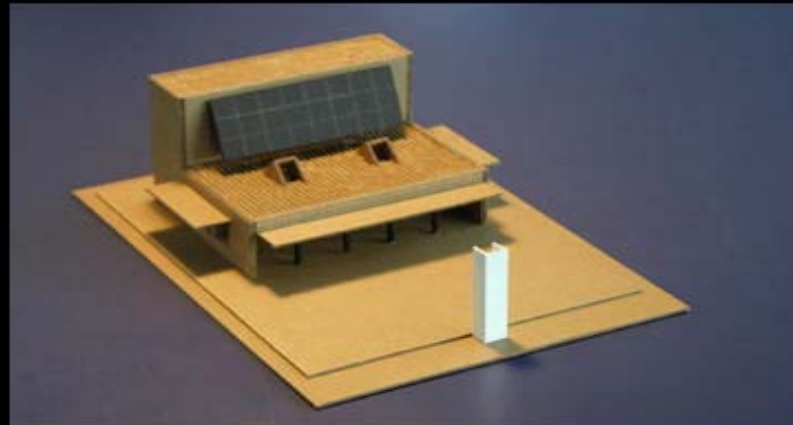


BAGLEY NATURE AREA CLASSROOM PAVILION

University of Minnesota Duluth



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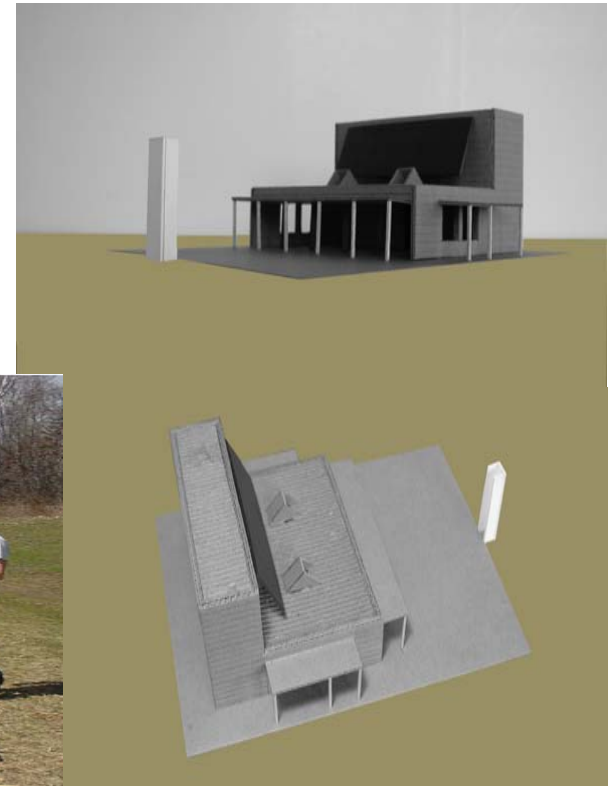
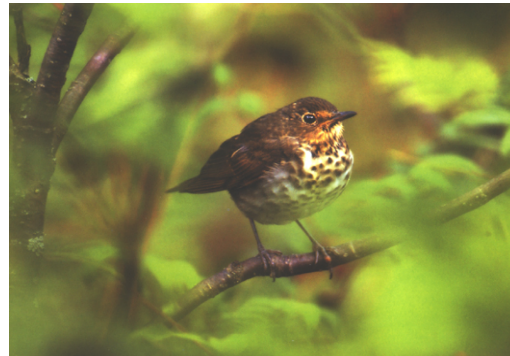
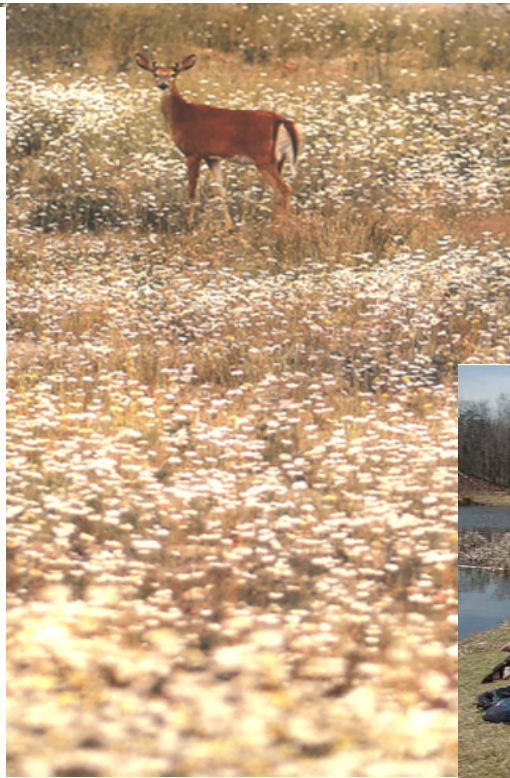


The University of Minnesota Duluth is currently comprised of over 50 buildings on 244 acres and is located less than a mile from the edge of Lake Superior. The campus serves more than 11,300 undergraduate and graduate students and is a cornerstone of the Duluth community. The Bagley Classroom Pavilion will be located on a 50 acre contiguous nature preserve within the UMD campus, sitting on a previously developed building site with dramatic views of Rock Pond. The building's flexible design will allow for a variety of uses including classes, field work, meetings, lectures, special events, and exhibits. This building will demonstrate leadership in energy efficiency, renewable energy, wastewater treatment, stormwater management, passive heating, natural ventilation, water efficiency, local and renewable materials, and a healthy indoor environment. Designed to be a *LEED Platinum* building, it will serve as a learning tool and model of sustainable design and construction for all of northern Minnesota.

55 LEED NC 2.2 PLATINUM

- 12 SS Sustainable Sites
- 5 WE Water Efficiency
- 15 EA Energy & Atmosphere
- 6 MR Materials & Resources
- 12 EQ Indoor Environmental Quality
- 5 ID Innovation & Design Process

THE SETTING: NATURE AS A CLASSROOM



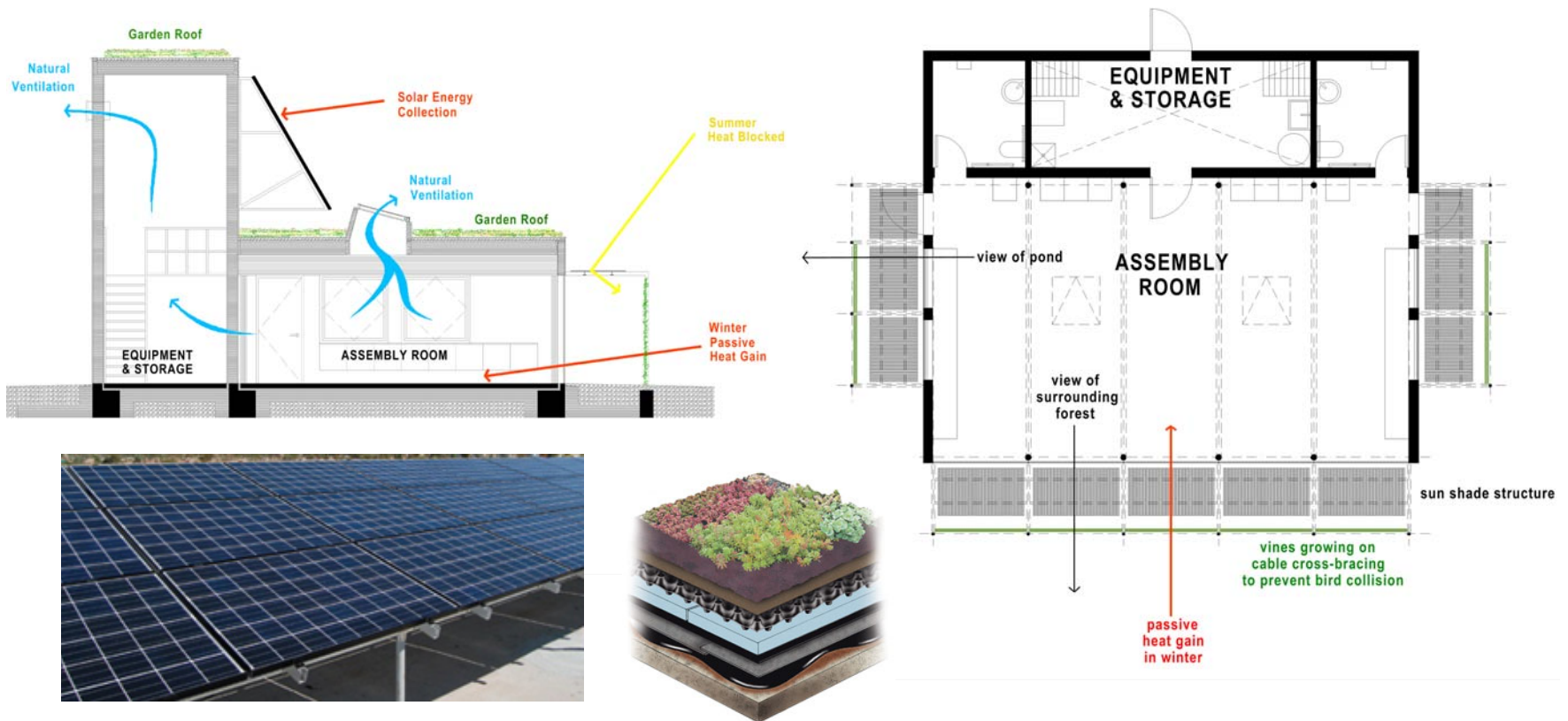
Because of the wide variety of forest and aquatic ecosystems, the Bagley Nature Area is an outdoor teaching laboratory almost without parallel on any other campus in the United States. Over 30 courses from departments across UMD currently use the nature area for class exercises daily. The Recreational Sports Outdoor Program regularly conducts workshops and clinics here. Despite this heavy use, classes have been conducted without any kind of weather protection, equipment storage or indoor plumbing. This new building will serve these needs and enhance the outdoor laboratory exercises by providing a place to examine samples and conduct wildlife observations of the surrounding forest and Rock Pond. The building will impose a minimal impact on the microclimate and wildlife habitat by reducing heat islands, light pollution, and stormwater runoff.

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12 SUSTAINABLE SITE

- previously developed building site
- soil erosion & sedimentation control
- minimal building footprint
- located 1/2 mile from a variety of basic community services
- located 1/4 mile from bus lines
- bicycle storage provided
- no increase in parking
- protecting existing habitat
- pervious paving & vegetated roofs control stormwater

A SUSTAINABLE MODEL: ENERGY EFFICIENCY AND RESPONSIBLE WATER USE



The building sector contributes between 40% and 50% of all carbon emissions in the United States. The Bagley Classroom Pavilion is designed to slash energy consumption as a super-insulated and air-tight building. Once complete, passive solar heating will satisfy the buildings heating needs while a high efficiency heat recovery ventilation unit will continuously provide fresh air. Natural ventilation in the summer will be enhanced by a chimney effect from the skylights and mechanical room vents. An on-site, grid connected solar photovoltaic system will produce more than the annual energy consumption. All wastewater will be treated and reused on-site, and a central composting system will be connected to modern looking toilets. As a result of these low-impact building designs, the Bagley Classroom Pavilion will be a learning tool and model of sustainable design for northern Minnesota.

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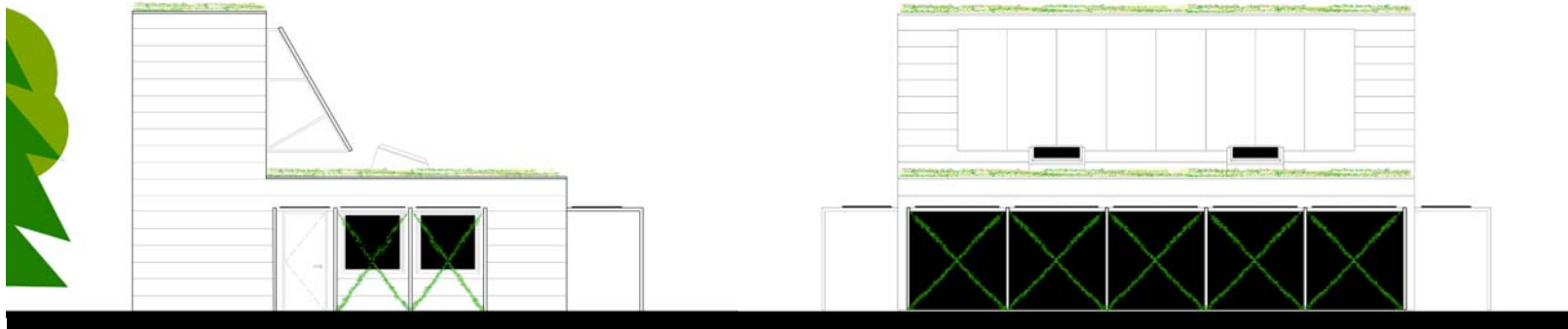
5 WATER EFFICIENCY

- vegetated roof & landscape requires no longterm irrigation
- innovative wastewater technologies
- over 30% reduction in water use

15 ENERGY & ATMOSPHERE

- 90% improvement in heating energy consumption
- 100% on-site renewable energy
- passive solar winter heating
- sun shades block summer heat gain
- super-insulated air-tight building

INNOVATION: RENEWABLE, REGIONAL AND RECYCLED MATERIALS



The Bagley Classroom Pavilion will rest quietly in the woods like a black bear, covered in black zinc siding with a veil of vegetation in front of the windows. It will sit lightly on the earth, both environmentally and visually. The interior design is warm and inviting, with reclaimed and regional timber beams and local wood paneling. All exposed materials will be maintenance free and low-VOC. The south wall will be comprised of glass, maximizing views of Rock Pond and the surrounding forest while providing passive heating in the winter. Large operating windows on the east and west walls will also provide views and natural ventilation. The lighting system will be used minimally because all occupied spaces will have abundant daylight.

6

MATERIALS & RESOURCES

- 50% construction waste recycled
- Reused, recycled content, regional and renewable materials
- 50% certified wood

12

INDOOR ENVIRONMENTAL QUALITY

- 100% occupied spaces have exterior views & day lighting
- 100% low-VOC interior environment
- Increased ventilation & air monitoring

5

INNOVATION & DESIGN PROCESS