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.
### List of Spaces

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

* Typical Ceiling Height 12 to 15 feet
# Portland's Public Market

## Program Information

Katherine Fontaine
12/04/07

## EDUCATION

<table>
<thead>
<tr>
<th>Area</th>
<th>Size</th>
<th>Use</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstration Area</td>
<td>1000 sf</td>
<td>1.5x</td>
<td>Community/Vendors/Consumers/Employees</td>
<td>Demonstration of activities at market (artists/farmers)</td>
</tr>
<tr>
<td>Classrooms</td>
<td>5 rooms</td>
<td>x</td>
<td>Community/Vendors/Consumers/Employees</td>
<td>Areas for small meetings and groups to gather and learn from local artisans</td>
</tr>
<tr>
<td>Display Areas</td>
<td>250 sf</td>
<td>1.5x</td>
<td>Community/Vendors/Consumers/Employees</td>
<td>Display of educational materials and local art</td>
</tr>
</tbody>
</table>

## PERFORMANCE

<table>
<thead>
<tr>
<th>Area</th>
<th>Size</th>
<th>Use</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>500 sf</td>
<td>3x</td>
<td>Performers/Consumers</td>
<td>Main stage for central performer</td>
</tr>
<tr>
<td>Secondary</td>
<td>2 (500 sf)</td>
<td>2x</td>
<td>Performers/Consumers</td>
<td>Small areas for small group entertainment (street performers)</td>
</tr>
</tbody>
</table>

## SOCIAL SERVICES

<table>
<thead>
<tr>
<th>Area</th>
<th>Size</th>
<th>Use</th>
<th>Description</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator Office</td>
<td>225 sf</td>
<td>x</td>
<td>Social Service employees</td>
<td>Main coordination office</td>
</tr>
<tr>
<td>Meeting Area</td>
<td>500 sf</td>
<td>x</td>
<td>Social Service employees</td>
<td>Meeting space for local social services to coordinate local efforts</td>
</tr>
</tbody>
</table>

## PRODUCTION

<table>
<thead>
<tr>
<th>Area</th>
<th>Size</th>
<th>Use</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse</td>
<td>15,000 sf</td>
<td>2x</td>
<td>Employees</td>
<td>Covered year round growing space</td>
</tr>
<tr>
<td>Outdoor Garden</td>
<td>15,000 sf</td>
<td>NA</td>
<td>Community/Volunteers</td>
<td>Outdoor public space for community enjoyment and education</td>
</tr>
</tbody>
</table>
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).
THESIS PROGRAM

KITCHEN PREPARATION 1,500 SF

BOARD MEETING SPACE  800 SF
LOCKER ROOMS  500 SF
OFFICES  1,000 SF

ADMINISTRATION
2,300 SF

DISPLAY AREAS  250 SF
CLASSROOMS  1,125 SF
DEMONSTRATION AREA  1,000 SF

EDUCATION
2,375 SF

SERVICE STALLS  3,200 SF

SECONDARY  1,000 SF
CENTRAL  1,000 SF

CRAFT STALLS  9,600 SF

PERFORMANCE
2,000 SF

FOOD STALLS  5,000 SF

MARKET SPACE  43,300 SF
THESIS PROGRAM

OUTDOOR GARDEN
15,000 SF

GREENHOUSE
15,000 SF

MEETING AREA
500 SF

COORDINATOR OFFICE
225 SF

SOCIAL SERVICES
725 SF

INFORMATION BOOTH
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
LIGHTING LEVELS

- SERVICE STALLS 3,200 SF
- CRAFT STALLS 9,600 SF
- FOOD STALLS 5,000 SF
- PRODUCTION 30,000 SF
- CIRCULATION/UTILITIES 11,750 SF
- ADMIN 2,300 SF
- PERFORMANCE 2,000 SF
- EDUCATION 2,375 SF
- KITCHEN 1,500 SF
- SOCIAL SERVICES 725 SF

CLOSE ADJACENCY
SOFT CONNECTION
HARD CONNECTION

HIGH AMBIENT/HIGH TASK
LOW AMBIENT/HIGH TASK
LOW AMBIENT/LOW TASK
TEMPERATURE DIAGRAM

- SERVICE STALLS 3,200 SF
- CRAFT STALLS 9,600 SF
- FOOD STALLS 5,000 SF
- ADMIN 2,300 SF
- PERFORMANCE 2,000 SF
- EDUCATION 2,375 SF
- KITCHEN 1,500 SF
- SOCIAL SERVICES 725 SF
- PRODUCTION 30,000 SF

- CLOSE ADJACENCY
- SOFT CONNECTION
- HARD CONNECTION

- SMALL TEMP RANGE - 70 DEGREES
- LARGE RANGE - FREEZE PROTECT

TEMPERATURE DIAGRAM
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.
• 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).
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