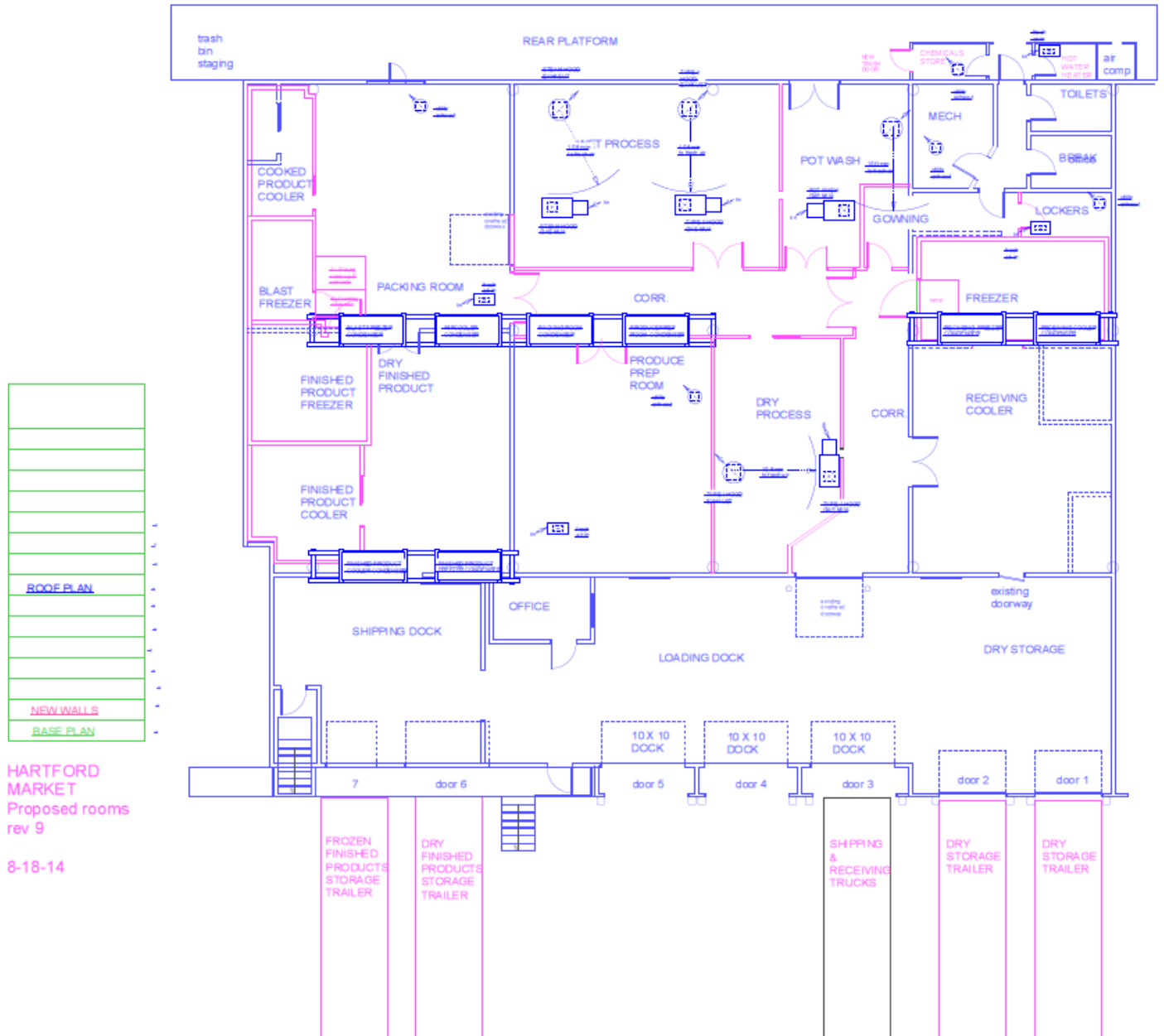
Hartford Market Process Plan, detailing lighting plan Revision 9e



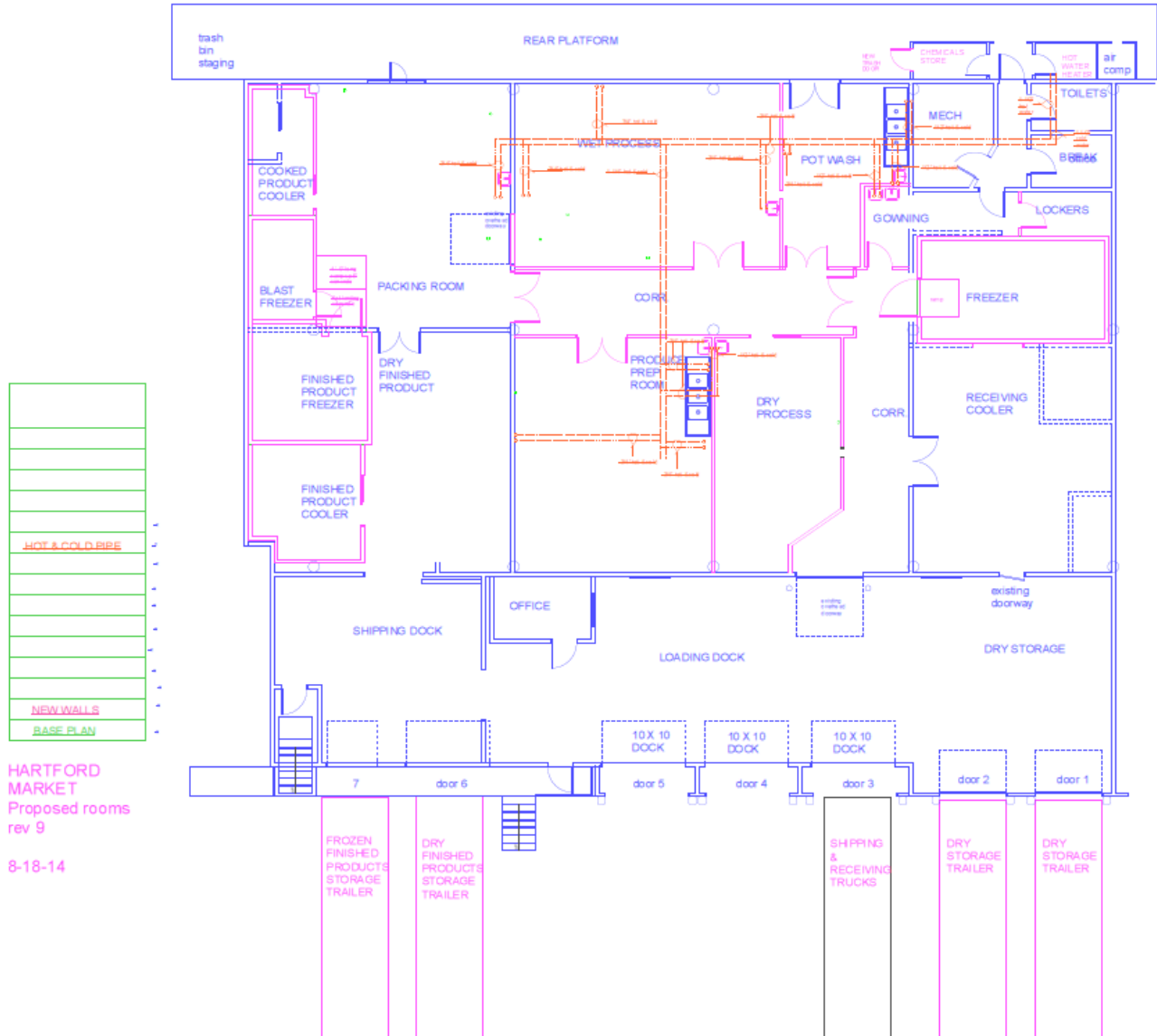
**Hartford Market Process Plan, detailing refrigeration plan
Revision 9f**



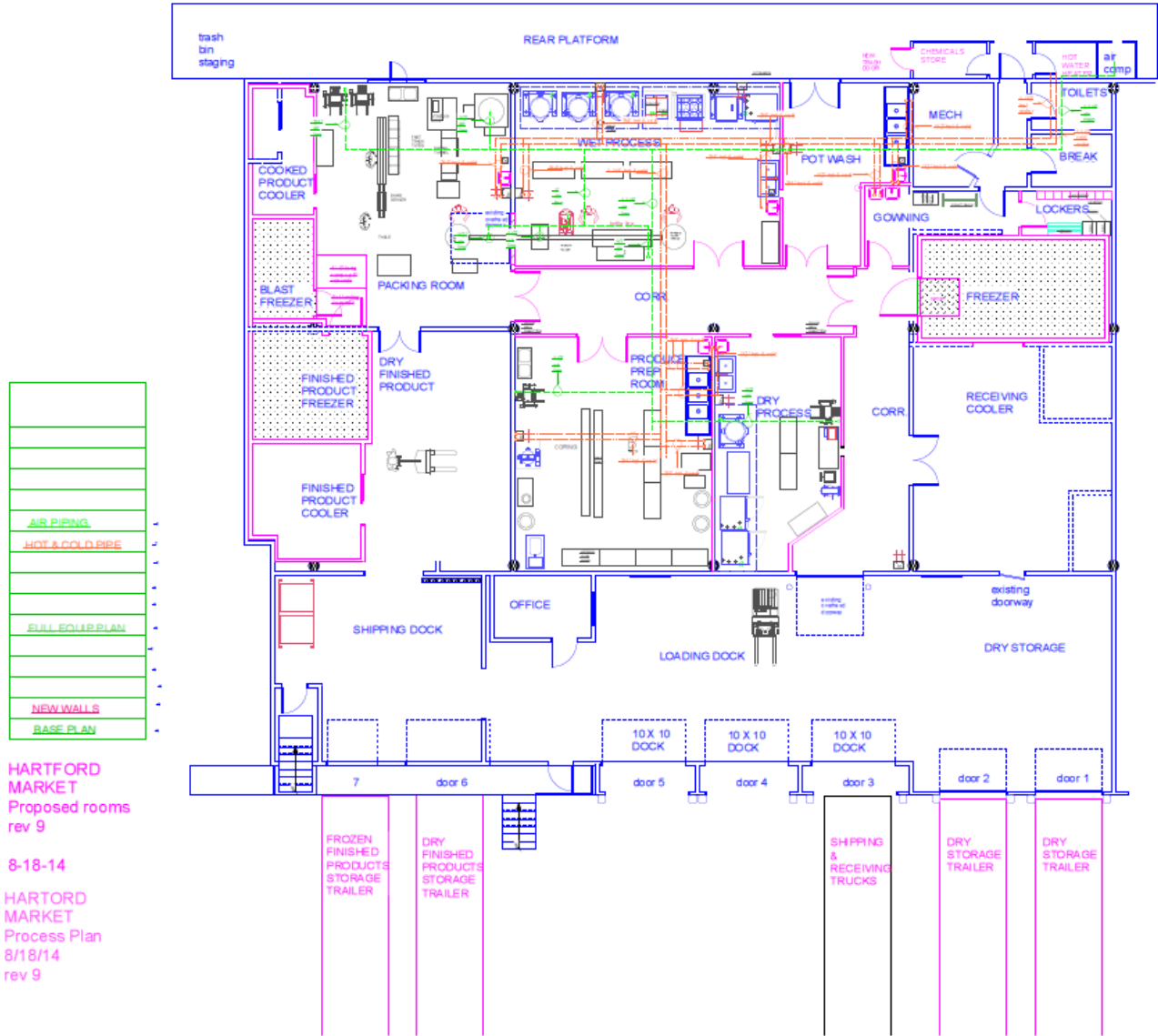
Hartford Market Process Plan, detailing roof plan Revision 9g



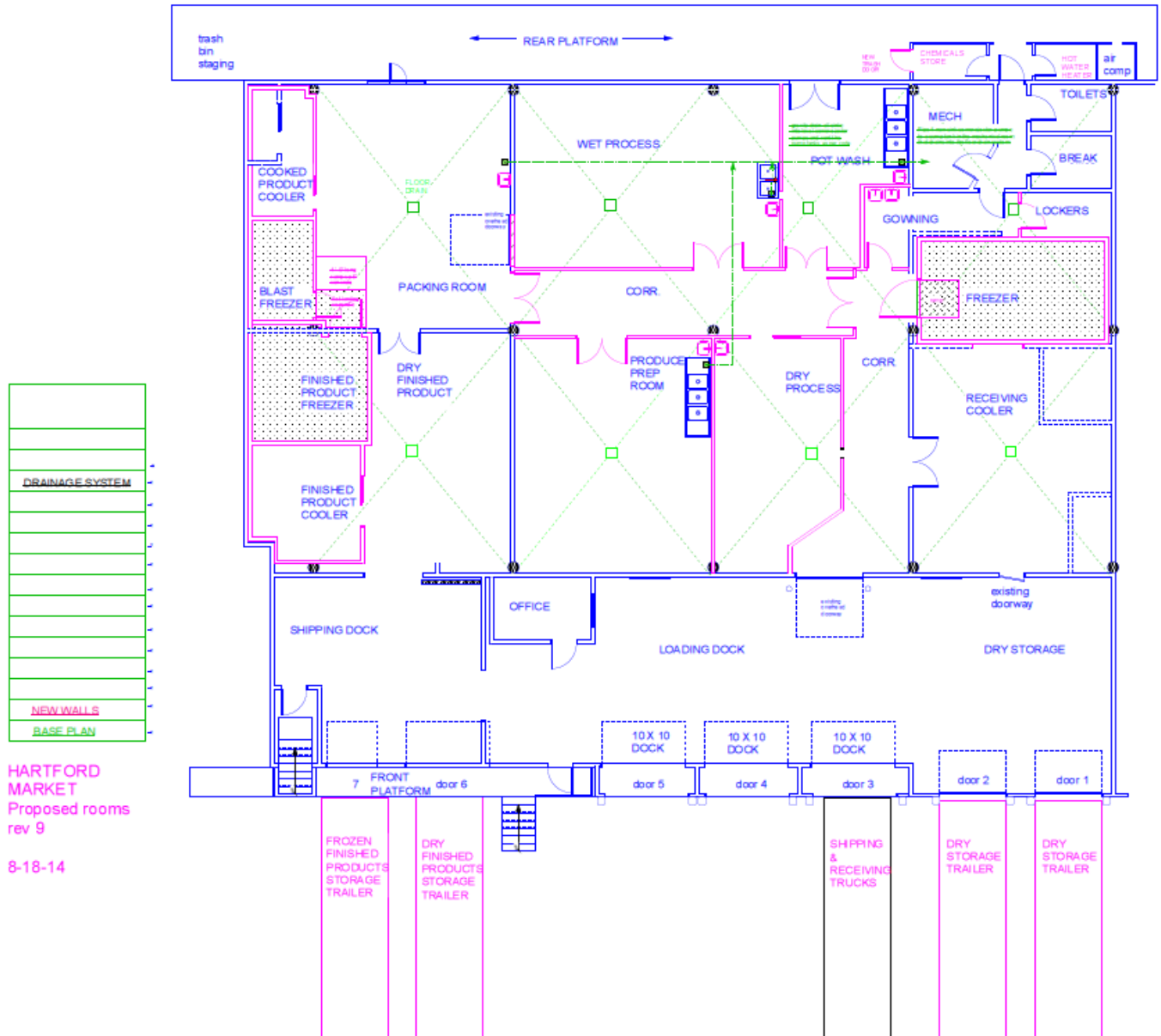
**Hartford Market Process Plan, detailing hot and cold water plan
Revision 9h**



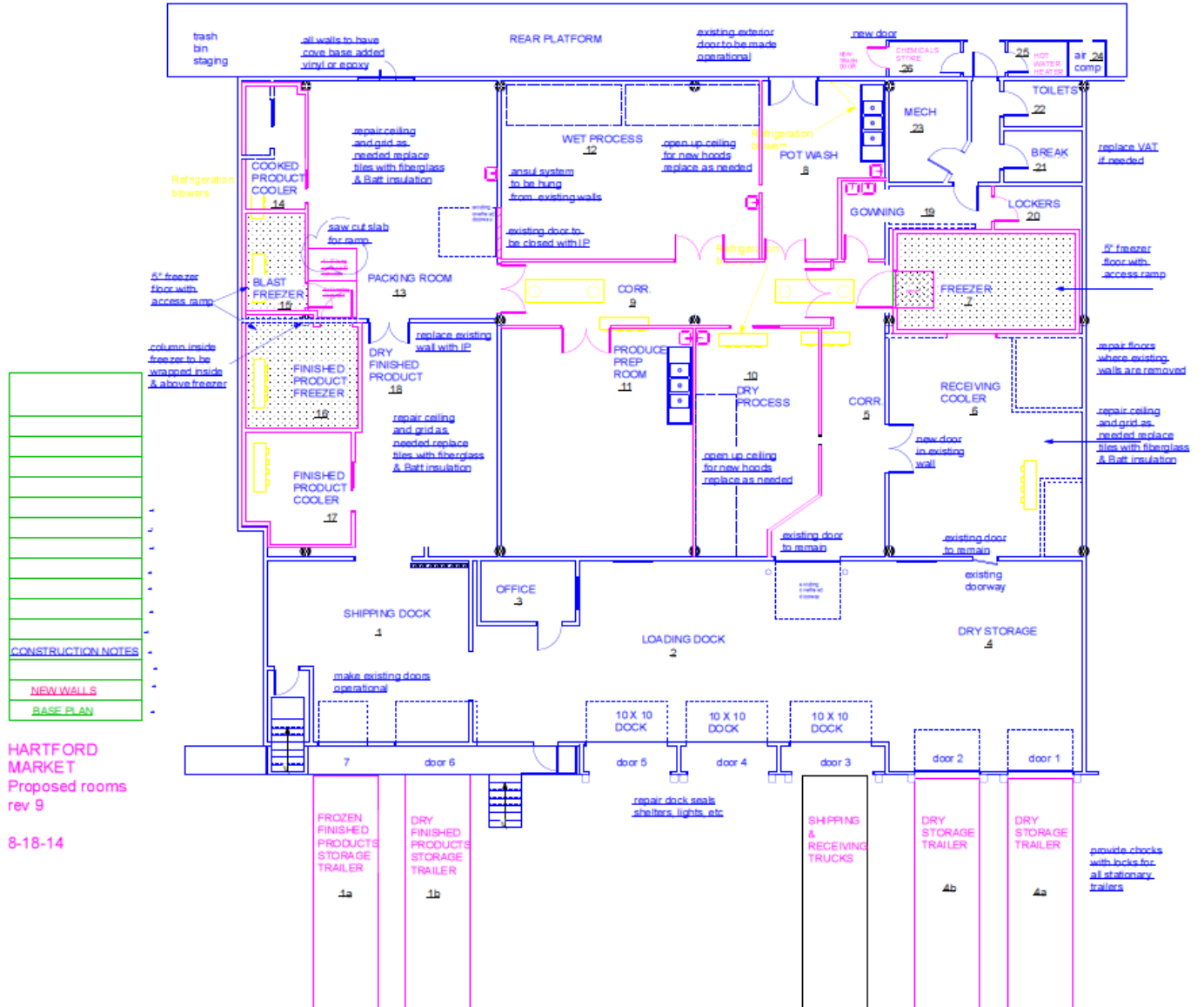
**Hartford Market Process Plan, detailing air pipe plan
Revision 9j**



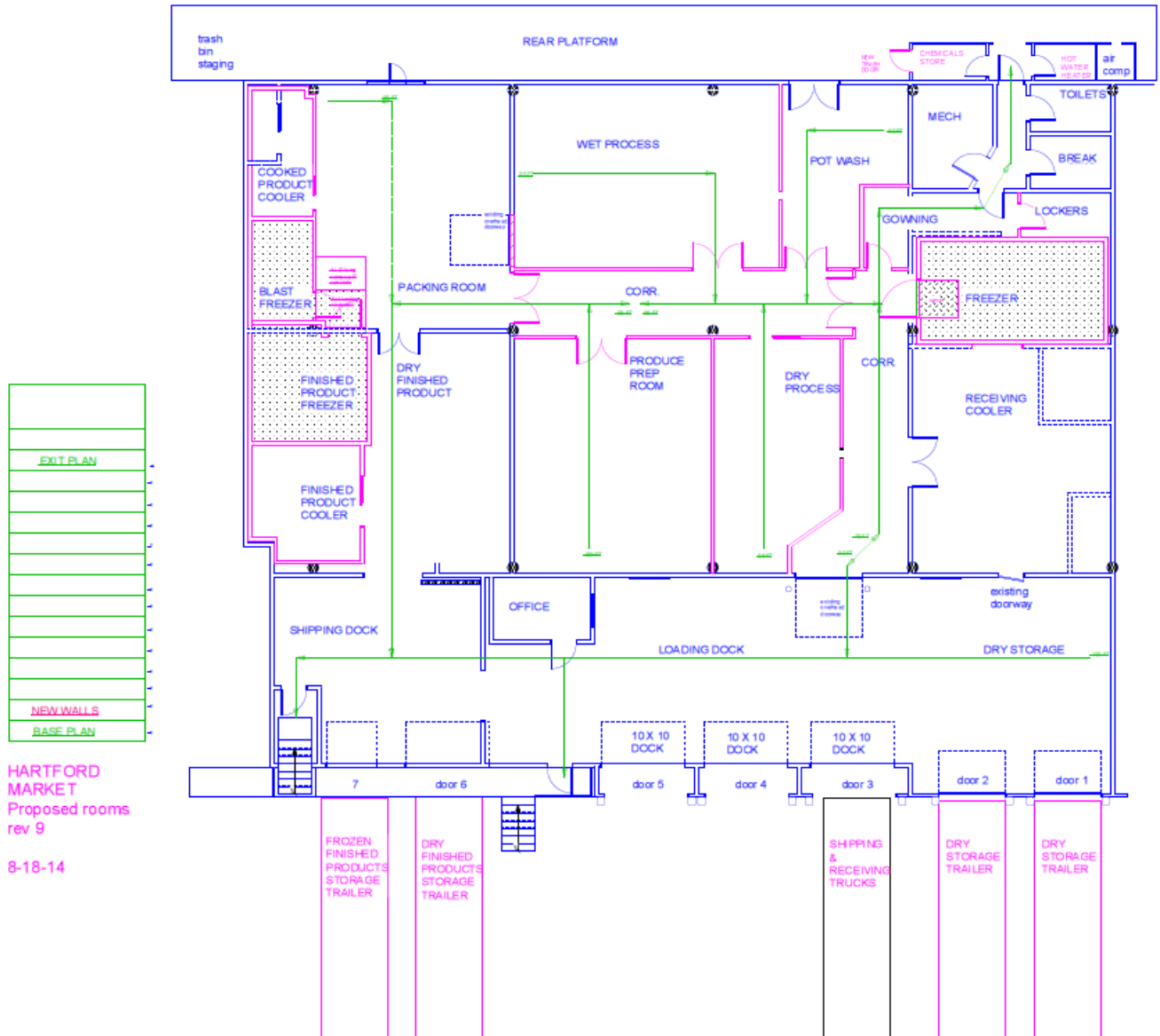
Hartford Market Process Plan, detailing drain plan Revision 9k



Hartford Market Process Plan, with construction details Revision 9n

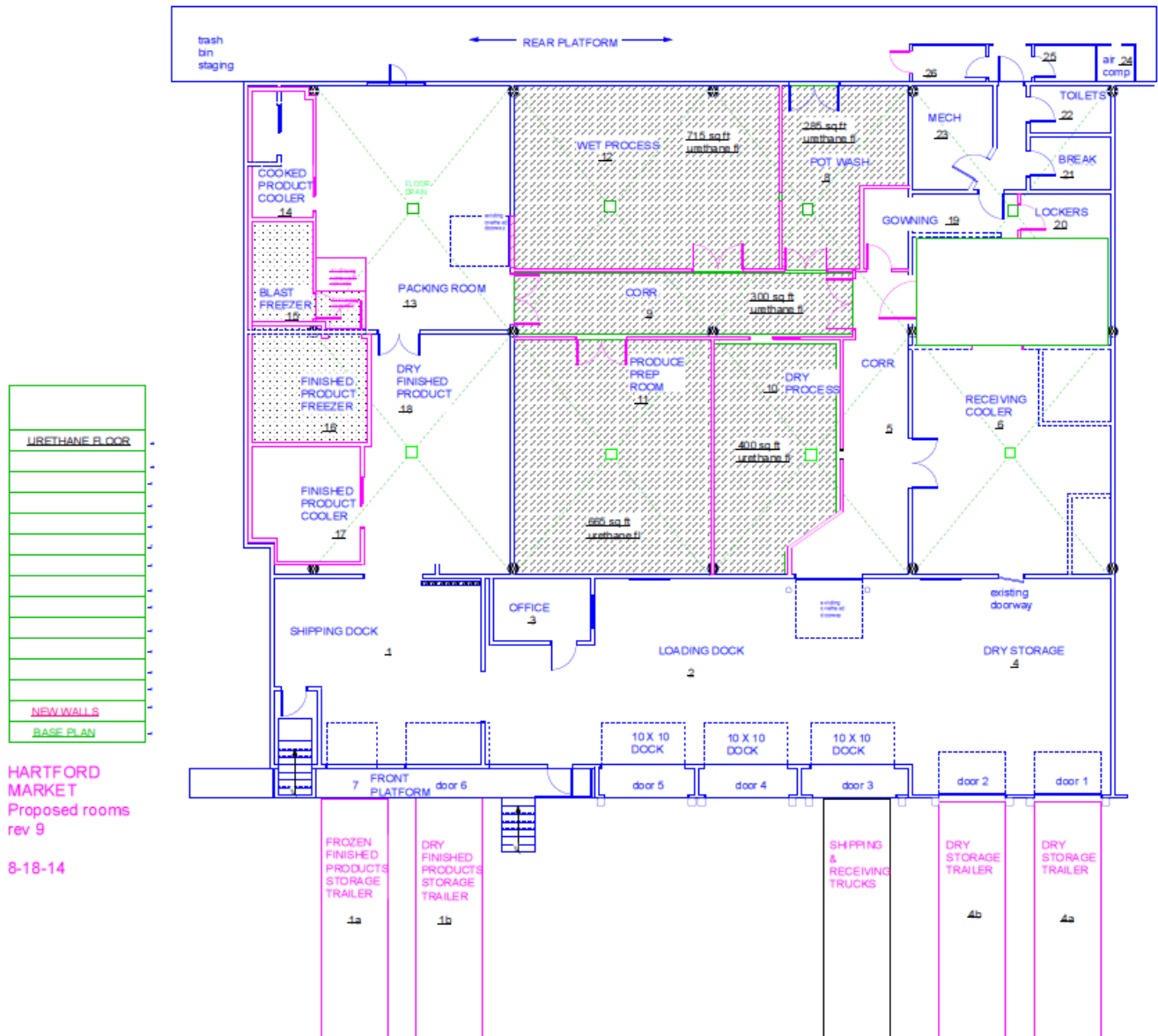


Hartford Market Process Plan, with Exit plan Revision 9p



HARTFORD MARKET
Proposed rooms
rev 9
8-18-14

Hartford Market Process Plan, detailing urethane flooring Revision 9q



Project Cost (page 1 of 6)

| room # | room name | item # | equipment description | vendor | process equipment cost | facility equip cost | refrig costs new equip | utility installation costs | new refrig installation costs | potential phase 2 equip |
|--------------------------|--------------|--------|-----------------------|-----------------|------------------------|---------------------|------------------------|----------------------------|-------------------------------|-------------------------|
| DRY PROCESS | | | | | | | | | | |
| 10 | dry process | 1 | table | advance | \$ 750 | | | | | |
| 10 | dry process | 2 | 140 qt bowl mixer | Hobart | \$ 16,000 | | | \$ 1,500 | | |
| 10 | dry process | 3 | bench scale | Metler 0-100 lb | \$ 2,500 | | | \$ 500 | | |
| 10 | dry process | 4 | table | advance | \$ 750 | | | | | |
| 10 | dry process | 5 | over under scale | Metler 05 lb | \$ 1,000 | | | \$ 500 | | |
| 10 | dry process | 6 | bag sealer | CVP 200 | \$ 17,000 | | | \$ 1,500 | | |
| 10 | dry process | 7 | Combi | Hobart | \$ 21,000 | | | \$ 2,500 | | |
| 10 | dry process | 8 | convection oven | Hobart | \$ 6,000 | | | \$ 750 | | |
| 10 | dry process | 9 | dehydrator | Harvest saver | \$ 15,000 | | | \$ 2,500 | | \$ 17,500 |
| 10 | dry process | 10 | kettle 20 gal | Mitsubishi | \$ 8,000 | | | \$ 2,500 | | |
| 10 | dry process | 11 | double sink | advance | | \$ 2,000 | | \$ 2,000 | | |
| 10 | dry process | 12 | hand sink | advance | | \$ 900 | | \$ 1,500 | | |
| 10 | dry process | 13 | table | advance | \$ 750 | | | | | |
| 10 | dry process | 14 | hose station | Strahman | | \$ 850 | | \$ 1,250 | | |
| 10 | dry process | 15 | hood | captiveaire | | \$ 10,000 | | \$ 5,000 | | |
| 50 | roof | 201 | hood exhaust fan | captiveaire | | \$ 5,000 | | \$ 5,000 | | |
| 50 | roof | 202 | hood MUA | captiveaire | | \$ 7,500 | | \$ 7,500 | | |
| CORRIDOR | | | | | | | | | | |
| 9 | corridor | 16 | door way sanitizer | lafferty | | \$ 3,500 | | \$ 2,000 | | |
| PRODUCE PREP ROOM | | | | | | | | | | |
| 11 | produce prep | 12 | hand sink | advance | | \$ 900 | | \$ 1,500 | | |
| 11 | produce prep | 14 | hose station | Strahman | | \$ 850 | | \$ 1,250 | | |
| 11 | produce prep | 17 | triple sink | advance | | \$ 3,000 | | \$ 2,000 | | |
| 11 | produce prep | 18 | dicer | 7 chefs | \$ 18,000 | | | \$ 1,500 | | \$ 19,500 |
| 11 | produce prep | 19 | slicer | 7 chefs | \$ 18,000 | | | \$ 1,500 | | \$ 19,500 |
| 11 | produce prep | 20 | vegetable dryer | Hobart | \$ 7,500 | | | \$ 750 | | |
| 11 | produce prep | 21 | fast track | fast track | \$ 2,500 | | | | | \$ 2,500 |
| 11 | produce prep | 22 | conveyor | Nedco | \$ 6,000 | | | \$ 1,500 | | \$ 7,500 |
| 11 | produce prep | 23 | Nilma washer | Nilma | \$ 7,500 | | | \$ 1,500 | | \$ 9,000 |
| 11 | produce prep | 24 | peeler | Hobart | \$ 3,500 | | | \$ 750 | | \$ 4,250 |

Project Cost (page 2 of 6)

| room # | room name | item # | description | vendor | equipment cost | facility equip cost | potential refrig cost | utility installation costs | new refrig installation costs | potential phase 2 equip |
|--------------------|--------------|--------|-------------------|--------------|----------------|---------------------|-----------------------|----------------------------|-------------------------------|-------------------------|
| 11 | produce prep | 25 | vegetable washer | Hobart | \$ 5,000 | | | \$ 750 | | |
| 11 | produce prep | 26 | vertical cutter | Hobart | \$ 15,000 | | | \$ 1,500 | | \$ 16,500 |
| 11 | produce prep | 27 | single chamber | Koch | \$ 4,500 | | | \$ 1,500 | | |
| 11 | produce prep | 28 | chamber machine | Koch | \$ 8,000 | | | \$ 1,500 | | \$ 9,500 |
| 11 | produce prep | 29 | sewage pump | little giant | | \$ 900 | | \$ 750 | | |
| WET PROCESS | | | | | | | | | | |
| 12 | wet process | 12 | hand sink | advance | | \$ 900 | | \$ 1,500 | | |
| 12 | wet process | 14 | hose station | Strahman | | \$ 850 | | \$ 1,250 | | |
| 12 | wet process | 31 | turntable | Nedco | \$ 3,500 | | | \$ 750 | | \$ 4,250 |
| 12 | wet process | 32 | bottle washer | gayer | \$ 20,000 | | | \$ 2,500 | | \$ 22,500 |
| 12 | wet process | 33 | conveyor | gayer | \$ 8,000 | | | \$ 1,500 | | \$ 9,500 |
| 12 | wet process | 34 | filler | gayer | \$ 25,000 | | | \$ 2,500 | | \$ 27,500 |
| 12 | wet process | 35 | capper | gayer | \$ 7,000 | | | \$ 750 | | \$ 7,750 |
| 12 | wet process | 36 | labeler | LSI labeling | \$ 30,000 | | | \$ 750 | | \$ 30,750 |
| 12 | wet process | 37 | turntable | Nedco | \$ 3,500 | | | \$ 750 | | \$ 4,250 |
| 12 | wet process | 38 | Combi | Hobart | \$ 21,000 | | | | | |
| 12 | wet process | 39 | braiser | Hobart | \$ 16,000 | | | \$ 2,000 | | |
| 12 | wet process | 40 | range | Cleveland | \$ 5,500 | | | \$ 750 | | |
| 12 | wet process | 41 | char grill | Cleveland | \$ 3,500 | | | \$ 750 | | |
| 12 | wet process | 42 | fryer | Cleveland | \$ 8,000 | | | \$ 1,500 | | |
| 12 | wet process | 43 | 100 gal kettle | lee | \$ 30,000 | | | \$ 2,500 | | \$ 32,500 |
| 12 | wet process | 44 | food pump | Waukesha | \$ 7,000 | | | \$ 1,500 | | |
| 12 | wet process | 45 | 100 gal kettle | lee | \$ 30,000 | | | \$ 2,500 | | \$ 32,500 |
| 12 | wet process | 46 | 40 gal kettle | Mitsubishi | \$ 15,000 | | | \$ 1,500 | | |
| 12 | wet process | 47 | steam hood | captiveaire | | \$ 10,000 | | \$ 5,000 | | |
| 50 | roof | 206 | hood exhaust fan | captiveaire | | \$ 5,000 | | \$ 5,000 | | |
| 50 | roof | 207 | hood MUA | captiveaire | | \$ 7,500 | | \$ 7,500 | | |
| 12 | wet process | 48 | gas hood | captiveaire | | \$ 10,000 | | \$ 5,000 | | |
| 50 | roof | 211 | hood exhaust fan | captiveaire | | \$ 5,000 | | \$ 5,000 | | |
| 50 | roof | 212 | hood MUA | captiveaire | | \$ 7,500 | | \$ 7,500 | | |
| 12 | wet process | 49 | table | advance | \$ 750 | | | | | |
| 12 | wet process | 50 | Ansul fire system | Ansul | | \$ 4,500 | | \$ 750 | | |

Project Cost (page 3 of 6)

| room # | room name | item # | description | vendor | equipment cost | facility equip cost | potential refrig cost | utility installation costs | new refrig installation costs | potential phase 2 equip |
|-----------------|-----------|--------|---------------|--------------|----------------|---------------------|-----------------------|----------------------------|-------------------------------|-------------------------|
| POT WASH | | | | | | | | | | |
| 8 | pot wash | 51 | wire rack | metropolitan | \$ 800 | | | | | |
| 8 | pot wash | 17 | triple sink | advance | \$ 3,000 | | | \$ 2,000 | | |
| 8 | pot wash | 12 | hand sink | advance | | \$ 900 | | \$ 1,500 | | |
| 8 | pot wash | 14 | hose station | Strahman | | \$ 850 | | \$ 1,250 | | |
| 8 | pot wash | 30 | eye wash | Grainger | | \$ 650 | | \$ 1,500 | | |
| 8 | roof | 221 | exhaust fan | captiveaire | \$ 2,500 | | | \$ 2,000 | | |
| 8 | roof | 222 | MUA | captiveaire | \$ 4,500 | | | \$ 3,000 | | |
| 8 | pot wash | 29 | sewage pump | little giant | | \$ 900 | | \$ 1,250 | | |
| GOWNING | | | | | | | | | | |
| 19 | gowning | 12 | hand sink | advance | | \$ 900 | | \$ 1,500 | | |
| 19 | gowning | 12 | hand sink | advance | | \$ 900 | | \$ 1,500 | | |
| 19 | gowning | 52 | supply rack | metropolitan | \$ 800 | | | | | |
| 19 | gowning | 53 | coat rack | metropolitan | \$ 250 | | | | | |
| 19 | gowning | 54 | lockers | penco | \$ 1,200 | | | | | |
| 19 | gowning | 55 | bench | penco | \$ 150 | | | | | |
| 19 | gowning | 56 | laundry bin | penco | \$ 100 | | | | | |
| 19 | gowning | 58 | not used | | | | | | | |
| 19 | gowning | 59 | not used | | | | | | | |
| 19 | gowning | 60 | not used | | | | | | | |
| 19 | gowning | 61 | not used | | | | | | | |
| FREEZER | | | | | | | | | | |
| 7 | freezer | 62 | product racks | metropolitan | \$ 5,000 | | | | | |
| 7 | freezer | 63 | not used | | | | | | | |
| 7 | freezer | 64 | not used | | | | | | | |
| PACKING | | | | | | | | | | |
| 13 | packing | 12 | hand sink | advance | | \$ 900 | | \$ 1,500 | | |
| 13 | packing | 14 | hose station | Strahman | | \$ 850 | | \$ 1,250 | | |
| 13 | packing | 65 | Tray sealer | Ross/Orics | \$ 40,000 | | | \$ 2,500 | | \$ 42,500 |
| 13 | packing | 66 | shrink wrap | Shanklin | \$ 5,500 | | | \$ 750 | | \$ 6,250 |
| 13 | packing | 67 | shrink tunnel | Shanklin | \$ 15,000 | | | \$ 1,500 | | \$ 16,500 |
| 13 | packing | 68 | pack table | advance | \$ 750 | | | | | |

Project Cost (page 4 of 6)

| room # | room name | item # | description | vendor | equipment cost | facility equip cost | potential refig cost | utility installation costs | new refig installation costs | potential phase 2 equip |
|--------------------------|-------------------|--------|----------------------|--------------|----------------------|---------------------|----------------------|----------------------------|------------------------------|-------------------------|
| 13 | packing | 29 | sewage pump | little giant | | \$ 900 | | \$ 1,250 | | |
| 13 | packing | 69 | conveyor | Nedco | \$ 6,000 | | | \$ 1,500 | | \$ 7,500 |
| 13 | packing | 70 | fast track | fast track | \$ 2,500 | | | | | \$ 2,500 |
| 13 | packing | 71 | band sealer | doboy | \$ 10,000 | | | \$ 750 | | \$ 10,750 |
| 13 | packing | 72 | metal detector | Safeline | \$ 18,000 | | | \$ 1,500 | | |
| 13 | packing | 73 | pack table | advance | \$ 750 | | | | | |
| 13 | packing | 74 | case taper | little david | \$ 5,500 | | | \$ 750 | | \$ 6,250 |
| 13 | packing | 75 | skate conveyor | Nedco | \$ 150 | | | | | \$ 150 |
| 13 | packing | 76 | bag sealer | CVP | \$ 17,000 | | | \$ 1,500 | | \$ 18,500 |
| 13 | packing | 77 | bag sealer | CVP | use dry process unit | | | | | \$ - |
| 13 | packing | 16 | door way sanitizer | lafferty | | \$ 3,500 | | \$ 2,000 | | |
| 13 | packing | 78 | table | advance | \$ 750 | | | | | |
| 13 | packing | 79 | case coder | case coder | \$ 10,000 | | | \$ 1,500 | | \$ 11,500 |
| COOLER | | | | | | | | | | |
| 14 | cooler | 80 | rolling racks | | \$ 6,000 | | | | | |
| 14 | cooler | 81 | pallet rack | Frazier | \$ 7,500 | | | | | \$ 7,500 |
| 14 | cooler | 82 | electric pallet jack | crown | \$ 5,000 | | | \$ 750 | | |
| 14 | cooler | 83 | not used | | | | | | | |
| SHIPPING | | | | | | | | | | |
| 14 | shipping | 84 | not used | | | | | | | |
| 14 | shipping | 85 | Fork lift & charger | | \$ 15,000 | | | \$ 1,500 | | \$ 16,500 |
| 14 | shipping | 86 | battery charging | | \$ 2,500 | | | | | \$ 2,500 |
| 14 | shipping | 87 | not used | | | | | | | |
| 14 | shipping | 88 | not used | | | | | | | |
| RECEIVING COOLER | | | | | | | | | | |
| 6 | receiving cooler | 90 | evaporator | born | \$ 2,000 | move cost | | | | |
| 6 | receiving cooler | 91 | evaporator | born | \$ 2,000 | move cost | | | | |
| 50 | roof | 200 | rec clr condenser | born | use existing | | \$ 20,000 | | \$ 10,000 | |
| RECEIVING FREEZER | | | | | | | | | | |
| 7 | receiving freezer | 92 | evaporator | born | \$ 5,000 | | | | | |
| 50 | roof | 205 | rec frz condenser | born | | \$ 30,000 | | \$ 10,000 | | |
| PRODUCE PREP | | | | | | | | | | |
| 11 | produce prep | 93 | evaporator | born | \$ 2,000 | move cost | | | | |
| 11 | produce prep | 94 | evaporator | born | \$ 2,000 | move cost | | | | |

Project Cost (page 5 of 6)

| room # | room name | item # | description | vendor | equipment cost | facility equip cost | potential refrig cost | utility installatio n costs | new refrig installatio n costs | potential phase 2 equip |
|-------------------------|------------------|--------|----------------------|-----------------|----------------|---------------------|-----------------------|-----------------------------|--------------------------------|-------------------------|
| 50 | roof | 215 | cold proc condenser | born | use existing | | \$ 20,000 | | \$ 10,000 | |
| PACKING | | | | | | | | | | |
| 13 | packing | 95 | evaporator | born | \$ 2,000 | move cost | | | | |
| 13 | packing | 96 | evaporator | born | \$ 2,000 | move cost | | | | |
| 50 | roof | 220 | packing condenser | born | use existing | | \$ 30,000 | | \$ 10,000 | |
| COOKED COOLER | | | | | | | | | | |
| 14 | cooked cooler | 97 | evaporator | born | \$ 2,000 | move cost | | | | |
| 50 | roof | 225 | cook clr condenser | born | use existing | | \$ 20,000 | | \$ 10,000 | |
| BLAST FREEZER | | | | | | | | | | |
| 15 | blast freezer | 98 | evaporator | born | \$ 5,000 | | | | | |
| 50 | roof | 230 | blast frz condenser | born | | \$ 35,000 | | \$ 10,000 | | |
| FINISHED FREEZER | | | | | | | | | | |
| 16 | finished freezer | 99 | evaporator | born | \$ 5,000 | | | | | |
| 50 | roof | 235 | finish frz condenser | born | | \$ 30,000 | | \$ 10,000 | | |
| FINISHED COOLER | | | | | | | | | | |
| 17 | finished cooler | 100 | evaporator | born | \$ 2,000 | move cost | | | | |
| 50 | roof | 240 | finish clr condenser | born | use existing | | \$ 20,000 | | \$ 10,000 | |
| MECHANICAL | | | | | | | | | | |
| 23 | mechanical | 101 | refrig cond exists | | | | | | | |
| 23 | mechanical | 102 | refrig cond exists | | | | | | | |
| 23 | mechanical | 103 | not used | | | | | | | |
| 23 | mechanical | 104 | not used | | | | | | | |
| AIR COMPRESSOR | | | | | | | | | | |
| 24 | Air compressor | 105 | air compressor | Quincy | \$ 7,500 | | | \$ 3,500 | | |
| 24 | Air compressor | 106 | air tank | Quincy | \$ 1,000 | | | \$ 750 | | |
| 24 | Air compressor | 107 | air dryer | Quincy | \$ 3,500 | | | \$ 2,500 | | |
| 24 | Air compressor | 108 | air filters | Quincy | \$ 750 | | | \$ 750 | | |
| 24 | Air compressor | 109 | not used | . | | | | | | |
| BOILER ROOM | | | | | | | | | | |
| 25 | boiler room | 110 | hot water heater | smith | | \$ 4,500 | | \$ 3,500 | | |
| 25 | boiler room | 111 | hot water pump | bell and gusset | | \$ 500 | | \$ 1,500 | | |
| 25 | boiler room | 112 | hot water tank | SMITH | | \$ 1,500 | | \$ 750 | | |

Project Cost (page 6 of 6)

| room # | room name | item # | description | vendor | equipment cost | facility equip cost | potential refrig cost | utility installation costs | new refrig installation costs | potential phase 2 equip |
|-------------------|---|--------|-------------|--------|----------------|---------------------|-----------------------|----------------------------|-------------------------------|-------------------------|
| 25 | boiler room | 114 | not used | | | | | | | |
| 25 | boiler room | 115 | not used | | | | | | | |
| CHEM STORE | | | | | | | | | | |
| 26 | chem. store | 116 | catch pan | | \$ 350 | | | | | |
| 26 | chem. store | 116 | not used | | | | | | | |
| A | Process equipment totals (Sum column of G) | | | | \$ 648,300 | | | | | |
| B | Facility equipment cost totals (Sum column of H) | | | | | \$ 199,400 | | | | |
| C | Equipment connection costs (Sum column of J) | | | | | | | \$ 195,000 | | |
| D | Total facility costs for equipment and connections of all equipment (Sum totals of B + C) | | | | | | | \$ 394,400 | | |
| E | Possible required refrigeration equipment costs (Sum column of I) | | | | | | \$ 110,000 | | | |
| F | Possible required refrigeration equipment installation costs (Sum column of K) | | | | | | \$ 50,000 | | | |
| G | Total cost for new refrigeration equipment installed (Sum of E & F) | | | | | | \$ 160,000 | | | |
| H | Demolition costs (from demo details) | | | | | \$ 52,500 | | | | |
| I | New Construction costs (from construction costs) | | | | | \$ 331,650 | | | | |
| J | Door costs (from door schedule) | | | | | \$ 28,300 | | | | |
| K | Project Facility costs (sum of D + G + H + I + J) | | | | | \$ 966,850 | | | | |
| L | Project Total with process equipment (Sum of A + K) | | | | \$ 1,615,150 | | | | | |
| M | Contingency (estimated at 10% of M) | | | | \$ 161,515 | | | | | |
| N | Tax & Freight (estimated at 3.5% of M) | | | | \$ 56,530 | | | | | |
| O | Project Grand Total estimate (Sum of L +M + N) | | | | \$ 1,833,195 | | | | | \$ 426,150 |
| | Project Grant Total estimate without Phase 2 options | | | | \$ 1,407,045 | | | | | |
| P | Facility square footage | | | | | 8000 | | | | |
| Q | Facility cost per square foot = (K + 0.10 contingency*K / P) | | | | \$ 127 | | | | | |
| | Project cost per square foot (including Phase 1 and 2 eqpt) | | | | \$ 229 | | | | | |
| | Project cost per square foot (including Phase 1 eqpt only) | | | | \$ 176 | | | | | |

Equipment Utilities (page 1 of 3)

| room # | room name | item # | description | vendor | volts | ph | amp | volts | ph | amp | cold water | hot water | drain | air size | air cfm | gas cubic foot |
|--------------------------|--------------|--------|--------------------|-----------------|-------|----|-----|-------|----|-----|------------|-----------|-------|----------|---------|----------------|
| DRY PROCESS | | | | | | | | | | | | | | | | |
| 10 | dry process | 1 | table | advance | | | | | | | | | | | | |
| 10 | dry process | 2 | 140 qt bowl mixer | Hobart | 208 | 3 | 20 | | | | | | | | | |
| 10 | dry process | 3 | bench scale | Metler 0-100 lb | | | | 120 | 1 | 5 | | | | | | |
| 10 | dry process | 4 | table | advance | | | | | | | | | | | | |
| 10 | dry process | 5 | scale | Metler 05 lb | | | | 120 | 1 | 5 | | | | | | |
| 10 | dry process | 6 | bag sealer | cvp A-200 | | | | | | | | | | | | |
| 10 | dry process | 7 | combi | Hobart | | | | 120 | 1 | 20 | | | | | | |
| 10 | dry process | 8 | conv oven | Hobart | | | | 120 | 1 | 20 | | | | | | |
| 10 | dry process | 9 | dehydrate | harvest | | | | | | | | | 1/2" | | | |
| 10 | dry process | 10 | kettle 20 gal | Mitsubishi | | | | 120 | 1 | 15 | | | | | | |
| 10 | dry process | 11 | double sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 10 | dry process | 12 | hand sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 10 | dry process | 13 | table | advance | | | | | | | | | | | | |
| 10 | dry process | 14 | hose station | Strahman | | | | | | | 0.75 | 0.75 | | | | |
| 10 | dry process | 15 | hood | captiveaire | | | | 120 | 1 | 15 | | | 1/2" | | | |
| 50 | roof | 201 | hood exhaust fan | captiveaire | 208 | 3 | 20 | | | | | | | | | |
| 50 | roof | 202 | hood MUA | captiveaire | 208 | 3 | 20 | | | | | | | | | 200 |
| CORRIDOR | | | | | | | | | | | | | | | | |
| 9 | corridor | 16 | door way sanitizer | lafferty | | | | 120 | 1 | 5 | 0.5 | | | | 1 | foam |
| PRODUCE PREP ROOM | | | | | | | | | | | | | | | | |
| 11 | produce prep | 12 | hand sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 11 | produce prep | 14 | hose station | Strahman | | | | | | | 0.75 | 0.75 | | | | |
| 11 | produce prep | 17 | triple sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 11 | produce prep | 18 | dicer | 7 chefs | 208 | 3 | 30 | | | | | | | | | |
| 11 | produce prep | 19 | slicer | 7 chefs | 208 | 3 | 30 | | | | | | | | | |
| 11 | produce prep | 20 | veg dryer | Hobart | | | | 120 | 1 | 20 | | | | | | |
| 11 | produce prep | 21 | fast track | fast track | | | | | | | | | | | | |
| 11 | produce prep | 22 | conveyor | Nedco | 208 | 3 | 15 | | | | | | | | | |
| 11 | produce prep | 23 | nilma washer | nilma | 208 | 3 | 15 | | | | | | 1" | | | |
| 11 | produce prep | 24 | peeler | Hobart | | | | 120 | 1 | 20 | | | | | | |
| room # | room name | item # | description | vendor | volts | ph | amp | volts | ph | amp | cold water | hot water | drain | air size | air cfm | gas-btu |
| 11 | produce prep | 25 | veg washer | Hobart | 208 | 3 | 20 | | | | 0.75 | | 1.5 | | | |
| 11 | produce prep | 26 | vertical cutter | Hobart | 208 | 3 | 30 | | | | | | | | | |
| 11 | produce prep | 27 | vacuum sealer | Koch | | | | 120 | 1 | 20 | | | | 1/2" | 2 | |
| 11 | produce prep | 28 | chamber machine | Koch | 208 | 3 | 40 | | | | | | | 1/2" | 2 | nitrogen |
| 11 | produce prep | 29 | sewage pump | little giant | | | | 120 | 1 | 15 | | | 1.5 | | | |
| WET PROCESS | | | | | | | | | | | | | | | | |
| 12 | wet process | 12 | hand sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 12 | wet process | 14 | hose station | Strahman | | | | | | | 0.75 | 0.75 | | | | |
| 12 | wet process | 31 | turntable | Nedco | | | | 120 | 1 | 15 | | | | | | |
| 12 | wet process | 32 | bottle washer | geyer | | | | 120 | 1 | 15 | 0.5 | 0.5 | 1.5 | | | |
| 12 | wet process | 33 | conveyor | geyer | 208 | 3 | 15 | | | | | | | | | |
| 12 | wet process | 34 | filler | geyer | | | | 120 | 1 | 5 | | | | 1/2" | 5 | |
| 12 | wet process | 35 | capper | geyer | | | | 120 | 1 | 5 | | | | 1/2" | 2 | |
| 12 | wet process | 36 | labeler | LSI labeling | | | | 120 | 1 | 15 | | | | | 2 | |
| 12 | wet process | 37 | turntable | Nedco | | | | 120 | 1 | 15 | | | | | | |
| 12 | wet process | 38 | combi | Hobart | 208 | 1 | 15 | | | | 0.5 | 0.5 | 1 | | | 80 |
| 12 | wet process | 39 | braiser | Hobart | | | | 120 | 1 | 15 | | | | | | 60 |
| 12 | wet process | 40 | range | Cleveland | | | | | | | | | | | | 120 |
| 12 | wet process | 41 | char grill | Cleveland | | | | | | | | | | | | 120 |
| 12 | wet process | 42 | fryer | Cleveland | | | | | | | | | | | | 80 |
| 12 | wet process | 43 | 100 gal kettle | lee | 208 | 1 | 15 | | | | | | | | | 80 |
| 12 | wet process | 44 | food pump | Waukesha | 208 | 1 | 15 | | | | | | | | | |
| 12 | wet process | 45 | 100 gal kettle | lee | 208 | 1 | 15 | | | | | | | | | 80 |
| 12 | wet process | 46 | 40 gal kettle | Mitsubishi | | | | 120 | 1 | 15 | | | | | | 60 |
| 12 | wet process | 47 | steam hood | captiveaire | | | | 120 | 1 | 15 | | | 1/2" | | | |
| 50 | roof | 206 | hood exhaust fan | captiveaire | 208 | 3 | 20 | | | | | | | | | |
| 50 | roof | 207 | hood MUA | captiveaire | 208 | 3 | 20 | | | | | | | | | 20 |
| 12 | wet process | 48 | gas hood | captiveaire | | | | 120 | 1 | 15 | | | | | | |
| 50 | roof | 211 | hood exhaust fan | captiveaire | 208 | 3 | 20 | | | | | | | | | |
| 50 | roof | 212 | hood MUA | captiveaire | 208 | 3 | 20 | | | | | | | | | 20 |
| 12 | wet process | 49 | table | advance | | | | | | | | | | | | |
| 12 | wet process | 50 | Ansul fire system | Ansul | | | | 120 | 1 | 15 | | | | | | |

Equipment Utilities (page 2 of 3)

| room # | room name | item # | description | vendor | volts | ph | amp | volts | ph | amp | cold water | hot water | drain | air size | air cfm | gas-btu |
|---|------------------|--------|------------------------------|--------------|-------|----|-----|-------|----|-----|------------|-----------|-------|----------|---------|-----------|
| POT WASH | | | | | | | | | | | | | | | | |
| 8 | pot wash | 51 | wire rack | metropolitan | | | | | | | | | | | | |
| 8 | pot wash | 17 | triple sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 8 | pot wash | 12 | hand sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 8 | pot wash | 14 | hose station | Strahman | | | | | | | 0.75 | 0.75 | | | | |
| 8 | pot wash | 30 | eye wash | Grainger | | | | | | | 0.5 | 0.5 | | | | mix valve |
| 8 | roof | 221 | exhaust fan | captiveaire | 208 | 3 | 20 | | | | | | | | | |
| 8 | roof | 222 | MUA | captiveaire | 208 | 3 | 20 | | | | | | | | | 200 |
| GOWNING | | | | | | | | | | | | | | | | |
| 19 | gowning | 12 | hand sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 19 | gowning | 52 | supply rack | metropolitan | | | | | | | | | | | | |
| 19 | gowning | 53 | coat rack | metropolitan | | | | | | | | | | | | |
| 19 | gowning | 54 | lockers | penco | | | | | | | | | | | | |
| 19 | gowning | 55 | bench | penco | | | | | | | | | | | | |
| 19 | gowning | 56 | laundry bin | penco | | | | | | | | | | | | |
| 19 | gowning | 57 | not used | | | | | | | | | | | | | |
| 19 | gowning | 58 | not used | | | | | | | | | | | | | |
| 19 | gowning | 59 | not used | | | | | | | | | | | | | |
| 19 | gowning | 60 | not used | | | | | | | | | | | | | |
| 19 | gowning | 61 | not used | | | | | | | | | | | | | |
| FREEZER | | | | | | | | | | | | | | | | |
| 7 | freezer | 62 | product racks | metropolitan | | | | | | | | | | | | |
| 7 | freezer | 63 | not used | | | | | | | | | | | | | |
| 7 | freezer | 64 | not used | | | | | | | | | | | | | |
| PACKING | | | | | | | | | | | | | | | | |
| 13 | packing | 12 | hand sink | advance | | | | | | | 0.5 | 0.5 | 1.5 | | | |
| 13 | packing | 14 | hose station | Strahman | | | | | | | 0.75 | 0.75 | | | | |
| 13 | packing | 65 | Orics tray sealer | Orics | 208 | 3 | 30 | | | | | | | 1/2" | 5 | |
| 13 | packing | 66 | shrink wrap | Shanklin | 120 | 1 | 15 | 120 | 1 | 15 | | | | | | |
| 13 | packing | 67 | shrink tunnel | Shanklin | 208 | 3 | 50 | | | | | | | | | |
| 13 | packing | 68 | pack table | advance | | | | | | | | | | | | |
| room # room name item # description vendor volts ph amp volts ph amp cold water hot water drain air size air cfm gas-btu | | | | | | | | | | | | | | | | |
| 13 | packing | 69 | conveyor | Nedco | 208 | 3 | 15 | | | | | | | | | |
| 13 | packing | 70 | fast track | fast track | | | | | | | | | | | | |
| 13 | packing | 71 | band sealer | doboy | | | | 120 | 1 | 20 | | | | | | |
| 13 | packing | 72 | metal detector | Safeline | | | | 120 | 1 | 20 | | | | 1/2" | 1.5 | |
| 13 | packing | 73 | pack table | advance | | | | | | | | | | | | |
| 13 | packing | 74 | case taper | little david | | | | 120 | 1 | 15 | | | | | | |
| 13 | packing | 75 | skate conveyor | Nedco | | | | | | | | | | | | |
| 13 | packing | 76 | bag sealer | | | | | 120 | 1 | 15 | | | | | | |
| 13 | packing | 77 | bag sealer | | | | | 120 | 1 | 15 | | | | | | |
| 13 | packing | 16 | door way sanitizer | lafferty | | | | 120 | 1 | 5 | 0.5 | | | | 1 | foam |
| 13 | packing | 78 | table | advance | | | | | | | | | | | | |
| 13 | packing | 79 | case coder | case coder | | | | 120 | 1 | 15 | | | | 1/2" | 0.5 | |
| COOLER | | | | | | | | | | | | | | | | |
| 14 | cooler | 80 | rolling racks | | | | | | | | | | | | | |
| 14 | cooler | 81 | pallet rack | Frazier | | | | | | | | | | | | |
| 14 | cooler | 82 | electric pallet jack | crown | 120 | 1 | 20 | 120 | 1 | 20 | | | | | | |
| 14 | cooler | 83 | not used | | | | | | | | | | | | | |
| 14 | shipping | 84 | not used | | | | | | | | | | | | | |
| SHIPPING | | | | | | | | | | | | | | | | |
| 14 | shipping | 85 | FORK LIFT & battery charging | | 208 | 3 | 20 | | | | | | | | | |
| 14 | shipping | 86 | battery charging | | | | | 120 | 1 | 20 | | | | | | |
| 14 | shipping | 87 | not used | | | | | | | | | | | | | |
| 14 | shipping | 88 | not used | | | | | | | | | | | | | |
| RECEIVING COOLER | | | | | | | | | | | | | | | | |
| 6 | receiving cooler | 90 | evaporator | bohn | 120 | 1 | 15 | 120 | 1 | 15 | | | | | | |
| 6 | receiving cooler | 91 | evaporator | bohn | 120 | 1 | 15 | 120 | 1 | 15 | | | | | | |
| 50 | roof | 200 | rec clr condenser | bohn | 208 | 3 | 20 | | | | | | | | | |
| RECEIVING FREEZER | | | | | | | | | | | | | | | | |
| 7 | receiving freeze | 92 | evaporator | bohn | 120 | 1 | 15 | 120 | 1 | 15 | | | | | | |
| 50 | roof | 205 | rec frz condenser | bohn | 208 | 3 | 30 | | | | | | | | | |
| PRODUCE PREP | | | | | | | | | | | | | | | | |
| 11 | produce prep | 93 | evaporator | bohn | 120 | 1 | 15 | 120 | 1 | 15 | | | | | | |
| 11 | produce prep | 94 | evaporator | bohn | 120 | 1 | 15 | 120 | 1 | 15 | | | | | | |
| 50 | roof | 215 | cold proc condenser | bohn | 208 | 3 | 20 | | | | | | | | | |

Demolition Allowance

| Item # | Location | Activity | allowance |
|-----------------------------------|--------------------------|---|------------------|
| 1 | shipping dock | clean up as needed | \$ 500 |
| 2 | loading dock | clean up as needed | \$ 500 |
| 3 | office | clean up as needed | \$ 500 |
| 4 | dry storage | clean up as needed | \$ 500 |
| 5 | receiving corridor | pump down and remove existing evaporators | \$ 750 |
| 6 | receiving cooler | remove west wall rooms | \$ 750 |
| | | remove north wall | \$ 750 |
| | | pump down and remove existing evaporators | \$ 750 |
| | | repair floors and wall joints | \$ 1,500 |
| 7 | receiving freezer | open up east wall for new door way | \$ 750 |
| | | install lintel as needed and trim out. | \$ 2,500 |
| | | remove north wall | \$ 750 |
| | | repair floors and wall joints | \$ 1,500 |
| 8 | pot wash | pump down and remove existing evaporators | \$ 750 |
| 9 | corridor | pump down and remove existing evaporators | \$ 750 |
| | | open up wall to room 13 | \$ 750 |
| | | install lintel as needed and trim out. | \$ 2,500 |
| | | repair floors and wall joints | \$ 1,500 |
| 10 | dry process | pump down and remove existing evaporators | \$ 750 |
| 11 | Produce prep room | pump down and remove existing evaporators | \$ 750 |
| 12 | Wet process | close door way to room 13 | \$ 2,500 |
| 13 | Packing room | remove part of the south wall as shown | \$ 750 |
| | | install lintel as needed and trim out. | \$ 2,500 |
| | | remove north wall | \$ 750 |
| | | repair floors and wall joints | \$ 1,500 |
| | | repair ceilings | \$ 2,000 |
| 14 | Cooked Product cooler | remove west wall rooms | \$ 750 |
| | | east wall | \$ 750 |
| | | pump down and remove existing evaporators | \$ 750 |
| | | repair floors and wall joints | \$ 1,500 |
| 15 | Blast freezer | pump down and remove existing evaporators | \$ 750 |
| 16 | Finished product freezer | pump down and remove existing evaporators | \$ 750 |
| 17 | finished product cooler | pump down and remove existing evaporators | \$ 750 |
| 25 | hot water | remove existing equipment | \$ 500 |
| 26 | chemical storage | open up east wall for new door | \$ 750 |
| | | install lintel as needed and trim out. | \$ 1,500 |
| 27 | miscellaneous repairs | ceiling tiles | \$ 2,000 |
| | | grid ceiling | \$ 2,000 |
| | | wall painting | \$ 5,000 |
| | | column painting | \$ 2,500 |
| | | pull back lighting circuits | \$ 2,500 |
| Total Demolition allowance | | | \$ 52,500 |

Construction Details (page 1 of 4)

| room # | room name | activity | allowance |
|------------------|--------------------|---|------------------|
| 1 | shipping dock | make existing roll up doors operational | \$ 750 |
| | | general clean up of walls, floors ceiling paint | \$ 750 |
| | | use existing lighting | |
| | | add exit & emergency light | \$ 1,000 |
| 2 | loading dock | make existing roll up doors operational | \$ 750 |
| | | general clean up of walls, floors ceiling paint | \$ 750 |
| | | use existing lighting | |
| | | add exit & emergency light | \$ 1,000 |
| 3 | office | general clean up and repairs | \$ 750 |
| | | use existing lighting | |
| 4 | dry storage | make existing roll up doors operational | \$ 750 |
| | | general clean up of walls, floors ceiling paint | \$ 750 |
| | | use existing lighting | |
| 5 | receiving corridor | repair ceiling grid, replace tiles, batt insulation, grid | \$ 2,000 |
| | | use existing lighting | |
| 6 | receiving cooler | repair ceiling grid, replace tiles, batt insulation, grid | \$ 2,000 |
| | | add new door into east wall | \$ 3,500 |
| | | add 4 DTF 96 HO fixtures | \$ 4,000 |
| | | 2 evaporators | in project costs |
| | | 1 roof condenser | in project costs |
| OR USE EXISTING | in project costs | | |
| 7 | receiving freezer | install a full four wall, floor, & ceiling freezer | \$ 30,000 |
| | | trim out freezer walls to existing walls | \$ 2,000 |
| | | install an access ramp in the freezer | |
| | | provide door heaters, relief ports, light , thermometer | \$ 4,000 |
| | | add 2 DTF 96 HO fixtures | \$ 2,000 |
| | | 1 evaporator | in project costs |
| 1 roof condenser | in project costs | | |
| 8 | pot wash | general clean up of walls, floors ceiling paint | \$ 750 |
| | | build 25 x 10 walls to underside of existing ceiling | \$ 3,750 |
| | | install hand & triple sink | in project costs |
| | | install 285 sq ft of urethane floor and cove base | \$ 2,850 |
| | | add 3 DTF 96 HO fixtures | \$ 3,000 |
| | | add two exit & emergency lights | \$ 2,000 |
| | | triple sink | in project costs |
| | | hand sink | in project costs |
| | | pump | in project costs |
| eye wash | in project costs | | |

Construction Details (page 2 of 4)

| room # | room name | activity | allowance |
|--------|-------------------|---|------------------|
| 9 | corridor | reference adjacent rooms | |
| | | repair ceiling grid, replace tiles, batt insulation, grid | \$ 750 |
| | | install 300 sq ft of urethane floor and cove base | \$ 3,000 |
| | | add 2 DTF 96 HO fixtures | \$ 2,000 |
| | | add two exit & emergency lights | \$ 2,000 |
| 10 | dry process | general clean up of walls, floors ceiling paint | \$ 750 |
| | | build 50 x 10 sq ft of new walls to underside of ceiling | \$ 7,500 |
| | | install hand & triple sink | in project costs |
| | | install 400 sq ft urethane floor and cove base | \$ 4,000 |
| | | add 3 DTF 96 HO fixtures | \$ 3,000 |
| | | add exit & emergency light | \$ 1,000 |
| | | air lines | |
| 11 | Produce prep room | general clean up of walls, floors ceiling paint | \$ 750 |
| | | build 50 x 10 sq ft of new walls to underside of ceiling | \$ 7,500 |
| | | install hand & triple sink | in project costs |
| | | add refrigeration evaporators | in project costs |
| | | install 665 sq ft of urethane floor and cove base | \$ 6,650 |
| | | add 6 DTF 96 HO fixtures | \$ 6,000 |
| | | add exit & emergency light | \$ 1,000 |
| | | air lines | \$ 1,000 |
| 12 | Wet process | general clean up of walls, floors ceiling paint | \$ 750 |
| | | build 40 x 10 ft of walls to underside of ceiling | \$ 6,000 |
| | | install hand & triple sink | in project costs |
| | | install type I and type II hoods | in project costs |
| | | build new fill in piece for closed wall to room 13 | \$ 1,500 |
| | | install 715 sq ft of urethane floor and cove base | \$ 7,150 |
| | | add 6 DTF 96 HO fixtures | \$ 6,000 |
| | | add exit & emergency light | \$ 1,000 |
| | | air lines | \$ 1,000 |
| 13 | Packing room | repair ceiling grid, replace tiles, batt insulation, grid | \$ 750 |
| | | general clean up of walls, floors ceiling paint | \$ 750 |
| | | install hand sink | in project costs |
| | | add refrigeration evaporators | in project costs |
| | | add 6 DTF 96 HO fixtures | \$ 6,000 |
| | | add two exit & emergency lights | \$ 2,000 |
| | | hand sink | in project costs |
| | | pump | in project costs |

Construction Details (page 3 of 4)

| room # | room name | activity | allowance |
|--------|--------------------------|---|------------------|
| | | air lines | \$ 2,000 |
| | | 2 evaporators | in project costs |
| | | 1 roof condenser | in project costs |
| | | OR USE EXISTING | in project costs |
| 14 | Cooked Product cooler | general clean up of walls, floors ceiling paint | \$ 750 |
| | | build 45 x 10 ft new walls to underside of ceiling | \$ 6,750 |
| | | add refrigeration evaporators | in project costs |
| | | add 1 DTF 96 HO fixtures | \$ 1,000 |
| | | 1 evaporator | in project costs |
| | | 1 roof condenser | in project costs |
| | | OR USE EXISTING | in project costs |
| 15 | Blast freezer | install a full four wall, floor, & ceiling freezer | \$ 30,000 |
| | | trim out freezer walls to existing walls | \$ 2,500 |
| | | install an access ramp in the freezer | \$ - |
| | | provide door heaters, relief ports, light , thermometer | \$ 4,000 |
| | | add refrigeration evaporators | in project costs |
| | | add 1 DTF 96 HO fixtures | \$ 1,000 |
| | | 1 evaporator | in project costs |
| | | 1 roof condenser | in project costs |
| 16 | Finished product freezer | install a full four wall, floor, & ceiling freezer | \$ 30,000 |
| | | trim out freezer walls to existing walls | \$ 2,000 |
| | | install an access ramp in the freezer | \$ - |
| | | provide door heaters, relief ports, light , thermometer | \$ 4,000 |
| | | add refrigeration evaporators | in project costs |
| | | add 3 DTF 48HO fixtures | \$ 2,500 |
| | | 2 evaporators | in project costs |
| | | 1 roof condenser | in project costs |
| 17 | finished product cooler | install a full four wall & ceiling in cooler | \$ 20,000 |
| | | trim out cooler walls to existing walls | \$ 2,500 |
| | | add refrigeration evaporators | in project costs |
| | | add 3 DTF 48HO fixtures | \$ 2,500 |
| | | 1 evaporator | in project costs |
| | | 1 roof condenser | in project costs |
| | | OR USE EXISTING | in project costs |
| 18 | dry finished product | repair ceiling grid, replace tiles, batt insulation, grid | \$ 750 |
| | | add 3 DTF 96 HO fixtures | \$ 3,000 |
| | | add exit & emergency light | \$ 2,000 |

Construction Details (page 4 of 4)

| room # | room name | activity | allowance |
|------------------------------------|---|---|-------------------|
| 19 | gowning | general clean up of walls, floors ceiling paint | \$ 1,500 |
| | | install hand sinks | in project costs |
| | | add 2 DTF 48HO fixtures | \$ 1,500 |
| | | add two exit & emergency lights | \$ 2,000 |
| | | 2 hand sinks | in project costs |
| 20 | lockers | general clean up of walls, floors ceiling paint | \$ 750 |
| | | add wall with door to create the room | |
| | | add 1 DTF 48HO fixtures | \$ 750 |
| | | add exit & emergency light | \$ 1,000 |
| 25 | hot water | prepare the room for the new heater | \$ 750 |
| | | repair existing lights | \$ 500 |
| 26 | chemical storage | install a new door in the east wall | \$ 750 |
| | | prepare the room for chemicals | \$ 500 |
| | | repair existing lights | \$ 500 |
| all | plumbing for all mains and drains, etc, allowance | | \$ 15,000 |
| all | electrical panels and conduit for all rooms, etc. allowance | | \$ 20,000 |
| all | Steel for supporting new condensers on roof allowance | | \$ 20,000 |
| Total of construction costs | | | \$ 331,650 |