

Toolkit for Greener Practices

Showcase of Ideas

Option 3-3: Environmentally Friendly Building and Site Design

Phillips Eco Enterprises Center: Sustainable Building Design and Natural Landscaping

Site conditions:

Remediation sites around the country, including the Maxson Steel site in St. Paul and the Phillips Eco-Enterprise Center in Minneapolis, are being developed using sustainable design principles. Decisions on the scope or nature of the site investigation or the preferred cleanup remedy may be altered based on an intention to design the site and buildings using sustainable principles. In particular, contaminant distribution may inform the location of stormwater-management features and buildings, so the site investigation should be aligned with potential site grading and building placement. There may be a need to plan final grading and cleanup excavations in unison, since soils and vegetation beneficial to on-site stormwater management should not be disturbed.

Preventive activity description:

- The Phillips (Neighborhood) Eco-Enterprise Center (PEEC) design focuses primarily on occupant health and energy and material efficiency. The site is within an easy walk of major mass-transit routes. Energy-conservation efforts and technologies will have a significant impact, with annual savings of \$9,000 and a payback period of only nine years. Site development incorporates 100% on-site storm water retention using natural percolation; naturally enhanced biofiltration of runoff, and a 25,000-square-foot dry prairie restoration. Representative features include geo-exchange heating and cooling (photo), energy-recovery ventilation, active daylighting (photo), energy management system, green roof (photo), 100% stormwater retention (photos), low-emission coatings, and salvaged and recycled materials used in construction. The facility has been awarded Cutting Edge Project of the Year by *City Business Magazine* (1998) and Earth Day Top Ten by the American Institute of Architects (2000). The facility is also a pilot project of the Green Building Council's Leadership in Energy Efficiency and Environmental Design (LEED) program.
- The Maxson Steel site represents a revolution in the way the St. Paul Port Authority implements its land sales. The Port Authority cleans up brownfield sites and sells them under fair-market value in return for increased tax base and community job opportunities at livable wages. The developments are designed according to the Port Authority's Urban Design Covenants.
- The covenants were recently revised to encourage principles of sustainable design. To show the seriousness of its commitment, the Port Authority has retained an architect and landscape architect that specializes in sustainable design, available at no charge for consultation with the purchaser's design staff. The Port is currently considering incorporating requirements for sustainable design in the covenants: "Whereas, the Port seeks to guide the future

development and use of the Property in order to preserve and maintain the value of the property and the Business Center. In particular, Declarant seeks to utilize new concepts of integration of work places, energy efficiency and sustainable design as contributing factors to the total community of the Business Center.”

Regarding site drainage, “the location and configuration of retention systems should be designed as an amenity as well as a necessity. Ponds, rainwater gardens, swales and wetland areas may be used separately or together as appropriate.” ... “Roofing solutions utilizing metal roofing accents and/or roof gardens are acceptable subject to the approval of the Port.”

Regarding landscaping, the idea of connectivity is carried out through guidance on connecting landscaped areas at the site to existing or neighboring planted areas in order to increase large patches of plantings. The purchaser of the first parcel at the former Maxson Steel Foundry site used feedback from the landscape architect on the Port’s retainer and is including filtration features to increase on-site stormwater as a result. The project is now under construction.

Benefits realized through the Pollution Prevention/Sustainability approach:

- High-performance buildings use less power and water, generate less waste and incorporate recycled or low-toxicity materials. These buildings provide healthy indoor air and daylighted spaces that contribute to greater worker productivity at significantly reduced personnel costs. (The portion of operating expense consumed by labor costs far exceeds that of energy and building operating expenditures.) Construction practices, such as advanced framing and materials optimization reduce construction costs, conserve resources and generate less construction waste. Renewable energy sources stem resource depletion and greenhouse gas production and significantly reduce operating costs. Build for deconstruction and for flexible use in the future. Install landscapes with low water needs. Locate facility near employee service area and adequate public transportation, and where delivery routes can be optimized. Use creative project accounting, in which short-term costs are balanced with the long-term savings with more efficient systems.
- On-site stormwater management provides natural filtration of sediment, volatile pollutants and excess nutrients and retains warm precipitation, reducing the impacts on surface water quality and aquatic life. Optimal stormwater-management practices suitable to contaminated sites incorporate filtration and, in some limited instances, infiltration strategies. Careful selection of landscape plants and detailed mapping of soil, topography and existing vegetation at the site accomplish this.
- Despite the presence of contamination left on site, innovative stormwater management was achieved. The following response actions were taken at the site:
Arsenic in surface soil: There were slightly elevated concentrations above background levels. The source was windblown dust from a now defunct, formerly upgradient pesticide plant. Response action: excavated the upper six inches of soil and layered it, sandwiched between two layers of impermeable clay beneath an impermeable parking lot. This response action was approved due to the low

concentrations and access in the future would be possible (putting beneath building footprint was not an option) were the health risk standards to be lowered in the future.

Petroleum-contaminated soil: To mitigate impacts from a leaking underground storage tank, a small volume of petroleum-contaminated soil was excavated and transported to a landfill.

Asbestos-contaminated demolition material: Underground, insulated pipe was removed during regarding operations and waste was transported to a landfill.

Keys to Success

- Ongoing opportunities for dialog on the environmental and economic impacts of sustainable design among public and private developers; community-development agencies; general contractors; suppliers; manufacturers; state regulatory, administrative and planning agencies; academics and other experts. Watershed conferences and workshops have been sponsored in Minnesota by trade organizations, professional associations, academic institutions, non-governmental and state regulatory agencies, and assistance organizations.
- The MPCA convened a stakeholder advisory group in 1999 to recommend greener practices at remediation sites.
- Paradigm shifts that support longer term return-on-investment calculations that reflect the unique benefits of sustainable designs and a change in the approach to public development covenants
- Partnerships, cooperation and collaboration.

Regulatory Administrative/Legal Tools:

- State assistance grants and loans
- Bully pulpit: the MPCA' Internet-based, interactive toolkit educates and gives access to resources.
- Stormwater Industrial Permits require a pollution-prevention plan.
- Minnesota Best Management Practices Manual includes on-site stormwater-management features.
- Executive Orders (The draft Green Government Initiative, Minnesota's second or third generation of draft executive orders concerning sustainable development, has the best chances yet of being seriously considered by the governor. An interagency team developed the draft.)