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For Professor Jean von Bargaen

Architectural Programming 549

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### The Children's Community Education Center

How can the urban core of Portland enhance American elementary education? The influx of people moving downtown with the new Portland Central Plan creates a real need for education facilities for all ages. Museums, music, arts and working professionals in the immediate vicinity can benefit the education system. Central location with nearby public transportation gives this school outreach potential. In the last several decades, the education system in the United States has become deficient. Lack of funding, poor facility management and an overriding concern with the bottom dollar has created a situation in which children don't have best the facilities to learn.

The objectives for this thesis are:

- Redefine the prototypical schoolhouse for an urban setting in Portland
- Rethink the current design standards and education system in which most schools conform to in the United States by creating a new style of education center.
- Focus on environments that promote learning.

This new standard will be detached from the current static classroom design, incorporate ideas from urban design, community involvement and sustainable practices into a new style of urban education center for downtown Portland.

There are three major levels in which energy is important to a new school. First, everyone needs proper lighting and climate control for a healthy learning environment. Second, the next generation needs to utilize new technology. This technology needs power to run. Third, school districts are usually under funded. Traditionally, school maintenance and operation costs are combined and fixed; it usually takes a bond measure to make major improvements. If schools are designed for reduced energy costs then other maintenance or improvements can receive the money.

There are many ways of reducing the energy of the school. One item that is helping overall energy conservation is the typical school schedule. The school year covers the fall, winter and spring. Since Portland has such a moderate climate, winter will require heat while ventilation can be used during the spring and fall. This climate also eliminates air conditioning. Large

groups of people have a high heat gain so the children themselves can help subsidize the heating load. The sun is usually out during the school day so daylighting and passive solar heating is acceptable. Daylighting assembly areas and classrooms will increase energy efficiency and promote healthy learning environments. Thin floor plates can also promote daylighting and help with natural ventilation. The building will have a large roof area in which rainwater can be collected for grey water uses like flushing toilets.

# Overall Program

Space Allocation	Quantity	SF Each	Net SF
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## Elementary School

### Administration: Elementary

Principals Office	1	150 sf	150 sf
Assistant Principals Office	1	150 sf	150 sf
Reception	1	150 sf	150 sf
Waiting	1	150 sf	150 sf
Record Room	1	300 sf	300 sf
Conference Room	1	600 sf	600 sf
Counselors Office	1	150 sf	150 sf
Faculty Mail Boxes	1	150 sf	150 sf
Nurse Station	1	150 sf	150 sf
Work Room	1	150 sf	150 sf
Staff Toilet	2	50 sf	100 sf
Teacher Break Room	1	400 sf	400 sf
<b>Total</b>			<b>2,600 sf</b>

### Education Centers: Elementary

Kindergarten Classrooms	4	1,200 sf	4,800 sf
First Grade Classrooms	3	1,000 sf	3,000 sf
Second Grade Classrooms	3	1,000 sf	3,000 sf
Third Grade Classrooms	3	1,000 sf	3,000 sf
Fourth Grade Classrooms	3	1,000 sf	3,000 sf
Fifth Grade Classrooms	3	1,000 sf	3,000 sf
Classroom Storage	19	100 sf	1,900 sf
Classroom Commons	6	1,000 sf	6,000 sf
<b>Total</b>			<b>27,700 sf</b>

### Auxillary Education

Family Resource Center	1	1,200 sf	1,200 sf
Library/ Media Center	1	4,000 sf	4,000 sf
Technology Labs	1	1,200 sf	1,200 sf
Art Room	1	1,000 sf	1,000 sf
Music Room	1	1,000 sf	1,000 sf
Multi-Purpose Room	1	1,000 sf	1,000 sf
<b>Total</b>			<b>9,400 sf</b>

### Auxillary Non-Education

Bathrooms	25	50 sf	1,250 sf
Resource Rooms	9	350 sf	3,150 sf
Assembly Area	1	6,000 sf	6,000 sf
Stage Area	1	1,000 sf	1,000 sf
Cafateria	1	5,000 sf	5,000 sf
Kitchen	1	3,000 sf	3,000 sf
Delivery Area	1	150 sf	150 sf
Chair Storage	1	400 sf	400 sf
Table Storage	1	400 sf	400 sf
<b>Total</b>			<b>20,350 sf</b>

## **Middle School**

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### **Administration**

Assistant Principals Office	1	150 sf	150 sf
Reception	1	150 sf	150 sf
Waiting	1	150 sf	150 sf
Conference Room	1	600 sf	600 sf
Concelors Office	1	150 sf	150 sf
Faculty Mail Boxxes	1	150 sf	150 sf
Nurse Station	1	150 sf	150 sf
Work Room	1	150 sf	150 sf
Staff Toilet	1	150 sf	150 sf
Teacher Break Room	1	400 sf	400 sf
<b>Total</b>			<b>2,200 sf</b>

### **Education Centers**

Sixth Grade Classrooms	3	1,000 sf	3,000 sf
Seventh Grade Classrooms	3	1,000 sf	3,000 sf
Eighth Grade Classrooms	3	1,000 sf	3,000 sf
Classroom Commons	3	1,000 sf	3,000 sf
<b>Total</b>			<b>12,000 sf</b>

### **Auxillary Education**

Family Resourse Center	1	1,200 sf	1,200 sf
Library/ Media Center	1	4,000 sf	4,000 sf
Technology Labs	1	1,200 sf	1,200 sf
Art Room	1	1,000 sf	1,000 sf
Music Room	1	1,000 sf	1,000 sf
Multi-Purpose Room	1	1,000 sf	1,000 sf
<b>Total</b>			<b>9,400 sf</b>

### **Auxillary Non-Education**

Bathrooms	25	50 sf	1,250 sf
Resource Rooms	9	350 sf	3,150 sf
Assembly Area	1	6,000 sf	6,000 sf
Stage Area	1	1,000 sf	1,000 sf
Cafateria	1	5,000 sf	5,000 sf
Kitchen	1	3,000 sf	3,000 sf
Delivery Area	1	150 sf	150 sf
Chair Storage	1	400 sf	400 sf
Table Storage	1	400 sf	400 sf
<b>Total</b>			<b>20,350 sf</b>

## **Community Center**

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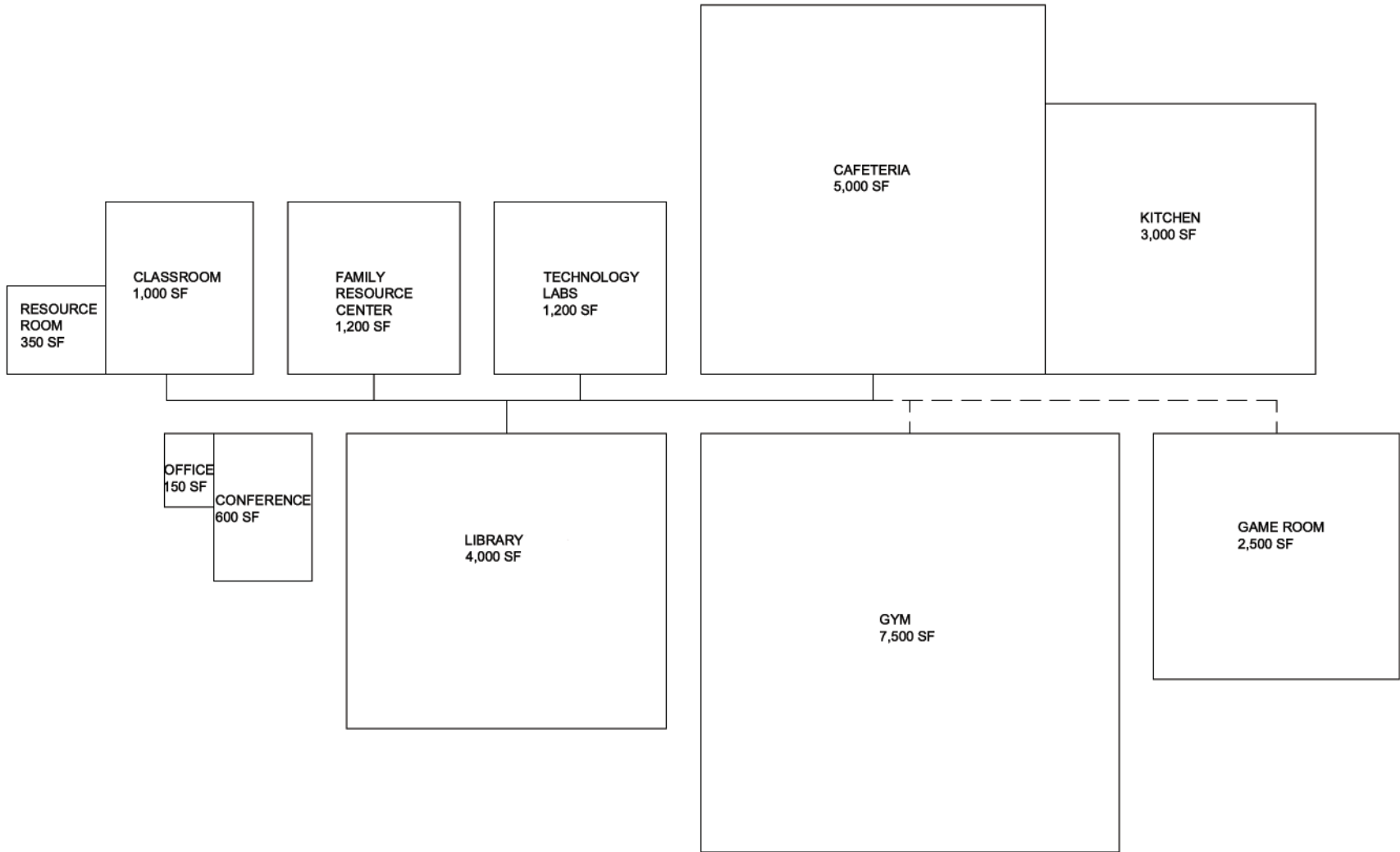
### **Community Center**

Club Entry	1	500 sf	500 sf
Reception	1	150 sf	150 sf
Full-sized Gym	1	7,500 sf	7,500 sf
Game Room	1	2,500 sf	2,500 sf
Technology Room	1	1,200 sf	1,200 sf
Arts and Crafts Room	1	1,200 sf	1,200 sf
Teen Center	1	1,200 sf	1,200 sf
Weight Room	1	1,200 sf	1,200 sf
Staff Offices	4	150 sf	600 sf
Kitchen	1	1,000 sf	1,000 sf
Bathrooms	10	50 sf	500 sf
Storage	1	2,000 sf	2,000 sf
<b>Total</b>			<b>19,550 sf</b>

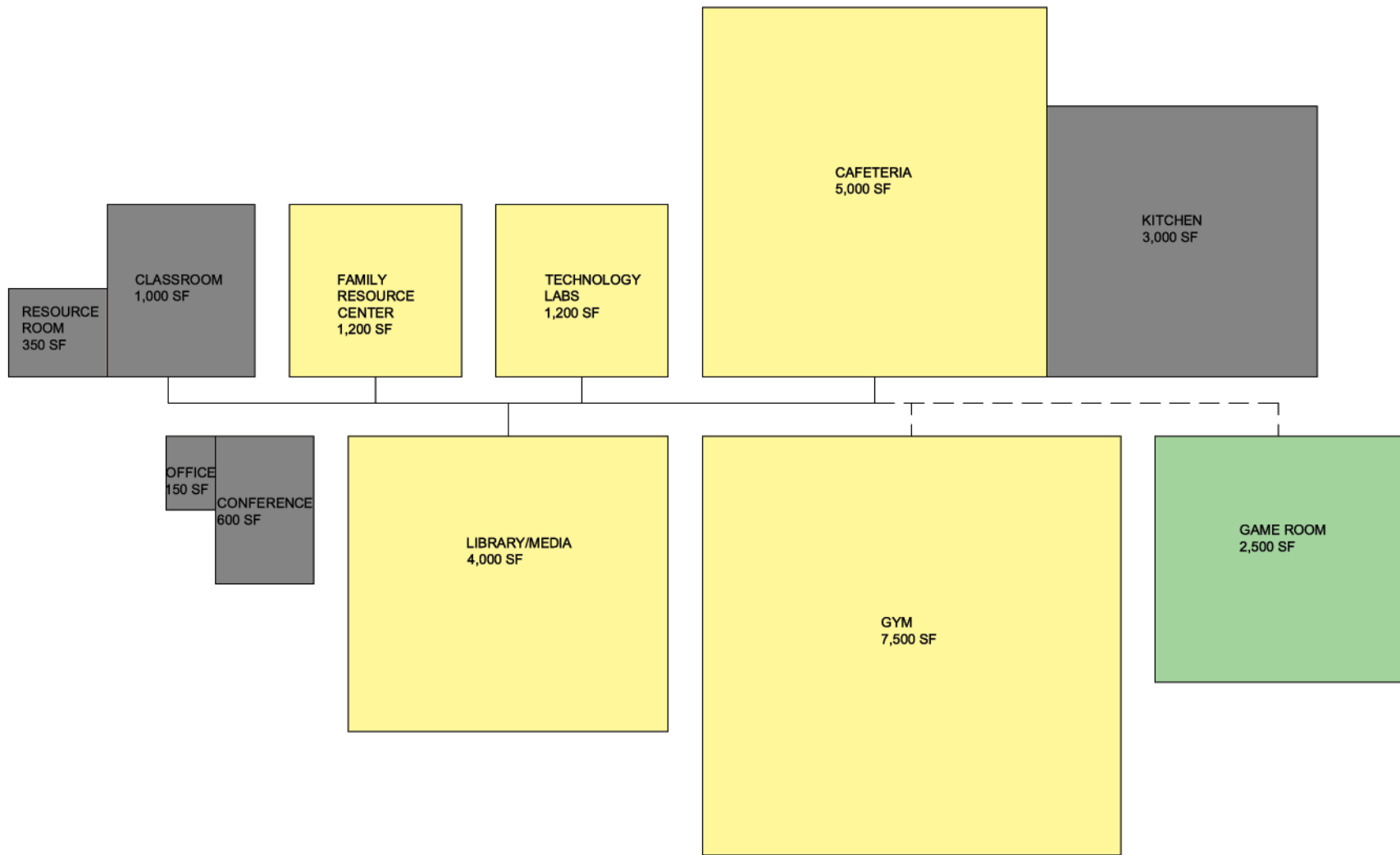
<b>Total Net</b>	<b>123,550 sf</b>
<b>Systems 15%</b>	<b>18,533 sf</b>
<b>Efficiency Ratio 40%</b>	<b>49,420 sf</b>
<b>Total Gross</b>	<b>191,503 sf</b>

# Energy Program

Space	Area (SF)	Height (Ft)	Activities	Occupants	Times of Day	Hours of Use	Lighting	Temperature Range	Energy
Principals Office	150	9'	Computer, meetings	1	Day	0 to 3	High task, high ambient	Low	Low
Conference Room	600	10'	Meetings	12	Day	0 to 3	High task, high ambient	Low	Low
First Grade Classrooms	1,000	12'	Learning, mix of uses	25	Day	3 to 8	High task, high ambient	Low	Medium
Family Resource Center	1,200	12'	Meetings, help with school, computers	30	Day, Evening	8 to 14	High task, low ambient	Low	Medium
Library	4,000	12'	Reading, meetings	100	Day, Evening	8 to 14	High task, high ambient	Medium	Low
Technology Labs	1,200	12'	Computer	30	Day, Evening	8 to 14	High task, low ambient	Low	High
Resource Rooms	350	9'	Prep for class	5	Day	0 to 3	High task, low ambient	High	Medium
Cafateria	5,000	12'	Eating	125	Day, Evening	8 to 14	Low task, low ambient	Medium	Low
Kitchen	3,000	10'	Preparing food	15	Day	0 to 3	High task, high ambient	Medium	High
Full-sized Gym	7,500	35'	Games, assembly	200	Day, Evening	8 to 14	Low task, low ambient	High	Low
Game Room	2,500	12'	Games	75	Evening	0 to 3	High task, low ambient	Low	High



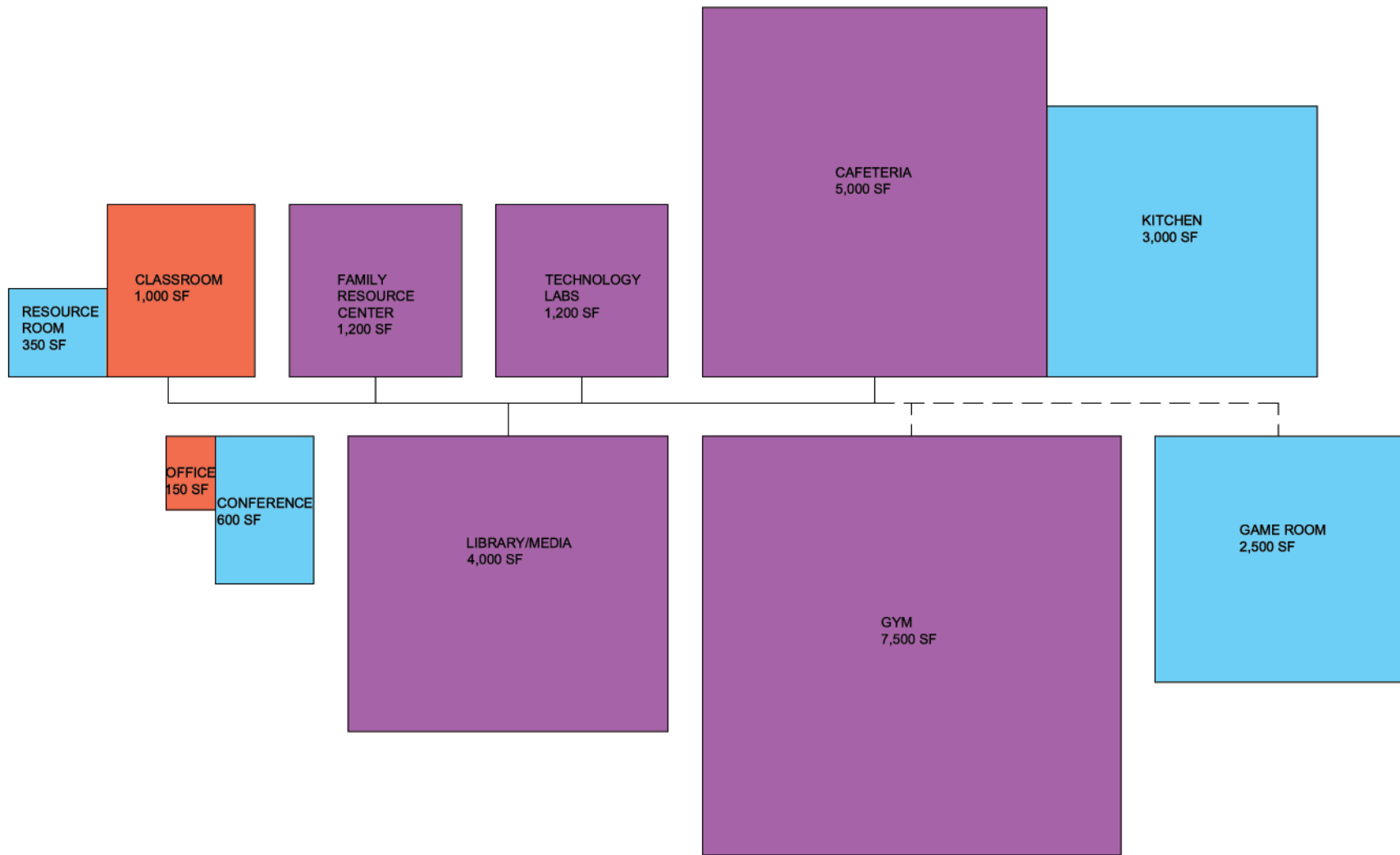
SCALED AREA DIAGRAM



- Daytime M-F
- Daytime, Evenings and Weekends
- Evenings and Weekends

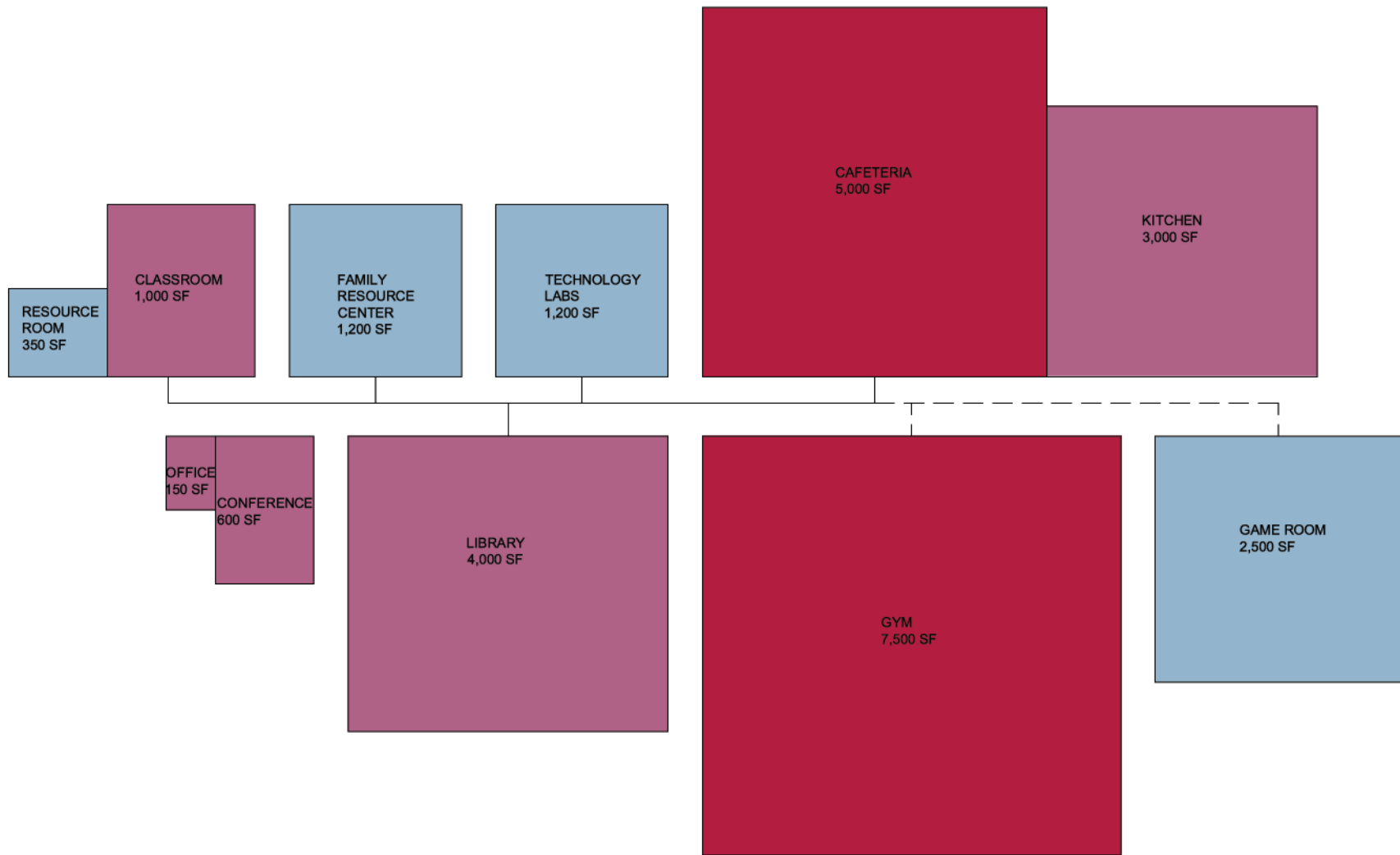
TIMES OF DAY





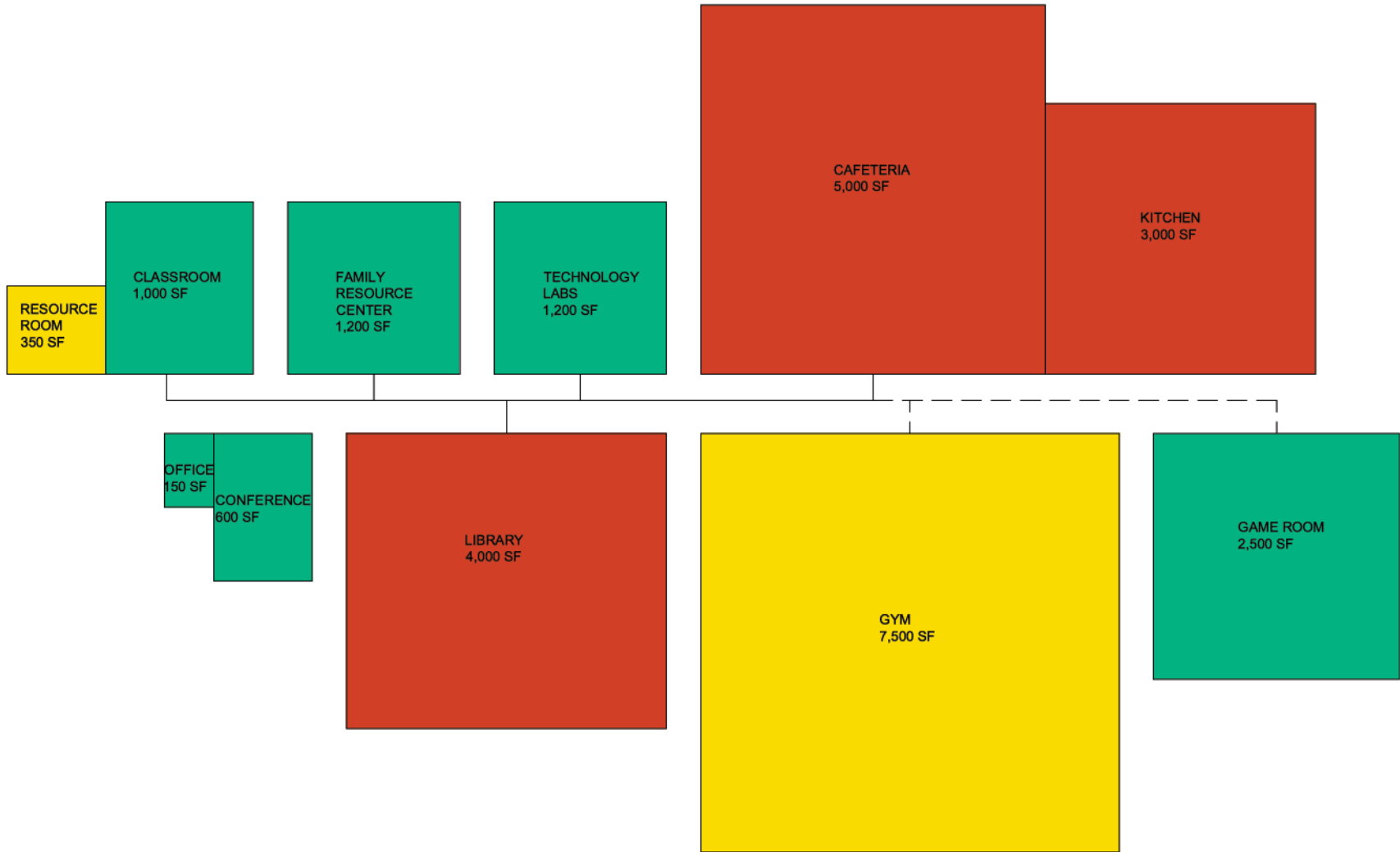
- 0-3 Hours per day
- 3-8 Hours per day
- 8-14 Hours per day

HOURS OF USE PER DAY



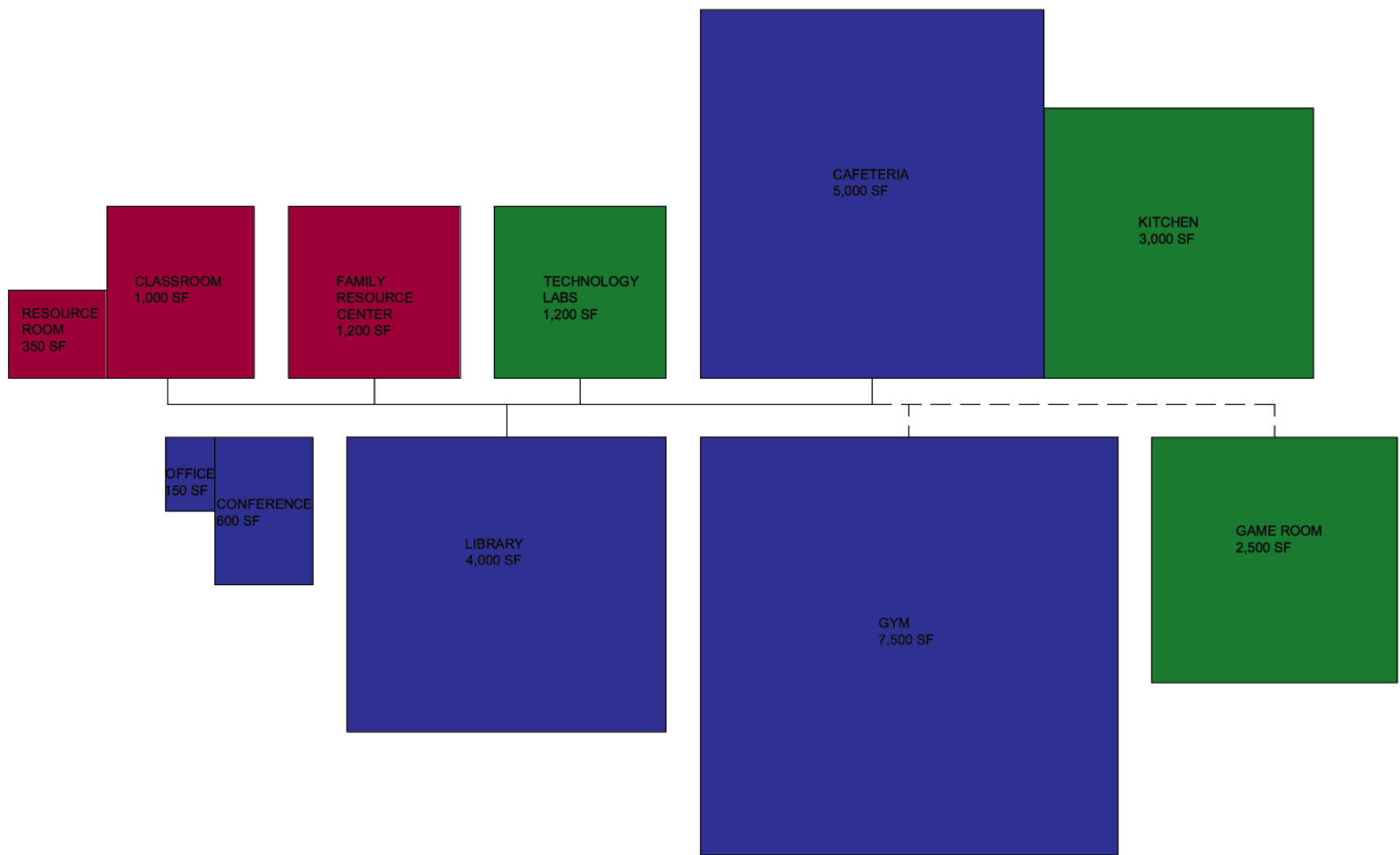
- High task, high ambient
- High task, low ambient
- Low task, high ambient

LIGHTING REQUIREMENTS



- Low range
- Medium range
- High range

TEMPERATURE RANGE



- Low energy
- Medium energy
- High energy

ENERGY USAGE