

Portland Public Market
A Gateway to the Central City
Katherine Fontaine



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Portland Public Market: A Gateway to the Central City

Thesis Statement and Objectives

Public Markets have been vital elements of cities for thousands of years. We have all experienced the idea of public markets, whether it is the tiny farmer's market on the side of the highway or the weekly market filling the spaces between buildings. These experiences include a mixture of observation and an interaction with local farmers and artists. The cross-cultural and class interactions that often happen at markets are a social phenomenon that we should study as a model for city life.

Public market buildings were once community centers, city halls and places of identity for cities. We need to recapture the urban community atmosphere within the central city and reclaim the interactions of city life. We are given opportunities to display our city's character and encourage the intersection of differences at certain points in Portland because of the use of bridges as city connections. I have chosen the base of the Broadway Bridge as the entry point to study and locate my project. The clients will include the Portland Farmer's Market Association and the Saturday Market Association.

The site at the base of the Broadway Bridge is unique because of its edges which consist of many potential redevelopment sites including the post office and Union station. Even with the current attention to the surrounding neighborhoods, this small area acts as a barrier between the growing communities of the central city. We must start to look at it as a gateway into the city and an important link between key areas. The project will include a green house space and a community garden for educational purposes and to help provide resources to the marketplace. Portland is constantly growing, there are about 1 million new residents predicted in the next 30 years (www.pdc.us). This growth brings a strong need for affordable family housing and middle-income housing, which I hope to introduce through a master plan. Through the intersection of a public market and affordable family housing, downtown Portland will gain a social community space that encourages cross-cultural and class interactions.

Energy Consumption related to thesis project:

There is a current demand to create more energy efficient buildings. A public market building can be wasteful because of high open spaces that will take significant energy to heat or cool and light. Although, there is potential to have spaces that can be flexible, and occupied only part of the year.

Possible energy conservation strategies and their architectural implications:

Energy conservation strategies begin with the exploration of a site plan. This includes addressing the existing physical environment, plant life, soil, water, climate and air quality, and diversity of human experience (Environmental Planning). Measures

should initially be taken to incorporate and plan for the natural environment that exists on the site prior to the building.

Secondly, building design considerations that will impact the energy consumption include: fenestration, insulation, thermal mass, space and structural requirements, horizontal and vertical space requirements, and exterior equipment (Energy Conservation). The building design considerations consist of two categories, passive and active strategies.

Passive Design conservation strategies:

- A windbreak can be created to reduce the amount of infiltration by placing trees [1.5 to 2.5 times the height] away from the building (Energy Conservation).
- Light colored paving can be used to reflect light into the building for daylighting. "Light reflected from the ground represents 10 to 15 percent of total daylight transmitted by a first floor window" (Energy Conservation).
- East/West orientation can be beneficially used for daylighting as well as cross ventilation with the correct placement of windows on opposite facades.
- The building configuration including a greater floor to ceiling height can improve environmental conditions in the summer by allowing warm air to rise.
- The building will incorporate direct gain and thermal mass strategies through solid mass walls along market stalls and direct gain through open glass community spaces.

Active Design conservation strategies:

- Lighting will be handled with individual control, allowing for task lighting and separate lighting in stalls so that the amount of energy can be used as needed rather than constantly through the space.
- Some amount of solar energy will be collected through PV panels on the roof where the roof height allows for it. This will be minimal but helpful combined with building occupation strategies.
- A raised floor heat pump system will be used to allow for radiant floor heating helping to control heat loss through the high spaces. If possible the system will be geothermal, gaining or discharging heat from or into the ground and circulating it through the closed loop system in the floor.

Portland's Public Market
Program Information

Katherine Fontaine
12/04/07

List of Spaces	SQUARE FOOTAGE	HEIGHT*	OCCUPANTS	ACTIVITIES	SCHEDULE
MARKET STALLS					
<i>Food</i>	50 Stalls (5,000 sf)	2x-3x	Vendors/Consumers	Stall retail space	6-9 Months a year for farmers market vendors 12 months for prepared food vendors
<i>Craft</i>	150 Stalls (9,600 sf)	2x-3x	Vendors/Consumers	Stall retail space	12 months a year during market hours
<i>Service</i>	50 Stalls (3,200 sf)	2x-3x	Vendors/Consumers	Stall retail sapce	12 months a year during market hours
<i>Aisles</i>	24,000 sf	2x-3x	Vendors/Consumers	Consumer circulation	12 months a year during market hours
<i>Kitchen Preparation</i>	1,500 sf	x	Vendors/Consumers	Additional preparation space for food	Opening and lunch time during Market daily hours
ADMINISTRATION					
<i>Office</i>	10 Offices (1000 sf)	x	Manager/Employees/ Board Members	Space for manager's coordination/organization	M-F (9:00am to 5:00 pm)
<i>Locker Rooms</i>	500 sf	x	Manager/Employees/ Board Members	Space for workers to change and store personal items	M-F (9:00am to 5:00 pm)
<i>Board Meeting Space</i>	800 sf	1.5x	Manager/Employees/ Board Members	Space for PFM and SMA to meet	M-F (9:00am to 5:00 pm)

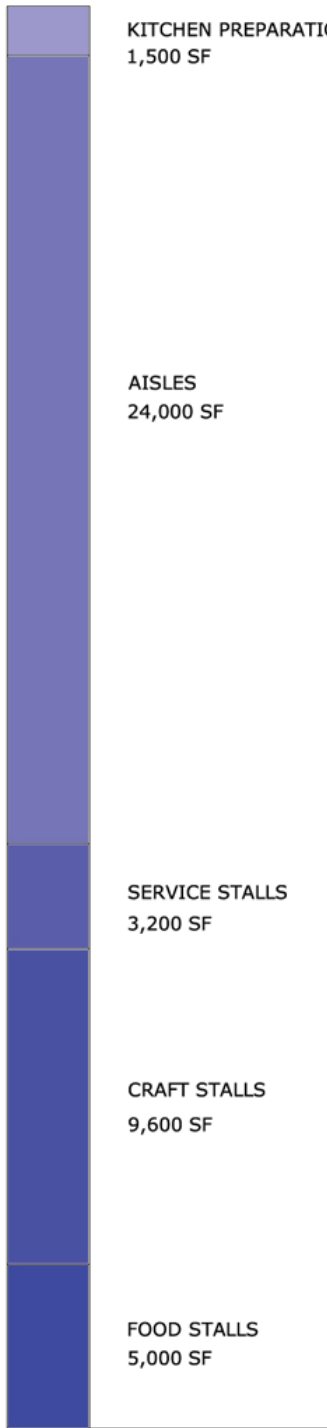
*X Typical Ceiling Height 12 to 15 feet

EDUCATION					
<i>Demonstration Area</i>	1000 sf	1.5x	Community/Vendors/ Consumers/Employees	Demonstration of activities at market (artists/farmers)	12 months a year during market hours
<i>Classrooms</i>	5 rooms (1125 sf)	x	Community/Vendors/ Consumers/Employees	Areas for small meetings and groups to gather and learn from local artisans	Infrequent use, possibly a couple hours a few days a week
<i>Display Areas</i>	250 sf	1.5x	Community/Vendors/ Consumers/Employees	Display of educational materials and local art	12 months a year during market hours
PERFORMANCE					
<i>Central</i>	500 sf	3x	Performers/Consumers	Main stage for central performer	3-5 performances per week during market hours
<i>Secondary</i>	2 (500 sf)	2x	Performers/Consumers	Small areas for small group entertainment (street performers)	3-5 performances per week during market hours
SOCIAL SERVICES					
<i>Coordinator Office</i>	225 sf	x	Social Service employees	Main coordination office	M-F (9:00am to 5:00 pm)
<i>Meeting Area</i>	500 sf	x	Social Service employees	Meeting space for local social services to coordinate local efforts	M-F (9:00am to 5:00 pm)
PRODUCTION					
<i>Greenhouse</i>	15,000 sf	2x	Employees	Covered year round growing space	Year Round
<i>Outdoor Garden</i>	15,000 sf	NA	Community/Volunteers	Outdoor public space for community enjoyment and education	Outdoor

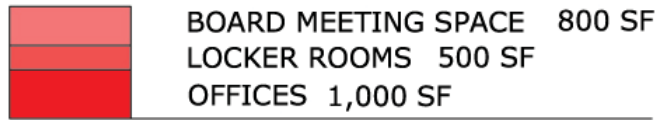
CIRCULATION/ UTILITIES					
<i>Lobby</i>	1000 sf	3x	All Occupants	Central Entrance and information	Year round during market hours
<i>Public Space</i>	NA	NA	Community	Multi-purpose community space	Outdoor/In Market year round use
<i>Bathrooms</i>	500 sf	x		Bathrooms	Open during all market hours
<i>Loading/Unloading</i>	4000 sf	NA	Vendors	Loading/Unloading of goods and services	Outdoor
<i>Parking</i>	20 (4000 sf)	NA	Employees/Visitors	Parking for local workers and visitors	Outdoor
<i>Seating Areas</i>	2000 sf	1.5x	Consumers/Visitors	Eating lunch and watching performers	During all market hours
<i>Information booths</i>	2 (250 sf)	x	Consumers/Visitors	Information about the market and activities	During all market hours

The chart above consists of seven categories consisting of the main market space, education, production, performance, administration, social services, and utility space. The goal for this project is to introduce multiple community activities and functions into the market providing a unique sensory experience bringing people of all cultures and classes together. Ideally, through the intersection of education, participation, and performance people will be interacting at the community scale as well as the human scale.

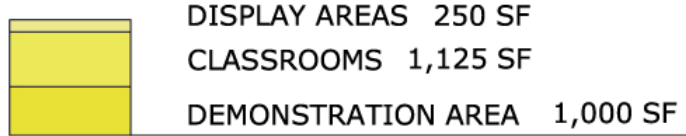
“Watching stallholders baking bread, roasting coffee, making pasta, cutting meat, or carving toys heightens the customer’s sensory experience of the market” (Public Markets).



MARKET SPACE
43,300 SF



ADMINISTRATION
2,300 SF

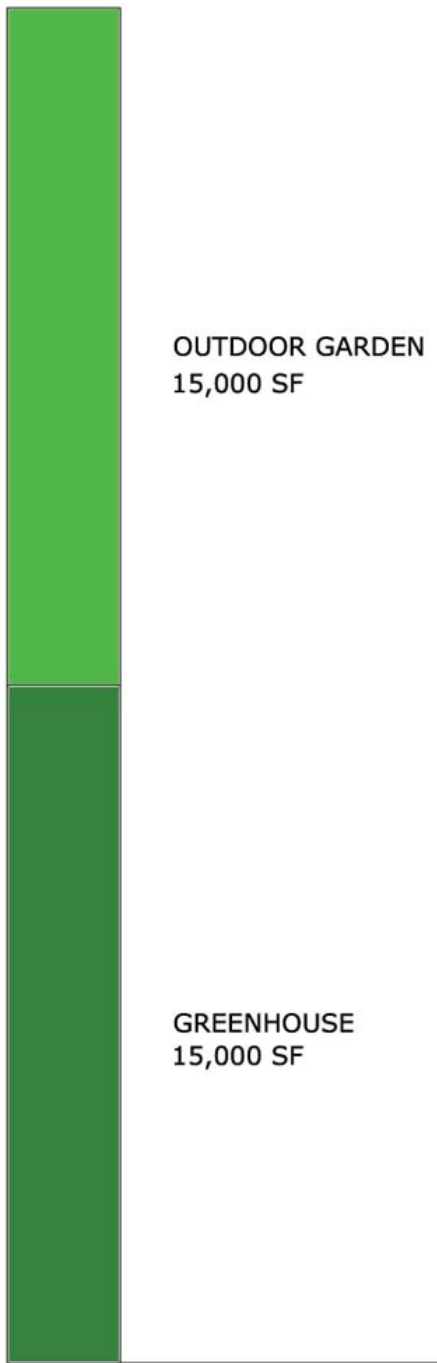


EDUCATION
2,375 SF



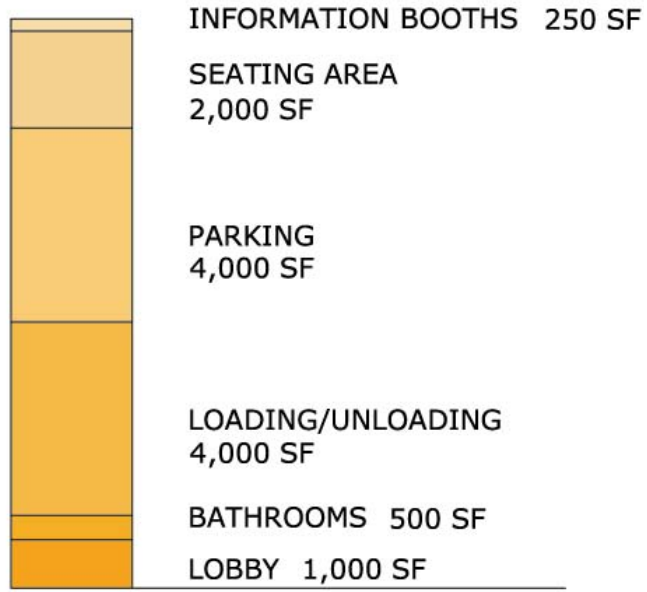
PERFORMANCE
2,000 SF

THESIS PROGRAM



MEETING AREA 500 SF
 COORDINATOR OFFICE 225 SF

SOCIAL SERVICES
 725 SF



INFORMATION BOOTHS 250 SF

SEATING AREA
 2,000 SF

PARKING
 4,000 SF

LOADING/UNLOADING
 4,000 SF

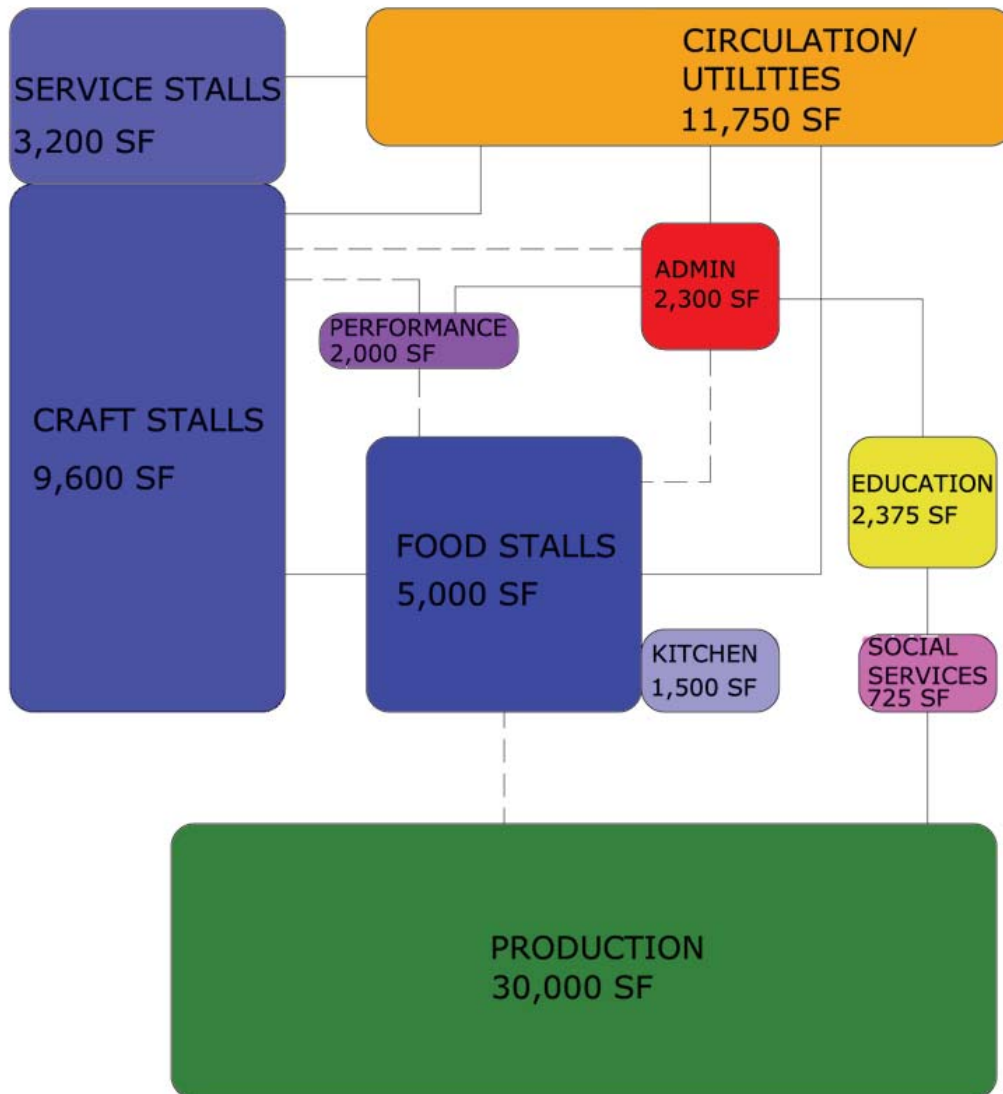
BATHROOMS 500 SF




LOBBY 1,000 SF

CIRCULATION/UTILITIES
 11,750 SF

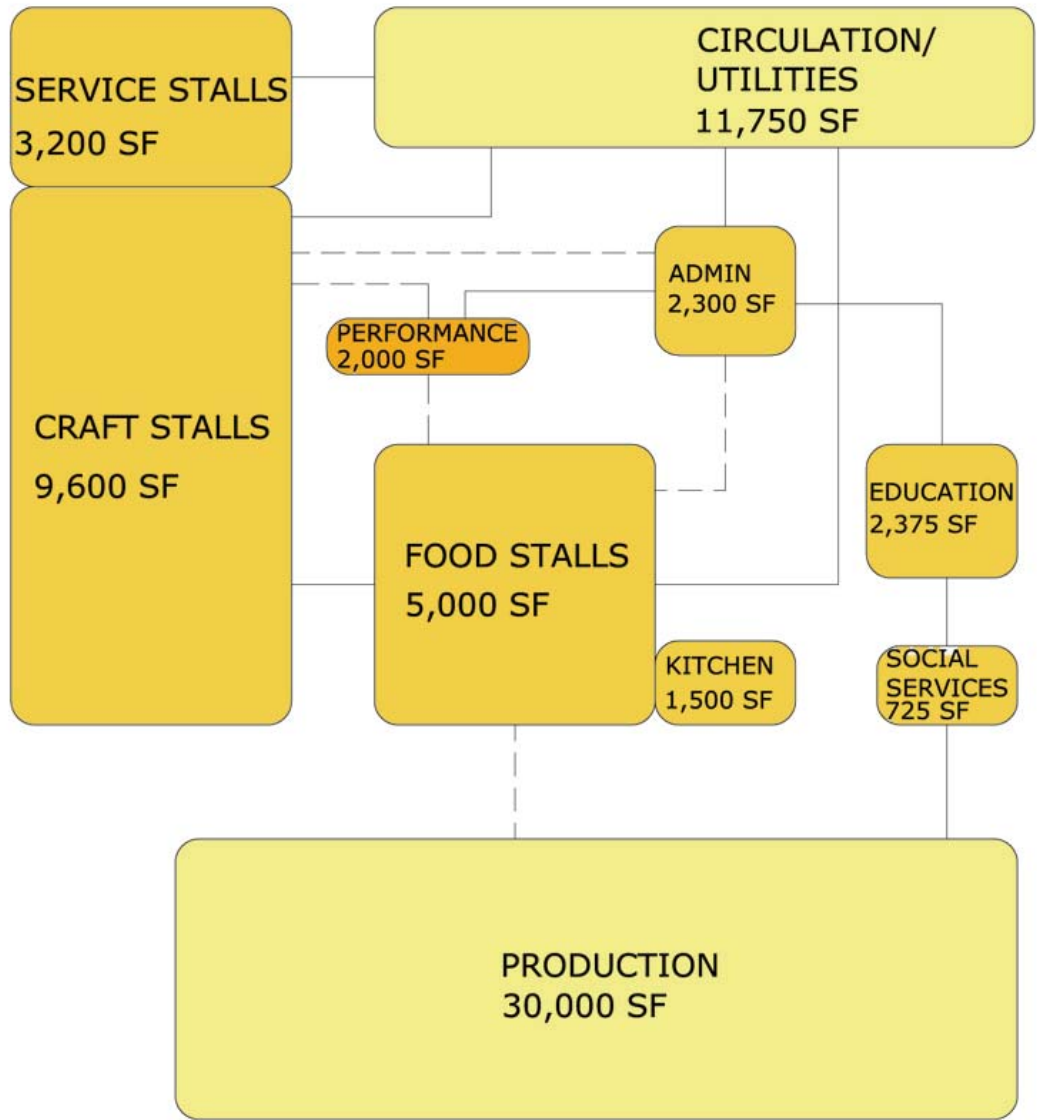
PRODUCTION
 30,000 SF

THESIS PROGRAM






-  CLOSE ADJACENCY
-  SOFT CONNECTION
-  HARD CONNECTION

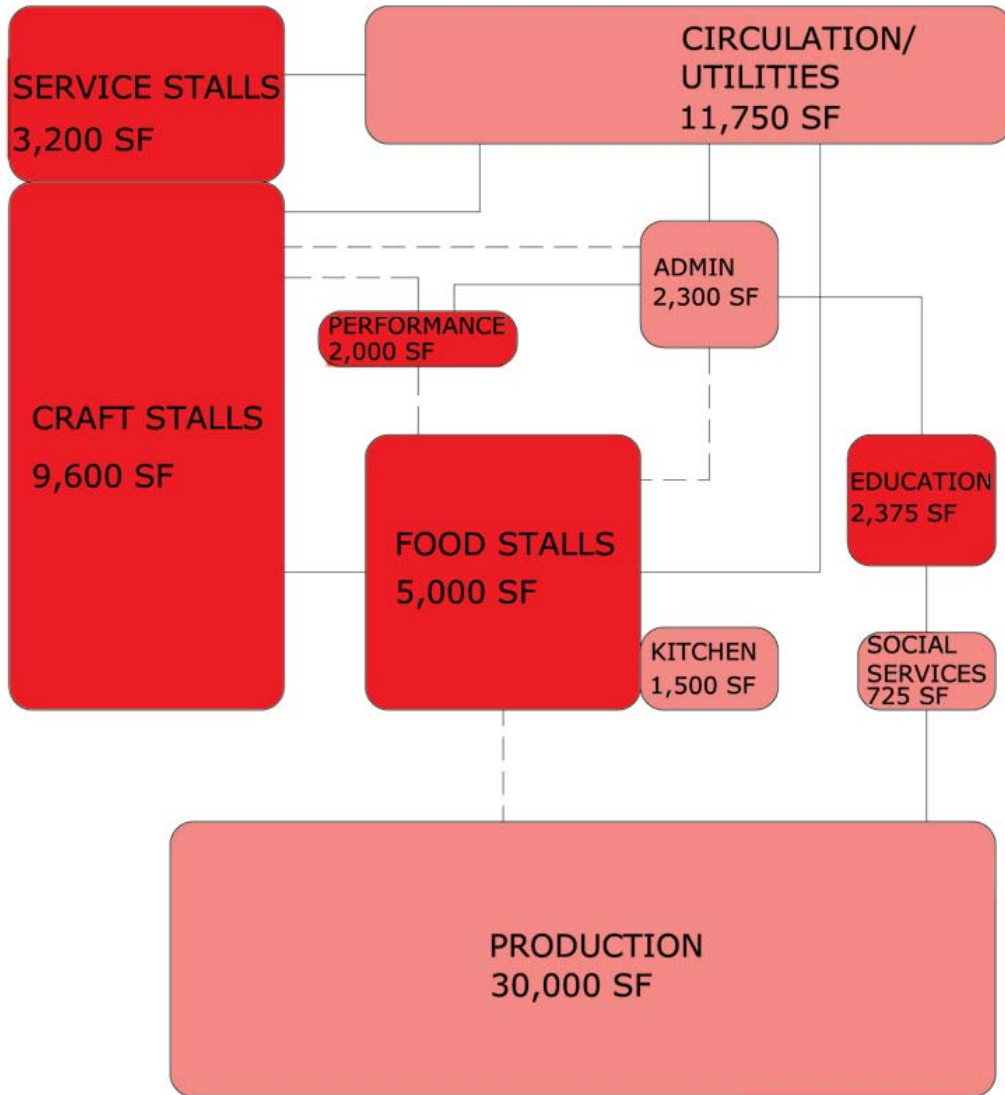
PROGRAM ADJACENCY DIAGRAM







 CLOSE ADJACENCY
 SOFT CONNECTION
 HARD CONNECTION

 HIGH AMBIENT/HIGH TASK
 LOW AMBIENT/HIGH TASK
 LOW AMBIENT/LOW TASK

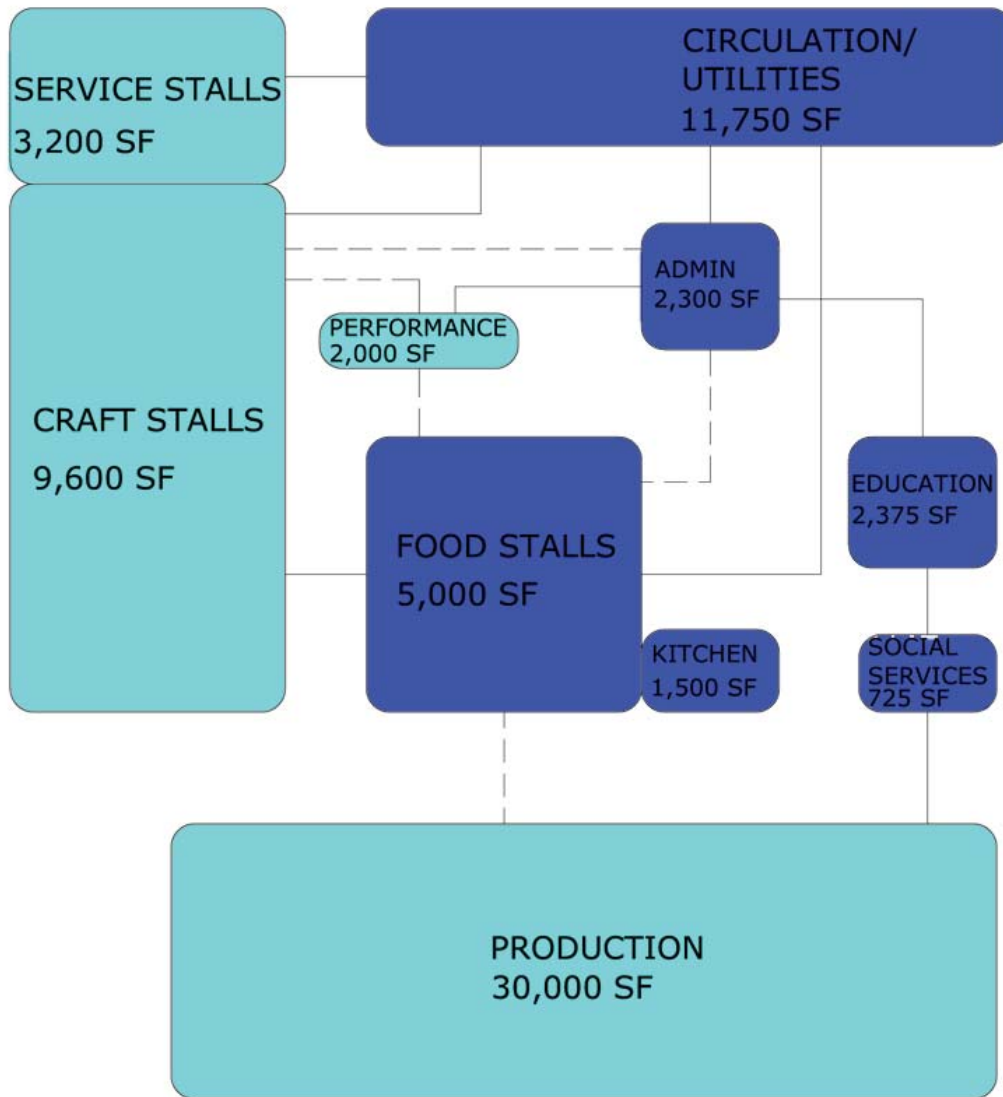
LIGHTING LEVELS



 CLOSE ADJACENCY
 SOFT CONNECTION
 HARD CONNECTION

 HIGH OCCUPANCY
 LOW OCCUPANCY

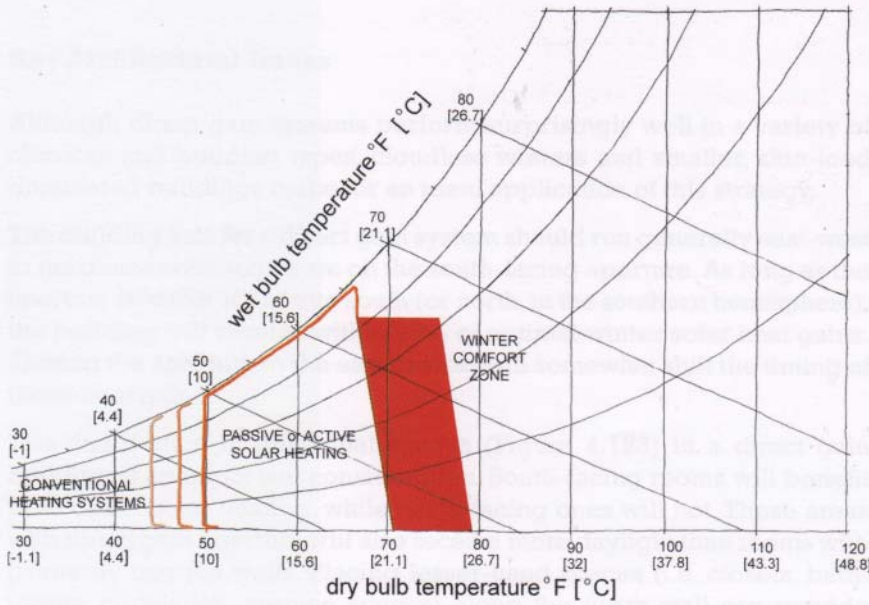
OCCUPANCY DIAGRAM



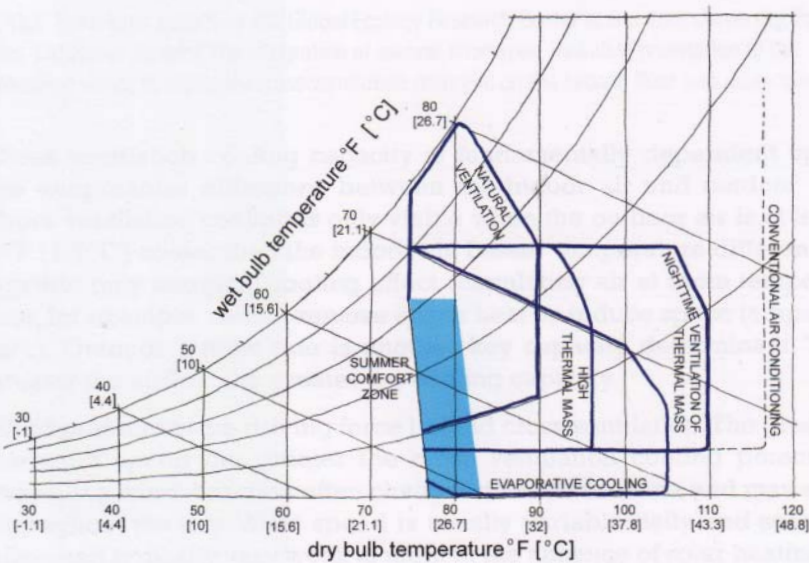
CLOSE ADJACENCY
 SOFT CONNECTION
 HARD CONNECTION

SMALL TEMP RANGE - 70 DEGREES
 LARGE RANGE - FREEZE PROTECT

TEMPERATURE DIAGRAM



4.120 Applicability of building heating strategies. ADAPTED FROM ENERGY CONSERVATION THROUGH BUILDING DESIGN



4.150 Applicability of building cooling strategies. ADAPTED FROM ENERGY CONSERVATION THROUGH BUILDING DESIGN

The diagrams on the previous pages show the temperatures, occupancy rates, and lighting levels that can all be used to help determine viable strategies for the building's energy systems. These two charts demonstrate strategies that can be used once the human comfort level is determined for each space. A public market is a unique space because many times of the year it can be an open air environment helping to extend the human comfort level. Therefore strategies such as natural ventilation and solar heating could be feasible solutions.

EXAMPLE COMFORT LEVEL CHARTS



- East/West Orientation of aisles, extending the building along the North/South axis allowing for daylighting and natural ventilation strategies.
- Large open floor plan that can be flexible and adaptable as the market grows and changes.
- Market on first level for each access, circulation, and comparison of stalls, with additional spaces on floors above.
- Clerestory windows to allow for natural light but eliminating direct sunlight, which can spoil food.

“As with the design of the overall market, what is sought is a balance between individuality and overall cohesiveness” (Public Market).

ARCHITECTURAL DESIGN IDEAS/STRATEGIES

CONCLUSION

Public market buildings typically have extensive requirements for sewer connections, electrical power, water supply, cold storage, and air conditioning and heating because of the large open spaces that are being used with multiple stalls (Public Markets). With that in mind, it is still possible to design an energy efficient building with some extra planning. The goal of the market is to bring the community together and educate people about sustainable food production and other environmentally conscience ways of living; therefore, the space that this takes place in should follow those principles. Beginning with site planning, simple moves can be made to create a succesful building. The diagrams included in this program will help efficiently plan for sustainable use of the building at various times of the year depending on needs, schedule, occupancy rates, and lighting.



Bibliography

1. Environmental Planning for Site Development: A Manual for Sustainable Local Planning and Design. 2nd Ed. Anne R. Beer and Catherine Higgins. 2000.
2. The Green Studio Handbook. Alison G. Kwok and Walter T. Grondzik. 1st Ed. 2007.
3. The Architect's Guide to Energy Conservation. Seymour Jarmul. 1980.
4. Sun, Wind, and Light: Architectural Design Strategies. 2nd. Ed. G.Z. Brown and Mark Dekay. 2001.
5. Public Markets and Community Revitalization. Theodore Morrow Spitzer and Hilary Baum. Project for Public Spaces, Inc. 2004.
6. Portland Development Commission. www.pdc.us
7. Portland Saturday Market. www.PortlandSaturdayMarket.com
8. Portland Farmer's Market. www.PortlandFarmersMarket.org