ARCH 232
Architecture and Cultural History III
Required (4 credits)

Professor: B.D. Wortham-Galvin
Meets: MW 9.00-11.20
Location: Academic & Student Rec Ctr 230
Contact: b.d.worthamgalvin@pdx.edu

Course Description
One of a series of courses tracing the history of western culture through its architecture from the early Paleolithic Age up to the 20th century. This course addresses the Enlightenment through to the 20th century. The courses will focus on a select number of architectural works that are representative of specific cultural beliefs, values, and ideologies as embodied in architectonic forms and experiences.

Course Objectives
• Familiarize students with the diversity of architecture issuing from the great epochs of history, with particular reference to its relationship with the other arts and the wider cultural context.
• Introduce the architecture, art and material culture of Enlightenment, Industrial and avant-garde cultures through to the 20th Century.
• Engage students with the material through lectures, research, writing, and other interpretive project work.

GRAs:
Lisa Patterson (lnp2@pdx.edu)
Genevieve Wasser (gwasser@pdx.edu)
**Assignment 3—The Building & the Sciences** (13% of course grade)

### Key Components and Key Dates

<table>
<thead>
<tr>
<th>Component</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issued</td>
<td>W 26 April</td>
</tr>
<tr>
<td>Key lecture/equipment orientation</td>
<td>M 1 May</td>
</tr>
<tr>
<td>Following class you are strongly encouraged to check out your equipment from BUILT (Shattuck 201)</td>
<td></td>
</tr>
<tr>
<td>Data Collection</td>
<td>M 1 May-Su 7 May; data collection is required during this time period</td>
</tr>
<tr>
<td>Last day to check out equipment</td>
<td>Th 4 May; if you have not checked out your equipment by this day you will receive an automatic 0 on Assignment 3</td>
</tr>
<tr>
<td>Part 1/Fieldwork due</td>
<td>M 8 May—bring hard copies to class; BUILT will review data collection in Class</td>
</tr>
<tr>
<td>Additional Data collection, only if deemed necessary by BUILT</td>
<td>Tu 9 May-Su 13 May</td>
</tr>
<tr>
<td>Final Paper due digitally</td>
<td>Su 14 May uploaded to d2l as a pdf with a time stamp no later than 11:59pm</td>
</tr>
<tr>
<td>Equipment due</td>
<td>Th 18 May is the last day to turn in equipment to BUILT (Shattuck 201) without a grade penalty.</td>
</tr>
</tbody>
</table>

In order to accomplish assignment 3 you will receive 3 things:

1. The document you are reading now gives you the overview of the schedule, report requirements, and grading rubric.
2. A building overview document which orients you toward the building, critical contact information, and overall building science questions of concern for your entire group.
3. A specific sheet that will guide you toward your individual data collection around more specific set of building science questions.

[all of these documents will be placed on d2l]

**Part 1: Field notes—hard copy due in class M 8 May**

Field Notes:

Use the sheet handed out in class on W 26 April to make field notes while you are on site at your building doing data collection. Bring original to class on 8 May. If you needed to make additional notes in a sketchbook, please bring those as well.

**Part 2: Required Format for Written Document due on Su 14 May on d2l by 11:59pm:**

- uploaded to d2l as a pdf
time stamped on d2l NO LATER THAN 11:59pm on the day it is due; otherwise it is considered late and will incur late penalties; you are STRONGLY ENCOURAGED to post the night before.

Required Content:

- your name, the building’s name, the building’s location, date(s) of data collection
- Stating the architectural question(s) you are pursuing
- Stating your hypothesis of how you think your building might perform related to the question(s)
- Narrative Response: 400 minimum words-500 maximum words
  
  You are required to address the following topics in your description of the data collected
  1. The original question(s) your are addressing and your original hypothesis (and why/how you thought that way before data collection.
  2. The nature of the data you collected and what you learned from it.
  3. A reassessment (or affirmation) of your hypothesis and how it relates to the question(s)
  4. The larger contexts and/or implication of your revised thinking (based on the data collection) for: buildings designed during this era, and/or buildings of this climate; and/or buildings of the typology; and/or buildings with this type of construction/materials.. You are not required to discuss all 4; but you are required to discuss and speculate

- References: you are required to have references. Reports that have only web-based sources will receive the lowest grade; Reports that have a mix of web and books will receive a higher grade; reports that have a mix of web based sources, books, and journal articles will receive the highest grade.

- Data Table
  Organize the data you took in the field in a clear to read table of some kind that is clearly labeled to include units of data collected

- References
  In order to write your narrative response with excellence, it will most likely require research (particularly to address topic 4). References for that research should go here.

- Field Notes
  You are required to take field notes on the sheets handed out in class on W 26 April. You are required to scan this and include it in the write up report you are producing above.

What you hand in should LITERALLY look like this in terms of formatting (i.e. use the same headers):

Name:

Building Name & Location:

Date(s) of Data Collection:

Architectural Question:

Hypothesis Based on Question:

Narrative Response: (498 words)

Data Table:
  [Display the data collected (as an individual) in a clear to read table or graphic]

References:
### Field Notes:
Scan and include as final pages of pdf for d2l upload. In other words, you should be uploading a single pdf that contains your write up and your field notes.

### Grading Rubric:

<table>
<thead>
<tr>
<th></th>
<th>Excellence</th>
<th>Good</th>
<th>Average</th>
<th>Substandard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architectural Question</strong></td>
<td>— 5 points</td>
<td>- N/A -</td>
<td>- N/A -</td>
<td>[0 points]</td>
</tr>
<tr>
<td></td>
<td>The question you</td>
<td></td>
<td></td>
<td>The question you</td>
</tr>
<tr>
<td></td>
<td>pursued in your</td>
<td></td>
<td></td>
<td>pursued is not</td>
</tr>
<tr>
<td></td>
<td>data collection is</td>
<td></td>
<td></td>
<td>present in the</td>
</tr>
<tr>
<td></td>
<td>included in the</td>
<td></td>
<td></td>
<td>designated</td>
</tr>
<tr>
<td></td>
<td>designated location</td>
<td></td>
<td></td>
<td>location</td>
</tr>
<tr>
<td></td>
<td>[5 points]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hypothesis:</strong></td>
<td>— 5 points</td>
<td>- N/A -</td>
<td>[2.5 points]</td>
<td>[0 points]</td>
</tr>
<tr>
<td></td>
<td>Hypothesis is clearly stated and relates directly to the question the data collection is intended to answer</td>
<td></td>
<td>Hypothesis present but is not clearly related to the question the data collection is intended to answer</td>
<td>No hypothesis was made.</td>
</tr>
<tr>
<td></td>
<td>[5 points]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hypothesis present but is not clearly related to the question the data collection is intended to answer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0 points]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Table:</strong></td>
<td>— 10 points</td>
<td>- N/A -</td>
<td>[5 points]</td>
<td>[0 points]</td>
</tr>
<tr>
<td></td>
<td>Data table is included and is easy to read and includes the units of measurement.</td>
<td></td>
<td>Data table is present, but is not easy to read due to formatting or poor labels or lack of units of measurement</td>
<td>Data table is not present</td>
</tr>
<tr>
<td></td>
<td>[10 points]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technical Proficiency of Writing</strong></td>
<td>— 15 points</td>
<td>[13 points]</td>
<td>[12]</td>
<td>[10]</td>
</tr>
<tr>
<td></td>
<td>No spelling or grammar errors</td>
<td></td>
<td>Some spelling and grammar errors</td>
<td>Many spelling and grammar errors</td>
</tr>
<tr>
<td></td>
<td>[15 points]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Narrative Content of Writing:</strong></td>
<td>— 45 points</td>
<td>[38 points]</td>
<td>[34 points]</td>
<td>[29 points]</td>
</tr>
<tr>
<td></td>
<td>Clearly addresses original question(s) and hypothesis; discusses findings; revises relationship between these if necessary; speculates on broader implications for buildings of this typology / style</td>
<td></td>
<td>Data written as narrative exposition; partially addresses question and/or hypothesis.</td>
<td>Data described without narrative clarity or relevance to question / hypothesis established</td>
</tr>
<tr>
<td></td>
<td>[43-45 points]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sophisticated and complex analysis of connections may receive 45 points</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[12]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>References:</strong></td>
<td>— 5 points</td>
<td>- N/A -</td>
<td>- N/A -</td>
<td>[0 points]</td>
</tr>
<tr>
<td></td>
<td>Includes references</td>
<td></td>
<td></td>
<td>No references</td>
</tr>
<tr>
<td></td>
<td>[5 points]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Includes Field Notes (digitally attached)</td>
<td>[15 points]</td>
<td>- N/A -</td>
<td>[7 points]</td>
<td>[0 points]</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Field Notes are scanned and included with assignment 2. Has clearly used the provided sheet to take notes during data collection.</td>
<td>Field Notes are scanned and included with assignment 2, but there is minimal writing and notations from the data collection.</td>
<td>Field Notes are not included.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition to the rubric, these are the following grading penalties:

For digital upload:
- unexcused late work between 1 minute and 1 day late will receive -10 point penalty.
- Unexcused late work between 1 - 2 days late will receive -20 penalty
- Unexcused late work between 2 - 3 days late will receive -30 penalty
- After 3 days a 0 will be entered in d2l.

For in person hard copy:
- If you uploaded on time but forget hard copy you will receive -10 penalty.

Word Count:
- If you are under (1 word or many) you will receive -10 point penalty
- If you are over (1 word or many) you will receive -5 point penalty

Plagiarized work will result in an automatic 0.
Mercy Corp
AFTER-MODERN

LOCATION: 28 SW 1st Ave.
Portland, OR 97204

CONTACT: Not Needed

INSTRUCTIONS FOR ACCESS: Coordinate with the building’s posted hours and with posted events for the space. See links below for event dates.

https://www.mercycorps.org/action-center/events
https://www.mercycorpsnw.org/events/

DIRECTIONS: Enter Mercy Corp’s Action Center on First Ave. If there is no event taking place, proceed into the gallery space to observe differences between the historic Packer-Scott and the new Hacker addition.
Topics in Building Science

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Light</th>
<th>Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface + Air</td>
<td>Illuminance + Ultraviolet A</td>
<td>Airborne + Impact</td>
</tr>
</tbody>
</table>

TYPICAL BUILDING SCIENCE QUESTIONS

**Temperature**
- Is temperature even throughout room?
- Does ventilation impact temperature?
- Does daylight impact temperature?
- Does artificial light impact temperature?

**Light**
- How are the windows performing? Do windows impact temperature?
- How is overall light distribution with and without artificial lighting?

**Sound**
- What is the current sound level of a space?
- Is a space too noisy?
- Where is noise generated within a space?
PSU Engineering Building
AFTER-MODERN

INSTRUCTIONS FOR OBSERVATIONS:
Record measurement in each location designated with a box. Be sure to follow any specific instructions for your tool outlined on the topic and tool explanation sheet.
Surface Temperature

HYPOTHESIS:

SURFACE TEMPERATURE:

Heat flow can occur in one, two, or three dimensions. In almost all real situations, heat flow occurs in three dimensions but, from a practical point of view, it is often acceptable to simplify considerations to only one-dimensional, or series, heat flow. Heat transfer occurs by three primary mechanisms, acting alone or in some combination: conduction, convection, and radiation.¹

The Infrared Thermographer gives you an opportunity to see just what degrees the surfaces are radiating and conducting into the space.

INFRARED THERMOGRAPHER:

The Infrared Thermographer (IR) will be used to measure temperature differences between materials, joint details, and surfaces as a whole. The IR picks up on thermal changes in surfaces via the camera sensor. By turning on the laser targeting function on the sensor, you can accurately take measurements of surfaces with a visual guide. Be sure to check window pane, frame, and walls (interior and exterior) to identify changes in the conductance of different materials and the temperature change that can be seen.

To use the IR, plug the external Sensor into CH1 of your Vernier. This should automatically enter the sensor into your LabQuest App window. If not, select Sensors at the top of the screen - Sensor Setup - in CH1 click on “No Sensor” and scroll down to Temperature - IR Temperature Sensor, then OK. Be sure to turn the IR sensor on by clicking the red button (MEAS). To toggle the laser function, click the button with the laser symbol on the IR sensor.

When collecting data in your building, be sure to take readings of important surfaces (walls, window frames, etc.) in each space marked on the following page then record your findings.

Air Temperature

HYPOTHESIS:

AIR TEMPERATURE:
Heat flow can flow in any direction (in or out), though it always flows from hot to cold. When we apply this to buildings, and the basic physics that always applies, heat is transferred in any of three main ways:

Conduction: is the flow of heat through solid materials due to a temperature difference across the material.

Convection: occurs when gases and liquids are able to move and carry heat with them. Think of a cold draft on your feet on a winter’s night. Hot air rises and cold air is heavier so it falls. When you have both at the same time it creates a draft.

Radiation: occurs when heat is transferred from one surface to another without contact (conduction) or air movement (convection). An object that possesses more heat energy will radiate the heat through space to an object that is colder as we mentioned above. On a hot summer day would you rather stand in the sunshine or in the shade? The air temperature is the same but the experience of heat is a result of the radiation from the sun.¹

TEMPERATURE PROBE:
The Temperature Probe is an attachment to the Vernier Hand Held Unit that accurately measures temperature. To observe air temperature, plug the sensor into the side of the Hand Held Unit. The Unit will automatically enter the appropriate screen where temperature is being observed in °F (degrees Fahrenheit).

When collecting data in your building, stand for 5-10 seconds in each space marked on the following page before recording your findings. This allows for the most accurate reading. Recording a range of temperatures that exist in one location might be appropriate. In addition, hold the sensor at the base and avoid touching the stainless steel probe to extreme temperatures (i.e. cold metal surfaces, human body, etc.). When first arriving at the building and measurement location, if the sensor has been in a warmer/colder environment (i.e. a backpack, pocket, outside in the rain, etc.) give it a reasonable amount of time to adjust to the surrounding environment and its temperature. Be sure to take measurements at the multiple designated points in the room to see if/where the temperature fluctuates.

¹ Information found at http://www.greenbuilding.com/knowledge-base/what-green-building-science
Sound

HYPOTHESIS:

SOUND:
Sound, in terms of its appropriateness to architectural acoustics, is an audible pressure variation. Movement of the eardrum (and thus hearing) is caused directly by air pressure variations. Therefore, the physical magnitude generally of most interest to architectural acoustics is sound pressure (*force density*), and its derivative—sound pressure level—which is the ratio of a given sound pressure to a base level, expressed in decibels (dB). Below is a table of different decibel levels and the spaces and activities typical of them.

<table>
<thead>
<tr>
<th>Sound Level</th>
<th>Impression</th>
<th>Typical Spaces</th>
<th>Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20 dB</td>
<td>Very Quiet</td>
<td>Soundproof Room, Empty Auditorium</td>
<td>Whisper</td>
</tr>
<tr>
<td>30-40 dB</td>
<td>Noticeably Quiet</td>
<td>Broadcast Studio, Private Office</td>
<td>Conversation</td>
</tr>
<tr>
<td>50-60 dB</td>
<td>Usual Background</td>
<td>Office, Hospital, Bank, Lobby, Restaurant</td>
<td>Quiet Radio</td>
</tr>
<tr>
<td>70-80 dB</td>
<td>Loud, Noisy</td>
<td>Department Store, Supermarket, Factory</td>
<td>Street Noise</td>
</tr>
<tr>
<td>90-100 dB</td>
<td>Very Loud</td>
<td>Machine Shop, Subway</td>
<td>Lawnmower</td>
</tr>
<tr>
<td>110 dB</td>
<td>Discomfort</td>
<td>Woodworking Shop</td>
<td>Thunder</td>
</tr>
<tr>
<td>120-130 dB</td>
<td>Deafening</td>
<td></td>
<td>Rock Band</td>
</tr>
<tr>
<td>140 dB</td>
<td>Pain</td>
<td></td>
<td>Jet Takeoff</td>
</tr>
</tbody>
</table>

Sound plays an important role in supporting or disturbing the overall sense of comfort in most of the spaces we occupy everyday. Thus, providing acceptable acoustical conditions is a fundamental part of good design practice. With proper design efforts, wanted sounds can be heard properly and unwanted sounds (noise) can be attenuated or masked to the point where they do not cause annoyance.¹

SOUND LEVEL METER:
The Sound Level Meter is a sensor attachment to the Vernier Hand Held Unit and will be used to investigate room acoustics and make sound level comparisons. To observe sound levels, plug the sensor into the side of the Hand Held Unit. The Unit will automatically enter the appropriate screen where sound levels are being observed in dB (decibels). Alternately, readings will be displayed directly on the screen of the sensor.

- **Correct Settings:**
  1. Slide the power switch to the appropriate range (35-90)
  2. Set the time weighting switch to “S”
  3. Set the maximum level hold switch to “RESET”
  4. Set the frequency rating to “A”

When collecting data in your building, be sure to stand for 15-30 seconds in each space marked on the following page before recording your findings. For sound, it is helpful to record a high and low range (ex: 37-41 dB where 37 is the lowest measurement and 41 is the highest).

¹ Information found in *Mechanical and Electrical Equipment for Buildings* (11th Ed.) 739-740, 744, & 756
**Illuminance**

**HYPOTHESIS:**

---

**ILLUMINANCE:**

An ordinary wax candle has a luminous intensity horizontally of approximately 1 candela, hence the name of the SI unit for luminous intensity is the candela. Luminous intensity is a characteristic of the source only and is independent of the visual sense. If we take a 1 candela source that radiates light equally in all directions and surround it with a transparent sphere of 1 m (ft) radius, then by definition, the amount of luminous energy (flux) emanating from 1 m² (ft²) of surface on the sphere is 1 lumen. One lumen of luminous flux, uniformly incident on 1 m² (ft²) of area, produces an illuminance of 1 lux (lx).¹

Lux is useful because it is a standard measuring unit which tells us how well lit a space is. The amount of light required in a space in order to be called “well lit” changes with the activities of that space. Below are some activities with recommended illuminance levels.

- 100 lux  Corridors, Changing Rooms, Bulk Stores
- 200 lux  Foyers and Entrances, Dining Rooms
- 300 lux  Libraries, Sports and Assembly halls, Teaching Spaces,
- 500 lux  General Offices, Kitchens, Retail Shops, Laboratories
- 750 lux  Drawing Offices, Ceramic Decoration, Meat Inspection, Chain Stores
- 1000 lux General Inspection, Supermarkets
- 100,000 lux (Bright Direct Sunlight)

**LIGHT SENSOR:**

A light sensor is located on top of the Vernier Hand Held Unit. To observe illuminance, go to the main screen of the Vernier App and select “sensors” on the main task bar. Within sensors you will see a box labeled “light meter.” Select that box and return to the main screen. You are now observing illuminance (in lux).

When collecting data in your building, be sure to stand for at least 2 seconds in each space marked on the following page before recording your findings.

---

¹ Information found in *Mechanical and Electrical Equipment for Buildings* (11th Ed.) 471-473
UV-A

HYPOTHESIS:

UV-A RADIATION:

UV radiation from the sun has always played important roles in our environment, and affects nearly all living organisms. Radiation at the longer UV wavelengths of 320-400 nm, called UV-A, plays a helpful and essential role in formation of Vitamin D by the skin, and plays a harmful role in that it causes sunburn on human skin and cataracts in our eyes.¹

UV-A enters a building when it penetrates the glass in a window. Glass can block a certain amount of UV-A and some types of glass can block UV-A entirely. Below are examples of different window glass and respective UV-A transmittance.

Smooth ordinary glass - 74.3%
Laminated glass - 0%
Ordinary Glass with Sunlight Control Film - 0%
Green Glass - 0%
Blue Glass - 56.8%

UV-A SENSOR:

The UV-A Sensor is an attachment to the Vernier Hand Held Unit. To observe UV-A levels, plug the sensor into the side of the Hand Held Unit. The Unit will automatically enter the appropriate screen where UV-A is being observed in mW/m² (milliwatts per meter squared).

When collecting data in your building, be sure to stand for at least 2 seconds in each space marked on the following page before recording your findings. For UV-A, it is helpful to record a range (ex: 26-27 mW/m² or 5,012-5,190 mW/m²).

¹ Information found at http://earthobservatory.nasa.gov/Features/UVB written by Jeannie Allen. “Ultraviolet Radiation: How it Affects Life on Earth”
Background

Building:
- Aftermodern building
- 82,000 square feet
- Consists of two buildings
  - Historic Parker Scott Building - 1892
  - New addition - 2009

Mercy Corps:
- An organization driven by the belief that a better world is possible.
- Focuses on outreach
- 4,000 professionals working in over 40 countries. (296 Portland based)
**Architectural Description**

**Historical Exterior:** Red Brick

**New Addition Exterior:** Red Steel
- Woven motif symbolizes the unifying mission.
  The Open facade indicates the interactive nature between organization and community.

**Interior:** Inviting space designed to educate and inspire visitors to get involved in Mercy Corps work.
Architect/Firm

- Designed by THA Architecture/Hacker
- Located in downtown Portland
- Roughly 50 employees

“Hacker believes that architecture is best when it is an honest expression of the people and institutions it serves, when it interacts dynamically with its surroundings, and makes humble use of the earth’s resources.”
LEED Certification

*LEED - Leadership in Energy and Environmental Design*

Headquarter originally designed to meet LEED Gold standards.
- Ended up performing better than expected and thereby meeting LEED Platinum qualifications
Background

Building Performance
- Illuminance
- UVA
- Air/Surface Temp
- Sound

Untold Story

Graham Oden
Building Performance - Illuminance

Hypothesis: If the lighting strategies of the building accommodate for cloudy days, then the illuminance (Lux) for each predetermined space should reflect the standardized values respective to the type of space measured.

https://www.pharmpro.com/article/2016/08/vessel-lighting-measurement
Building Performance - Illuminance (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Illuminance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>89 lx</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

Plan from class handout
Building Performance - Illuminance (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Illuminance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>89 lx</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>92 lx</td>
</tr>
</tbody>
</table>
Building Performance - Illuminance (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Illuminance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>89 lx</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>135 lx</td>
</tr>
<tr>
<td>E</td>
<td>92 lx</td>
</tr>
</tbody>
</table>
Building Performance - Illuminance (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Illuminance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>89 lx</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>325 lx</td>
</tr>
<tr>
<td>D</td>
<td>135 lx</td>
</tr>
<tr>
<td>E</td>
<td>92 lx</td>
</tr>
</tbody>
</table>
### Building Performance - Illuminance (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Illuminance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>89 lx</td>
</tr>
<tr>
<td>B</td>
<td>415 lx</td>
</tr>
<tr>
<td>C</td>
<td>325 lx</td>
</tr>
<tr>
<td>D</td>
<td>135 lx</td>
</tr>
<tr>
<td>E</td>
<td>92 lx</td>
</tr>
</tbody>
</table>

Plan from class handout
Building Performance - UVA

*Hypothesis*: The insulated glass windows used in the Mercy Corps building design will be effective in UV-A protection, blocking out 90-100% of radiation.


http://www.cleanhospital.com/uv.html
Building Performance - UVA (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Blinds were down.
<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plan from class handout
Building Performance - UVA (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Blinds were down.

Plan from class handout
Building Performance - UVA (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Blinds were down.

Plan from class handout
Building Performance - UVA (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The blinds were down!
## Building Performance - UVA (cont.)

The blinds were down.

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>D</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Building Performance - UVA (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>D</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>E</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>West Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The blinds were down.

Plan from class handout
Building Performance - UVA (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>D</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>E</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>West Exterior</td>
<td>1760</td>
<td>8.1</td>
</tr>
<tr>
<td>South Exterior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The blinds were down.
Building Performance - UVA (cont.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Transmittance (mW/m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>B</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>C</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>D</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>E</td>
<td>43</td>
<td>0.2</td>
</tr>
<tr>
<td>West Exterior</td>
<td>1760</td>
<td>8.1</td>
</tr>
<tr>
<td>South Exterior</td>
<td>2215</td>
<td>10.01</td>
</tr>
</tbody>
</table>

The blinds were down.

Plan from class handout
Building Performance-
Air Temperature

*Hypothesis:* The southern wall would show higher temperatures than the west or northern front due to its high sunlight exposure.

<table>
<thead>
<tr>
<th>Location</th>
<th>Air Temperature (Fahrenheit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Western corner</td>
<td>72.7</td>
</tr>
<tr>
<td>B - Western Door</td>
<td>72.5</td>
</tr>
<tr>
<td>C - Southern Wall</td>
<td>75.2</td>
</tr>
<tr>
<td>D - Center Hallway</td>
<td>74.9</td>
</tr>
<tr>
<td>E - North-East Wall</td>
<td>75.3</td>
</tr>
</tbody>
</table>
Building Performance-
Surface Temp

*Hypothesis*: Window temperature would be lower than the interior surface temperatures.

<table>
<thead>
<tr>
<th>Location</th>
<th>Surface Temperature (Fahrenheit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Western window glass</td>
<td>64.4</td>
</tr>
<tr>
<td>B - Western window frame</td>
<td>59</td>
</tr>
<tr>
<td>C - Southern Screen</td>
<td>71.6</td>
</tr>
<tr>
<td>D - Center Column Wall</td>
<td>66.2</td>
</tr>
<tr>
<td>E - North-East Wall</td>
<td>68</td>
</tr>
</tbody>
</table>
Building Performance - Sound

Hypothesis: Due to the nearby road the public transit Max line, the volume will be higher closer to the exterior walls in proximity to the source or sound.

<table>
<thead>
<tr>
<th>Location</th>
<th>Sound Level Conference (Decibels)</th>
<th>Sound Level Standard (Decibels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Western Gathering Space</td>
<td>54.3</td>
<td>48.6</td>
</tr>
<tr>
<td>B - Western Door</td>
<td>57.2</td>
<td>52.7</td>
</tr>
<tr>
<td>C - Southern Space</td>
<td>56.8</td>
<td>50.5</td>
</tr>
<tr>
<td>D - North East Wall</td>
<td>67.0</td>
<td>52.7</td>
</tr>
<tr>
<td>E - Center Area</td>
<td>53.2</td>
<td>52.3</td>
</tr>
</tbody>
</table>

http://landscapevoice.com/portland-or/

Background

Building Performance

Untold Story
The Rise & Fall of Skidmore
Restoring Skidmore
The Reed Family
The Reed Legacy
Untold Story: Rise of Skidmore District

The Skidmore District is where Portland began.

http://farm1.static.flickr.com/70/183701948_5c2e8a6a9c.jpg

https://travelinblues.wordpress.com/trips-2012/20120710-portland/
Untold Story: Fall of Skidmore District

As of 2012 the district was recognized as one of Oregon’s most endangered places by the Historic Preservation League of Oregon.

https://restoreoregon.org/skidmore-old-town/#lightbox/1/
Untold Story: Restoring Skidmore

Projects such as Mercy Corps renovation of the Packer-Scott building help bring attention and pride to a forgotten neighborhood.

https://restoreoregon.org/skidmore-old-town/#lightbox/1/
Untold Story: Reed Family

- Portland founded in 1843 and incorporated in 1851.
- Simeon Gannett Reed and wife Amanda Wood migrate from California in 1852.
- Simeon engaged in the steel, steamboat, railroad, and food industries.

http://www.reed.edu/reed_magazine/june2012/articles/features/comrades/comrades2.html
Untold Story: Reed’s Business

- Founded the Oregon Steam Navigation Company in 1860 with Jacob Kamm and John C. Ainsworth.
- Used to transport food and goods along the Willamette River, Columbia River, and Pacific Ocean.
- Business served as transportation as well.

Untold Story: Outcome of Reed’s Business

- Designed by the firm Whidden And Lewis.
- Located directly North of the Skidmore Fountain.
- Originally served as a wholesale warehouse.
- Distributed foods and goods transported by the steamship business.

http://pdxoldtown.org/history/
Untold Story: Reed’s Legacy

- The function of the new space is similar to the function of the original space.
- Distributes nutrition on a much larger scale.
- Enriches the lives of those who experience the space.
- Fulfills Reed’s desire to expand and enrich Portland.


Portland Building
AFTER-MODERN

LOCATION: 1120 SW 5th Ave.
Portland, OR 97204

CONTACT: Facilities and Services
gsfacreq@portlandoregon.gov

INSTRUCTIONS FOR ACCESS: Have one group member send one email to notify when you plan to do your testing and coordinate with the building’s posted hours.

DIRECTIONS: Enter the Portland Building from the 5th Ave entrance. Proceed through the lobby, pass the elevators, and continue to the cafe seating space.
Topics in Building Science

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Light</th>
<th>Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface + Air</td>
<td>Illuminance + Ultraviolet A</td>
<td>Airborne + Impact</td>
</tr>
</tbody>
</table>

TYPICAL BUILDING SCIENCE QUESTIONS

Temperature
Is temperature even throughout room?
Does ventilation impact temperature?
Does daylight impact temperature?
Does artificial light impact temperature?

Light
How are the windows performing? Do windows impact temperature?
How is overall light distribution with and without artificial lighting?

Sound
What is the current sound level of a space?
Is a space too noisy?
Where is noise generated within a space?
Portland Building
AFTER-MODERN

INSTRUCTIONS FOR OBSERVATIONS:
Record measurement in each location designated with a box. Be sure to follow any specific instructions for your tool outlined on the topic and tool explanation sheet.
The Portland Building
By Darby, Mykalene, Philip, Yanet, and Zachary
Historical Context

- Anti-War Protests - Vietnam
- “Shift from strength to substance”
- Modernist to Postmodernist
- Shift from City to Suburbs
- City development in Portland
- 1972 Downtown Plan
  - Pedestrian friendly, waterfront focus, and storefront/street level interest
  - Focus on transit
The Competition

● Three Proposals
● Postmodernist against local modernists
● Big Five in New York
  ○ Mostly residential and remodeling
  ○ Professor at Princeton
Building Features

- Diverged from expected
- Post Modern
- 15 story decorated box
- “Green” tiled pedestal
- Terracotta Pillars
- Tan Stucco
- Garlands
- Portlandia

https://s-media-cache-ak0.pinimg.com/originals/29/ec/b5/29ecb575640ffac57c8bfa9055c060e.jpg
Building Features

- Judged to be dark, cramped, and poorly laid out.
- Low ceiling heights
- A separate runoff held for the design of the interior past the first floor
  - Zimmer Gunsal Frasca (ZGF) chosen
- Multiple designs result in a disjointed feeling
Untold Story: Portland Budgeting

- Budget of the Portland Building, 1982: $29M
  - Worth approx $75M today w/ inflation
- Current Renovation project would cost $175-$195M
  - Same cost to simply rebuild 3x
- Michael Graves won because of economics
  - Fit an extra 40,000 SQ FT compared to other submissions to the competition.
  - Use of inexpensive materials and tectonics.

“Our building doesn’t have much forgiveness in the surface because of the budget. Our building is straight up and straight down after it does its step back because it’s essentially a concrete column and all that is dealing with the budget.” - Michael Graves
Untold Story: Portland Budgeting

The Past

- Mayor at the time Frank Ivancie loved the inexpensive design, but...
  - July, 1981 elected officials attempted to raise personal salaries 18.5%
  - City of Portland & Citizens fought for a month, finally a 9% salary hike was accepted.
- Meanwhile, Portland Building had serious damage & cracking in subsequent years through present.
Untold Story: Portland Budgeting

The Present

- Still a lack of communication with the public.
- While Portland has a $493M Discretionary fund for all departments, but why isn’t it being used?
  - PPS might see a $14M cut in the next year, including 70 teachers city-wide.
  - PBOT in $1M annual deficit, cutting 75 inhouse staff since 2008.
Untold Story: Portlandia

- 1% of Portland Building budget was set aside for the project’s public art.
- Graves proposed using “Miss Commerce” from Portland’s official seal as reference.
- Commission was given to Raymond Kaskey.
  - Portlandia’s physical appearance inspired by his wife.
- Kaskey began constructing the sculpture in 1983 in Washington D.C.

Untold Story: Portlandia

- Lack of funds threatened the sculpture’s completion.
  - Use of donations was approved to raise a final $150,000 for completion and shipment.
- The sculpture drew national attention.
  - Second largest sculpture done through repoussé process.
- Portlandia was welcomed and embraced by citizens.
Untold Story: Portlandia

- 1998 Mayor Vera Katz proposed relocation of the sculpture to the waterfront.
  - Locals supported the idea but Kaskey and other artists opposed it.
  - “The building and the sculpture are better off for each other”. -Michael Graves

- Issue continues today
  - Some want the Portland Building to be demolished but have Portlandia relocated.
  - Others want to keep both intact.
Building Performance Location: Cafe Area, 1st Floor
Performance: Illuminance

Hypothesis: The illuminance of the space will be relatively low (50-150 lux) due to the limited amount of natural light and reliance on artificial light.

Data:

1. 53 lux
2. 40 lux
3. 25 lux
4. 60 lux
5. 28 lux
6. 28 lux
Performance: UV-A

Hypothesis: The windows of the space will unsuccessfully block UV-A, and readings near the windows will be high.

Data:
1. 0.1%
2. 0.1%
3. 0.1%
4. 0.1%
5. 0.1%
6. 0.1%
Performance: Sound

Hypothesis: The noise level of the space will be echoing and loud because of the materials and purpose of the space.

Data:

1. 60 dB
2. 53 dB
3. 55 dB
4. 58 dB
5. 50 dB
6. 54 dB
Performance: Air Temperature

Hypothesis: The space is large but will maintain relatively stable temperatures because of the large-scale HVAC systems installed.

Data:

1. 72.1 °F
2. 72.5 °F
3. 72.2 °F
4. 72.4 °F
5. 71.8 °F
6. 71.7 °F

Average: 72.1 °F
Performance: Surface Temperature

Hypothesis: Interior surface temperatures of the building will not be affected by presence or lack of natural light and instead be directly correlated and controlled by the building's HVAC system.

Average Surface Temperatures:

<table>
<thead>
<tr>
<th>Surface Type</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrazzo Floor</td>
<td>65.6 °F</td>
</tr>
<tr>
<td>Ceiling</td>
<td>66.5 °F</td>
</tr>
<tr>
<td>Wall</td>
<td>54.2 °F</td>
</tr>
<tr>
<td>Tile Wall</td>
<td>52.6 °F</td>
</tr>
<tr>
<td>Window Pane</td>
<td>67.1 °F</td>
</tr>
<tr>
<td>Window Frame</td>
<td>66.2 °F</td>
</tr>
<tr>
<td>Door</td>
<td>64.4 °F</td>
</tr>
<tr>
<td>Metal Rail</td>
<td>64.4 °F</td>
</tr>
<tr>
<td>Metal Frame</td>
<td>64.4 °F</td>
</tr>
<tr>
<td>Marble Table Top</td>
<td>68.6 °F</td>
</tr>
<tr>
<td>Wood Chair</td>
<td>68 °F</td>
</tr>
</tbody>
</table>
References


Simon Benson House
PRE-MODERN

LOCATION: 1803 SW Park Ave
Portland State University
Portland, OR 97207

CONTACT: Justin Katigbak
Operations Coordinator - Portland State University
katigbakj@psuf.org
503-725-8943

INSTRUCTIONS FOR ACCESS: Get in contact with Justin to confirm the Simon Benson House is open to the public on the day you wish to conduct your studies.

PSU South Park Blocks

DIRECTIONS: Enter the Simon Benson House through the main entrance which is located on the corner of the South Park Blocks and SW Montgomery Street. Follow the arrows (check in with front desk: room 106) to room 105 known as the Back Conference Room.
Topics in Building Science

Temperature
Surface + Air

Light
Illuminance
+ Ultraviolet A

Sound
Airborne + Impact

TYPICAL BUILDING SCIENCE QUESTIONS

Temperature
Is temperature even throughout room?
Does ventilation impact temperature?
Does daylight impact temperature?
Does artificial light impact temperature?

Light
How are the windows performing? Do windows impact temperature?
How is overall light distribution with and without artificial lighting?

Sound
What is the current sound level of a space?
Is a space too noisy?
Where is noise generated within a space?
Simon Benson House
PRE-MODERN

INSTRUCTIONS FOR OBSERVATIONS: Record measurement in each location designated with a box. Be sure to follow any specific instructions for your tool outlined on the topic and tool explanation sheet.
Simon Benson House
Pre-Modern Building

Thomas, Markell, Mustafa, Omar, Tuan
Context

1-2 Introduction
3-6 Architectural Description
7-10 Data Collection
11-14 Architect Background Story
15-18 Hidden Story of the Building
19 References
About the House

*Simon Benson house*

- Built in 1900 CE
- Architect: Simon Benson
- Original Location: southeast corner of Eleventh Avenue and Clay Street
- Moved to: 1803 SW Park Avenue in the West End district of Portland on the campus of Portland State University
- Size: 0.23 acre (10,000 SF)
- Style: Late 19th Victorian - Queen Anne Style
- Purpose: Living Space -> Education related
Materiality
Exterior Site
Interior Site
Surface Temperature

**Hypothesis**
Before obtaining the results, my hypothesis was that room temperature is always the same at all points inside a room.

**Results**
- The surface temperature increase near the windows
- The center of the room is the warmest area due to the dark colored objects
Air Temperature

**Hypothesis**
Air Temperature would be even throughout room with it being warmer near windows, ventilation and artificial light

**Results**
- Temperature increases near windows
- Temperatures increases near artificial light
- Temperature increases near ventilation
**Light Luminance**

**Hypothesis**
Queen Anne houses like the Benson House would specialize more in the emittance of natural light because having electricity was still considered a luxury and natural lighting would be something everyone could afford.

**Results**
- In front of the fireplace the Lx was the lowest
- In the center of the room the LX was the second lowest
- The east facade window was less exposed to the natural light than the west facing windows.
Hypothesis
Large window may not always guarantee a higher amount of UV-A radiation entering into a building when compared to a small window

Results
• The UV-A radiation do not depend on the size of the windows.

• A low UV-A can occur due to the presence of objects which inhabit the natural light from falling onto the windows

• The east large window had less UV-A than the small west facade window.
Sound

**Hypothesis**
Each increase in the thickness of the medium, the sound will be absorbed more. Thus, every decrease in the thickness itself, the sound will be filtered less, causing the noise to pass louder.

**Results**
- Sound has the property to travel through any kind of medium by using their wavelength.
- Sound can be reduced depending on the thickness of the insulator.
Benson championed Oregon transportation, having financed the beginning of building this highway, in the Columbia Gorge, in 1914. He was regarded as one of the forefathers of the Oregon highway system.
As evidence of his confidence in the importance of good highways, completed the building of the Columbia Gorge Hotel in 1921 on the Upper Columbia River Highway.
Background Story

Benson Railroads
Simon was the first in Oregon to use logging railroads to haul the logs to water. He used the big Steam donkey engines to haul ready logs onto the railcars.
Background Story

Benson invented a new type of transportation for logs, called the Benson raft. These were up to 1,000 feet long, hauling between 4,000,000 board feet (9,400 m$^3$) and 8,000,000 board feet (19,000 m$^3$) of logs.
The building underwent numerous problems ranging from neglect, erosion, water damage and looting for decades.

Various individuals unsuccessfully attempted to save the house.

Committee led by Gretchen Kafoury finally started to salvage the building.

The House was moved to its new location on the Portland State University campus January 16, 2000.
Hidden Story

• John Marandas was forced out of Simon Benson House because he could not renovate the house from his promised time.

• The renovation partners:
  - P & C Construction
  - 30 more subcontractors
  - Volunteering artisans and architectural experts
  - SERA Architect
  - Financial support from more than 1,000 individuals and business and spearheaded

• The renovation took nearly a year, with limited resources and small amount of budget, thus running out of money was common.
• Did you know the Simon Benson house still has all the ORIGINAL windows from when it was built in 1900?! 

• When the house sat in disrepair and was abandoned, 13 of the windows were stolen and sold all over the state of Oregon.

• Thanks for the Portland State Alumni, Stuart Hood class of 56’. They donates antique stained window located in the center of the site. Where it was salvaged from a Queen Anne style home built in the late 1890’s, the same era the Simon Benson house was built!
References

http://www.oregonlive.com/history/2015/01/vintage_oregon_simon_benson_ho.html


References


