

Conservation Design For Commercial Properties

Site Selection

What is Site Selection?

Site selection is simply the process of choosing a development site that reduces the environmental impact caused by construction. Locations to avoid include wetlands, large bodies of water, prime farmland, and habitats for endangered species. Additionally, development sites should be chosen within existing commercial areas rather than areas with undeveloped infrastructure.

Benefits of Site Selection:

Careful attention to site selection benefits everyone: developers, communities, individuals and wildlife. Knowledge of the land to be developed will make the building process smoother and prevent any future costs from being incurred. Understanding the natural water flow of the property can help developers avoid high erosion areas, preventing higher maintenance costs later on. Developing in an existing commercial district minimizes the need for new infrastructure. Avoiding wetlands saves filling costs and protects the natural environment.

Site Consciousness

What is site consciousness?

Site consciousness is planning the construction process so that a minimal amount of biodiversity and natural environment is disturbed.

How can Site Consciousness be accomplished?

[Leadership in Energy and Environmental Design \(LEED\)](#) suggests to clear-cut no more than 40 feet beyond building perimeters, 10 feet beyond surfaced walkways, and 15 feet beyond primary roadway curbs and main utility branch trenches. Developments should plan for vegetated open space equal to 20% of a project's site area or should exceed the local zoning's open space requirement for the site by 25%. Place parking and pedestrian areas so that they have sun exposure for assistance in melting snow or ice. Share facilities with neighboring developments when possible.

Benefits of Site Consciousness:

Using the natural topography, soils, and vegetation on a building site preserves natural habitats and costs less than the standard procedures of grading, displacing dirt, replacing topsoil, preparing new sod, and planting new trees and shrubs. Green spaces are both aesthetically pleasing and also increase property values. Trees provide shade and help reduce air conditioning costs. Limiting asphalt saves money and reduces storm water runoff.

Pointers:

-Personally walk the property to learn first-hand the features, topography, and vegetation. Mark all important features with construction tape and make sure to be on the property the day that it is cleared.

- Ask your local Department of Natural Resources (DNR) staff to walk your property and give suggestions on how to maintain existing (or start new) native habitat. DNR personnel are incredibly knowledgeable and their advice is often free.

-Your site planner may tell you to clear all “substandard” trees from the property. According to the Minnesota Department of Natural Resources, Jack Pines are not useless vegetation. In fact, they provide important wildlife habitat. Only clear those trees that will be a safety hazard if left standing, and/or those that the DNR advises you to clear for other habitat reasons.

-Even when existing trees are left standing, your landscaper will often remove the shrub layer and establish lawn under the trees. It is important to retain all layers of native forest. Without the support structure of these layers, the stability and resilience of the community is compromised. This will potentially cause your trees to fail and destroy any habitat for local wildlife. In addition, undisturbed grounds are pervious, as opposed to "worked" soils, which in many cases are as impervious as cement.

-Construction companies face less business risk when they clear all of the natural vegetation, backfill, and replant than when forced to work around existing vegetation. Commercial developers must be persistent in insisting that the site plan follows the contour of the land and preserves native vegetation.

-Develop a good working relationship with your city or township staff at the very beginning of your project. Municipalities are growing increasingly interested in supporting sustainable development.

Storm Water Design

What is storm water design?

Storm-water design is the process in which storm water runoff is managed in order to limit disruption and pollution.

How can storm water design be accomplished?

Through the use of porous pavement (a special type of pavement that allows rain and snowmelt to pass through it, thereby reducing runoff), rain barrels to catch rainfall from gutters, and the creation of bio-retention areas (landscaping features adapted to treat storm water runoff) and rain gardens.

Benefits of storm water design:

Landscaped bio-retention areas are aesthetically pleasing, safer, and cost less to maintain than traditional storm water retention systems. Water from rain barrels can be used for hand-watering gardens, thereby reducing landscaping costs. Porous pavement reduces the need for curbing and storm sewers, improves road safety because of its better skid resistance, helps replenish local aquifers, and removes pollutants.

Although not easily quantifiable, conservation design presents long-term financial benefits to the community. Since large, conventional stormwater facilities demand large-scale maintenance, application of conservation design techniques can be more manageable by smaller communities.

Conventional stormwater ponds are raising liability concerns for their potential to present standing water safety hazards, particularly for children living near the ponds. These potential liability risks do not exist for conservation design elements such as bioretention areas. Another potential liability for slips on icy surfaces can be reduced or eliminated through the use of pervious asphalt. Some low-impact site designs cost nothing, such as maintaining sandy soils for their drainage potential, or letting all impervious surfaces drain into a grassy area or conservation area.

Pointers:

-Conventional storm water ponds are not low-impact design elements. They provide no pollutant infiltration, and are potential breeding grounds for mosquitoes.

-Use your local Extension Service office. Their staff is well-versed in low-impact technologies and their services are often free or at very low cost.

Success story:

The Crow Wing County Judicial Center in Brainerd, built in 2006, includes several rain gardens that will help reduce rainwater runoff, improve water quality in the Mississippi River, promote the recharge of natural groundwater storage and provide wildlife habitat.

In 1995, the city of Maplewood, Minnesota installed rain gardens within two blocks of residential areas because of problems with periodic flooding. The rain gardens effectively slowed storm water runoff without the need for added infrastructure. They have been such a success that nearly 250 more have been implemented in other neighborhoods.
http://www.forester.net/sw_0301_low.html

Water Efficient Landscaping?

What is water efficient landscaping?

Water efficient landscaping involves limiting or eliminating the use of potable water for landscaping irrigation.

How can water efficient landscaping be accomplished?

Landscaping with native plant species reduces the need for watering. [For limited watering of the gardens close to buildings, rain barrels that capture water can be used.](#)

Benefits of water efficient landscaping:

Captured water is free. Native vegetation eliminates the need for sprinklers, pesticides, and fertilizers and can help prevent erosion. Low-mow grasses can save thousands of dollars per year by significantly decreasing mowing and irrigation costs.

Pointers:

-Work with landscape contractors that know the local native vegetation. If possible, choose plants that were grown from seeds harvested locally. They will be more likely to successfully germinate than those from non-local sources.

-Make sure to choose indigenous plants that are proven to work well with your soil type. Baxter is built on glacial sands, so we plants that grow natively in sandy soils, such as old quarries, were chosen for the Fairview Office Park..

Optimal Energy Performance

What is optimal energy performance?

Optimal energy performance is the process of determining how to build and operate your development using the least amount of energy possible.

How can Optimal Energy Performance be accomplished?

Use energy-saving compact “mini” fluorescent light fixtures and T5 and T8 fluorescent lamps. [New technologies allow the use of special fluorescents even in temperatures of up to 20 degrees below zero.](#) Use heat pumps to maximize energy efficiency. Use cycled air conditioning (a program that allows the local power company to turn off the air conditioning every fifteen minutes during peak usage times in exchange for reduced electric rates). Shut down all PC’s during non-business hours and limit the number of lights left on at night.

Benefits of Optimal Energy Performance:

Optimizing energy performance and efficiency is not only good for the environment; it makes financial sense as well. Compact mini fluorescent lights pay for themselves in three years. On average a heat pump will pay for itself in only three years. Cycled air saves money by year two and pays for itself by year four. Shutting down all PC’s will save energy and reduce the amount of carbon dioxide emitted in to the atmosphere.

Success story:

Fluorescent lights, enhanced insulation, cycled air and a heat pump will save Fairview Office Park tenant Syvantis Technologies \$148,000 over ten years. By shutting down all their PC’s each night, Syvantis will save \$90 per PC in electricity and eliminate 1200 pounds of carbon dioxide each year.

Pointers:

-Get your utility company involved in the project during the design phase – before light fixtures, heating and cooling systems, and water heaters are determined, and before these systems go to bid. One of the most valuable members of the Fairview Office Park team was an individual employed by the local electric cooperative – and his advice was free!

-Small commercial building can use air conditioning cycling to reduce their cooling costs. However, this determination must be made before the utility meters are installed because different metering mechanisms are required in order to cycle. Determine air

conditioning cycling early in the project's design phase so that the proper bid specifications can be determined.

-Compact fluorescents require special fixtures. These fixtures usually need to be specified during the lighting layout stage of construction, so let your architect know your preference early.

-Creativity and imagination are helpful. The computer servers in the Syvantis Technologies offices at Fairview Office Park generate substantial heat, which means that during the winter Syvantis runs the air conditioner in their server room and heat the rest of the facility. The heating and cooling subcontractor for the project devised an ingenious way to capture the excess server heat and redistribute it to the rest of the facility through a system of dampers.

On-Site Renewable Energy

What is on-site renewable energy?

There are two primary types of on-site renewable energy: wind power and solar power. Wind power is not as economical in a wooded area such as Fairview Office Park. However, wind power can be purchased through local power companies in 100 kilowatt-hour blocks. Each block adds \$.50 to the electrical bill. This means that a 1200 kilowatt-hour block would cost only an additional \$6 per month. The additional amounts paid help fund the development of wind power sources throughout the state.

Solar panels can be installed anywhere on the building site, depending upon the quality of sunlight available. The panels are adjusted according to the time of year for maximum output. They are metered separately so that energy output can be measured. The energy produced is sent to the power grid, and a credit is earned on each electric bill.

Recycling

What's the easiest way to recycle? Getting employees to recycle is very easy. Simply place well labeled recycling bins in key locations. The bins should be conveniently situated throughout the facility, including under every desk.

Benefits of recycling.

Recycling reduces the cost of garbage removal and limits the amount of garbage in landfills. It increases overall economic efficiency by providing raw materials for the manufacture of items from recycled materials.

Success story:

Each building in the Fairview Conservancy Office Park will save an estimated \$400 per year by recycling.

Material Reuse

What is material reuse?

It is simply the idea of putting old, but still working, items to use or reuse.

How can material reuse be accomplished?

Rather than buying new, look for opportunities to purchase recycled wood, furniture, doors, and cabinetry from other projects or buildings. There are even companies that specialize in finding reclaimed items for building projects.

Benefits of material reuse:

Reuse can result in significant cost savings. Sometimes the quality or workmanship of reclaimed items is far superior to what would have been purchased outright, saving money and adding value at the same time. Reusing also reduces landfill use.

Success Story: The doors, frames, cabinetry, reception desk, break room appliances and sink, and track lighting at Syvantis Technologies in the Fairview Conservatory Office Park is reused from Syvantis' previous office location, saving the company an estimated [\\$10,000](#).

Indoor Air Quality

What is environmental tobacco smoke (ETS) control?

Environmental tobacco smoke control is the process of placing rules on how far someone needs to be from a building when smoking, or whether to allow smoking at all. All exterior smoking areas should be at least 25 feet away from entries, outdoor air intakes and operable windows. A smoke-free campus is an option as well.

Benefits of ETS control.

The effects of secondhand smoke on humans are well known. Secondhand smoke can also have a negative effect on the surrounding buildings and gardens. Eliminating or reducing these contaminants will improve the health of the people and the environment on the property.

Low-emitting materials.

Paint, carpeting, office cubicles and other materials can emit smells, irritating compounds or containments that result in indoor air quality problems. Alternatives or Low-VOC (volatile organic compound) materials are available.

Benefits of using low-emitting materials.

Using low-emitting materials creates a more comfortable environment and protects the health and wellbeing of both installers and occupants. Low VOC paint costs an average of \$5 more a gallon, but needs fewer coats than traditional paint. Stained concrete is an attractive alternative to carpet. It emits zero volatile organic compounds and prices typically start around \$7 per square foot.

There is no price difference between low VOC carpets and standard carpeting at the same quality level. Low VOC carpets have been around for the past five to six years but have not been advertised as an alternative to traditional carpeting.

Promoting Transportation Alternatives

What are transportation alternatives?

Fuel-efficient vehicles

Car-pooling

Public transportation

Walking/Biking

How can the promotion of transportation alternatives be accomplished?

Designate 3-5% of prime parking spaces for fuel-efficient vehicles only. Provide easily accessible and secure bicycle parking areas.

Benefits of alternative transportation.

It helps encourage the use of more fuel-efficient vehicles.