OSU HMSC HOUSING PROJECT

LIGHTING

LEED V4.1:

- (3) credits from Daylighting

- (1) credit from Color Rendering Index (CRI) of fixtures used

- (1) credit from Lighting Controls

Designed for Efficiency:

- Optimizes incorporation of daylight

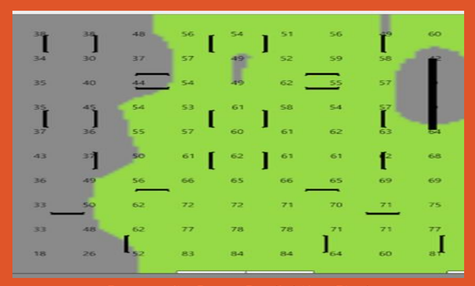
- Utilizes only LED luminaires with fixture-integrated control devices

  * Photocells & Occupancy

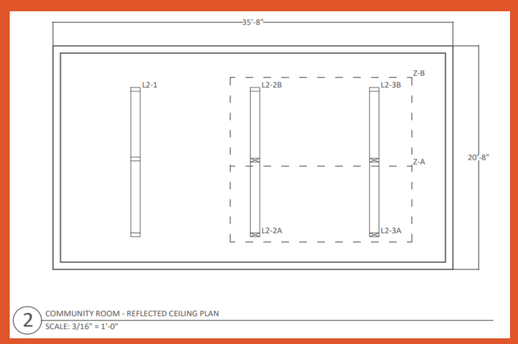
- Allows for seamless operation management

Code Compliance:

- Adheres to IES Recommended Illuminance Levels (15-30fc), ASHRAE Standard 90.1 (0.72 W/sf), and OEESC (2024).



Community Room Daylighting Study



Community Room Reflected Ceiling Plan

Building rendering of the OSU HMSC Student Housing Project (Rendering Courtesy of Mackenzie)

PROJECT DESCRIPTION

The OSU HMSC housing project in Newport, OR, aims to create sustainable dorms for marine science students, fostering a strong OSU-coastal community bond. Each team member selects eco-friendly, locally sourced materials, ensuring cost-effectiveness and community integration. Collaboration across four disciplines ensures a resilient, environmentally conscious design.

Disciplines:

- Structural
- Lighting
- Water Resource
- Building Envelope

Site Overview:

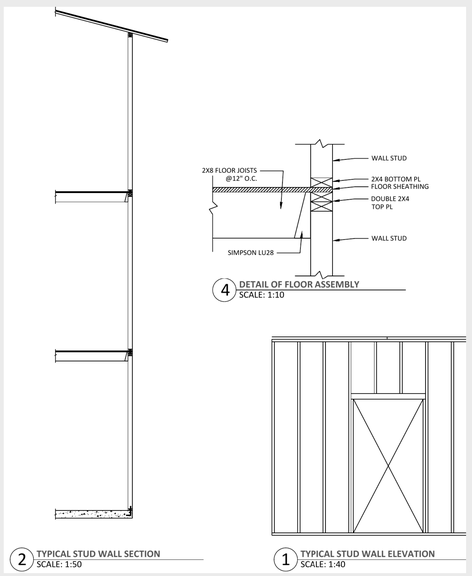
- Site Footprint: 220,120 sqft.
- - 3 stories
- Building Footprint: 34,000 sqft. - 77 Studio Units

STRUCTURAL

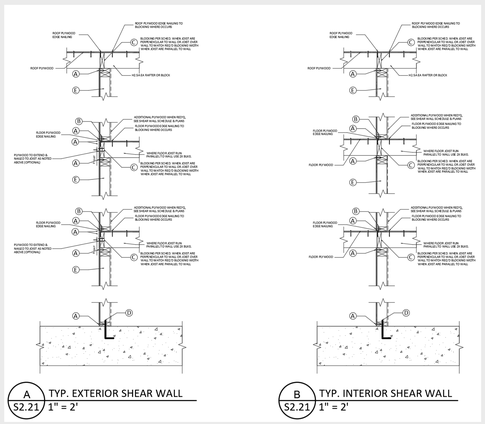
Structural system determined by equilibrium equations, both 2019 OSSC & ASCE 7-16 provisions, along with the 2018 NDS & 2021 SPDWS.

Lateral

- Wind and seismic forces are acting on the lateral system and was found that the seismic loading controls
- Resisting System: Wood Panel Shear Walls
- Seismic Risk Category: II



Structural Stud Wall Details



Structural Shear Wall Details

Gravity

- Resisting System: Wood Stud Bearing Walls
- Live Loads: Primarily Residential and Construction Loads
- Dead Loads: Estimated based using HUD Residential Structural Design Guide (2017).
- Snow & Rain Loads: Negligible due to roof design, not controlling.
- Member design aided by Weyerhaeuser's ForteWeb web-based software

BUILDING ENVELOPE

Goals & Objectives:

- Keep exterior elements outside.

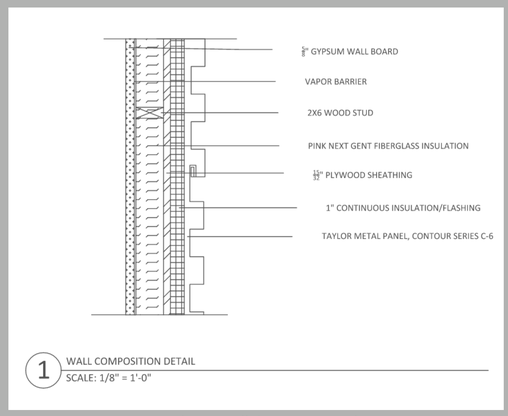
- Keep interior elements at the desired RH and temperature.

- Design an energy efficient building envelope that can withstand weathering.

Material Selection:

- Pink Next Gent Fiberglass Insulation

- Contour Wall/Soffit C-6 Classic Series

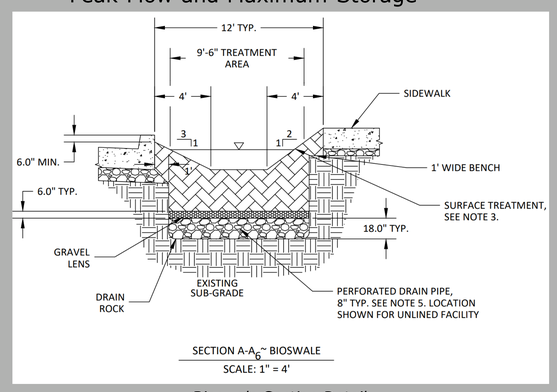


Envelope Wall Section Detail

WATER RESOURCES

Hydraulic Analysis of bioswales was determined by utilizing Civil 3D Hydroflow, City of Newport Master Planning Documents, and ODOT reference manual.

- Rational Method (TR-55 Tc)
- Hydraulic Class "C" Soil Group (Exfiltration Rate)
- Peak Flow and Maximum Storage



Bioswale Section Detail

Oregon State University