

SMSU Green Activities

Recycling of Trash in Academic Buildings

At many of the more heavily travelled hallway areas, a recycling container is located beside a trash container. Are working to design and purchase decals to place on receptacles so they are more visible.

Each main office area has a recycling container, as do individual offices.

Recycling of Trash in Residence Halls

Sweetland Hall - There are 3 areas where trash bins are located – one per floor. Each area has 2 recycling containers.

Foundation Apartments - 1 recycling container is located in the apartment building, and one large recycling dumpster is located outside the building alongside the garbage dumpster. (The outside dumpsters are the main trash/recycling sites.)

Traditional Residence Halls - There are 4 houses in each complex – and in most houses, there are 1 to 2 garbage bins plus a large recycling bin at the bottom of each stair. In the garbage rooms of each house (on 1st floor), there is a garbage bin and a recycling container. Kitchens in each house have garbage and recycling containers.

Other Recycling & Green Efforts

Fluorescent lamps – use vendors for recycling.

Recycling of appliances from residence halls – use Lyon County Recycling Center.

Computers – follow Minnesota State requirements and use vendors for recycling.

Water stations – located in Sweetland Hall and the Conference Center so students can fill up water containers, rather than purchasing cases of bottled water.

Food Service operation - CHARTWELLS:

- Food donations are made to Lyon County Food Shelf at the end of each semester (mainly produce and dairy perishables)
- Green cleaning – Green Seal Certified EcoLab products used at all locations
- Divert 100% of fryer oil to bio-diesel
- Recycle all back of house packaging (cardboard, glass, tin, plastic and metal)
- All catering disposable service ware is bio-degradable
- Napkins at all locations are 100% Recycled Content
- Offer vegetarian entrees at lunch and dinner, Monday – Friday
- Tray-less dining at all locations to reduce waste and water usage
- Organics are collected separately (Sani-Max) to divert organics from the landfill

RA Facility – used MONDO as the flooring material on its multi-purpose courts. Mondo rubber flooring is made of sustainable materials including renewable natural rubber, natural fillers and color pigments

that are free of lead and other heavy metals. Mondo flooring is antibacterial and antimicrobial throughout and is free of harmful chemicals, which helps to create healthy indoor environments. KalWall used , a translucent wall panel, in the fieldhouse to provide natural daylight into the facility, thereby reducing the need for lighting at all times of the day.

SMSU campus uses a chilled water plant for cooling, eliminating the need for individual, ozone depleting refrigeration equipment for each building.

Uses sensor operated low flow toilets, urinals, showerheads and sinks in a number of facilities.

Light pollution reduction in place at Sweetland Hall (non-emergency lighting is controlled to turn off during non-peak hours)

Energy efficient windows installed in REC, Sweetland Hall, Student Center, Conference Center, and the lobby of Founders Hall.

Design of new facilities includes daylighting of spaces.

Building envelope improvements in new facilities.

Campus roofs greater than/equal to code values.

Automated energy system to control electrical loads.

REC site water flows to a retention pond where it is naturally filtered prior to entering existing wetlands.

Replaced T12 fluorescent bulbs with T8s in the academic buildings (2012 program through PBEEEP). T8s are more efficient and use less energy. Lighting improvements made to the PE 106 gym in 2011-12 – fewer light bulbs providing more light require less energy. Working to replace lighting in the RA fieldhouse and main hallway – with more energy efficient fixtures/lamps.

Several areas on campus planted with native prairie grasses and plants. The use of irrigation systems is reduced by provision of the prairie grass that does not require potable water. Prairie grass also requires no mowing.

Bicycles can be checked out from Residence Hall office. Bicycle racks are located on campus to promote use of bicycles.

Hydro-electric power has been used since the campus was built in the late 60s. Power is generated in the Missouri River Basin.

Plantings at Student Center and Conference Center are drought tolerant, disease resistant requiring little or no pesticides and very low maintenance required overall (compared to other plantings).

Installed light sensors in restrooms in 2011. Lights automatically turn on when one enters the restroom and will automatically turn off after 15 minutes.

Green Efforts within Facilities and Physical Plant operation

Painting: SMSU painter uses non-oil based paints predominately on campus. Only in very limited applications is oil-based paint used.

Grounds:

- Uses organic fertilizer (a poultry based fertilizer that's been composted and pasteurized. Traditional fertilizer is made of natural gas and petroleum.) Organic fertilizer has low in toxicity; doesn't leach; builds up the soil because it has organic material in it; is purchased from Wisconsin – so fairly "local"; is less expensive than traditional fertilizer; is a long, slow releaser; and not applied as often.
- *Insecticides* – SMSU doesn't use any insecticide – may use wasp spray if wasps reported and does use donuts in the REC pond to keep mosquitoes down.
- *Herbicides:* SMSU does not do a general spray of all grass surfaces. Round-up is used around trees and buildings; cracks in sidewalks. A broadleaf herbicide is used on dandelions – only do spot spraying.
- Use weed eaters that are the 4 stroke type. Not as many emissions, more fuel-efficient.
- Grass blend used allover campus is predominantly Tall Fescue which is more drought tolerant, uses less water and less fertilizer than the other grasses typically used.
- Trying to get to more diesel equipment, and the State has more biodiesel equipment on contract. SMSU Grounds only has 2 pieces of "grounds" equipment that run on gas now. The rest are diesel.
- Used RePLAY to sealcoat Loop Street, ST and ST service drives, and the Foundation Apartments parking lot the summer of 2013. RePLAY is an agricultural oil seal and preservation agent – is a non-petroleum based product used to extend the life of paved asphalt surfaces. Unlike petroleum-based products, RePLAY is non-toxic, non-polluting, safe for the user, CO2 negative, and environmentally friendly.

Custodial Services: uses green cleaning products where possible.

Electrical: Continuing change out of non-efficient lights to LED. Most recently: BA 1st floor hall lights by counseling and testing; RA spine uplights; a portion of the spine lighting at ceiling locations; Vehicle Storage Building lights – changed over to LED. Residence Halls are also converting to LED.

F Hall Decommissioning (2007)

- 1,977 cubic yards of concrete was recycled on the job.
- 76.515 ton of metals were recycled
- SMSU carpenter pulled all of the lock cylinders from the F Hall building. These cylinders are reused for the rekeying of other spaces.
- SMSU carpenter removed all of the door hardware in F Hall and 1 new aluminum door. These items will be reused throughout the campus.
- SMSU electrical staff pulled lights out of lounge areas – for reuse.
- SMSU carpenter removed any wood that could be reused for projects on campus.

Library – SMSU Efforts (2003-04)

- SMSU carpenter pulled the lock cylinders from the library doors before it was renovated – and these cylinders are reused for the rekeying of other spaces. Door closers and doors were also

salvaged (doors were reused to make tables for classrooms and offices at SMSU). Oak lumber from walls, oak baseboard was salvaged by SMSU for reuse on campus projects.

Student Center (2003)

- SMSU carpenter removed wood at railing and wood walls at old coffeehouse area – for reuse on campus projects.

PAST BUILDING DESIGNS

Science & HRI remodeling (Science and Culinology labs), 2009-2011

Sustainable Design Issues

Architectural:

- Re-use of existing building
- Recycled content of finishes –
 - flooring - vct contains 1% post –industrial recycled content
 - flooring – biobased tile contains 10% pre-consumer recycled content
 - ceiling – act has 23-40% recycled content
- Rapidly renewable materials:
 - flooring – biobased tile contains 2% rapid renewable content
- Low Emitting Materials: Adhesives & Sealants:
 - Vct and biobased tile adhesives are labeled a low-emitting adhesive
- Low Emitting Materials: Paints:
 - Low VOC paints

Electrical (all lighting):

- All interior non-emergency light fixtures are automatically controlled and turn off during non-business hours.
- Compact fluorescent, recessed down lights, and linear fluorescent fixtures with energy efficient T8 lamps.
- Dimming ballasts in all offices to control lighting levels in those rooms while occupied.
- Manual lighting control switches with integrated occupancy sensors to turn lighting off when space is not occupied for a certain period of time.
- Magnetic ballasts were replaced with more energy-efficient electronic ballasts which provides for an overall lamp-ballast system efficacy increase of 15%-20%.
- Dual technology occupancy sensors for lighting control in restrooms, storage rooms, offices, labs and classrooms to turn lights off when space is not occupied.

Mechanical:

- The IL Building has been converted from a constant air volume to variable air volume airflow control.
- Variable volume laboratories minimize the amount of outside air that requires conditioning as well as the energy used to move the air throughout the buildings.
- Heat recovery is used to transfer waste heat from the laboratory exhaust on the ST Building to the outdoor air to reduce the amount of heat that has to be added to condition the air.

Regional Event Center, 2008

Green Highlights

- Site water flows to a retention pond where it is naturally filtered prior to entering existing wetlands.
- Open grass parking for overflow.
- Facility located adjacent to existing recreation athletic facilities on campus to consolidate campus resources and eliminate the need for new parking lots.
- SMSU student body has a large ADA population. The Regional Events Center is located close to campus to facilitate ADA transportation to events.

Water Efficiency

- Artificial turf uses no potable water for irrigation.
- Sensor operated low flow toilets, urinals, and sinks reduce facility water use

Environmental Sustainable Aspects

- Stadium lighting uses specialized glare control reflectors to minimize light pollution and the exterior building lighting uses total cut-off fixtures to minimize light pollution.
- Native prairie grasses planted.
- Drinking fountains are no lead design water system free of lead containing brass parts as defined by the Safe Water Drinking Act.

Energy and Atmosphere

- The buildings energy systems were commissioned to verify the building is operating as designed and to further enhance energy efficiency.
- Conference rooms and suites have individual room heating, ventilating and air conditioning controls.
- The facility uses the campus-chilled water for cooling eliminating the need for adding additional ozone depleting refrigeration equipment.
- Occupancy sensors control lighting in conference rooms, suites, press box and toilet rooms.
- Lighting controls include manual dimmers, occupancy sensors, control panel for outdoor lighting and remote control of stadium lighting.

Materials and Resources

- Carpets have high recycled content and are adhered with low VOC adhesives.
- Low VOC paints.

Indoor Environmental Quality

- Facility designed to exceed ASHRAE 55 thermal comfort requirements.
- Outdoor air delivery to occupied spaces designed to exceed ASHRAE 62 indoor air quality requirements.
- A construction IAQ management plan was followed to improve occupant comfort.
- Every publically occupied space has a connection to the outdoors and superior daylighting.

Sweetland Hall, 2009

Sustainable principles, practices and materials pertaining to the SMSU 2009 Residence Hall based upon Leadership in Energy and Environmental Design (LEED) and Minnesota B3 categories.

Site Development

- Sustainable site - Created and implemented an Erosion and Sedimentation Control Plan for all construction activities meeting Minnesota's Pollution Control Agency's requirements
- Site selection - Avoidance of critical sites i.e. is not farmland, public park, provides habitat for endangered species
- Site development - Native prairies grass were planted and trees were salvaged and relocated on the site
- The site has vegetated open space adjacent the building that exceeds the building footprint promoting bio diversity

Water Efficiency

- The use of irrigation systems is reduced by provision of prairie grass that does not require potable water
- Plumbing fixture flush and faucet sensors in public restrooms
- Toilets: 1.4-gallon flush setting that saves almost 2,000 gallons of water per year per fixture
- Drinking Fountain: No Lead Design-Water system free of lead-containing brass parts as defined by the Safe Drinking Water Act. Uses HFC-134a refrigerant.

Building Envelope

- Windows in every unit and public space provide daylight which reduces electrical energy consumption
- The R-values of the building envelope exceed minimum requirements. The cavity wall is R17, the roof is R28
- The window glazing has Low E tint has a U factor of 0.31

Electrical

- Energy efficient T5 linear fluorescent/electronic ballast light fixture and lamps.
- Energy efficient recessed downlights with compact fluorescent/electronic ballast.
- Occupancy sensors in public restrooms, storage, office and miscellaneous spaces.
- Low voltage general lighting control for public spaces with occupancy sensor overrides to reduce light levels by two-thirds in the public corridors.
- Day light harvesting in the First Floor Lounge.
- The washers and dryers are Energy Star compliant.
- All non-emergency lighting is controlled to turn off during non-peak hours and only light as required for safety and comfort is provided at the exterior.

Mechanical

- Premium high efficiency motors.
- Variable frequency drive on heating and chilled water pumps.
- Use of R410 refrigerant in DX split systems.
- Ventilation meets ASHRAE 62.1-2004 for indoor air quality.
- Air filtration with MERV 6 moisture resistant pre-filter & MERV 14 filters.
- Energy recovery ventilation system preheating outdoor air with return/exhaust air from building.
- Use of energy recovery wheel to reheat cooling supply air for humidity control in lieu of new energy.
- High efficiency gas condensing boilers.

Materials and Resources

- 10% of materials cost was recycled content.
- All of the building carpet is 100% recycled and recyclable material including the backing.
- The steel columns and beams are 95% recycled content.
- The gypsum board panels have 100% recycled face paper.
- 10% of all materials extracted, processed and manufactured regionally.
- Site stone was cut from a local quarry.
- The wood ceiling is FSC certified (Forest Stewardship Council).
- All quartz counter tops are low emitting and the associated sealant is Greenguard Certified.
- The resin terrazzo has zero VOCs.
- The wood ceiling is low-emitting and does not contain Urea Formaldehyde.
- The vestibules are greater than 6'-0" long with mats to capture dirt and particles.

Energy Use

- Summer humidity levels maintained between 20% and 50%.
- Indoor thermal comfort maintained between 68 degrees winter and 74 degrees summer with individual room controls allowing a range deviation from set point established by the campus energy management system.
- 90% of the building has access to natural daylight for connections between indoor spaces and the outdoors.

Encourage Healthful Activity

- The stairs are designed to encourage their use over elevators by the comfortable walking pace of the rise/run, the use of natural daylight and opening the stairs as much as possible to the interior of the building.
- Interior circulation has niches that encourage spontaneous resident interaction.
- Bike racks are provided to encourage the use of physical activity in lieu of driving.
- New sidewalks connect to existing walk ways and nearby facilities.
- Outdoor stepped plaza, green space and smaller plazas are provided to encourage a variety of outdoor activities.
- Secure bicycle racks are provided to encourage bike usage in order to reduce pollution and land development from automobile use.

Student Center Complex, 2002-2004

- Plantings identified by SMSU Grounds & Roads Supervisor are drought tolerant, disease resistant - requiring little or no pesticides and very low maintenance overall.
- Mulch in bedding areas.
- Design included a clerestory, which allows for day lighting of the SC spaces. Other windows provide pleasing spaces within the SC/CC.
- Used existing footings of the Student Center – and added a 2nd floor to the Student Center.
- Replaced large windows on the north and south sides of the Conference Center with more energy efficient glazing (glass).
- Roof for the SCC is designed to meet Minnesota State standards which provides for a high R-value of insulation.
- Local concrete supplier provided concrete for the project.
- Visionwall window system – very energy efficient window system: lets sunshine in without letting in/out heat; reduces outdoor noise; eliminates condensation and ultra-violet degradation; and allow for day lighting of the facility.