



BOLTON & MENK, INC.

By Design

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Handling Storm Water at the Source with Rain Gardens

You may have heard about rain gardens lately – they have been in the news for their ability to improve water quality in Minnesota’s rivers and lakes. Rain gardens are areas where storm water is captured and allowed to infiltrate into

- Keeps runoff on site
- Filters polluted urban runoff (oil, grease, salts, fertilizers, pesticide residue)
- Recharges groundwater
- Helps prevent flooding
 - Provides habitat/food for butterflies, birds
 - Beautifies a low spot, and
 - Serves as a natural filter, removing sediment, phosphorus and nitrogen from runoff.



Photo courtesy of the City of Maplewood

the ground. Rain gardens are also known by other names: bioretention basins, ephemeral wetlands, water quality gardens, storm water gardens, planted swales, biofilters, or strategically placed puddles.

Rain Garden Basics

Typically a rain garden is formed by a shallow depression – 4 to 8 inches deep for a residential yard and less than 32 inches deep for large-scale treatment – with permeable soils that drain quickly (in less than 72 hours). The rain garden is typically planted with water - absorbing native plants that can withstand intermittent flooding. The rain garden should be strategically located to collect, filter and infiltrate rain that falls on hard surfaces like roofs, driveways, alleys, or streets. Rain gardens serve to minimize the negative impact excessive runoff from these surfaces has on lakes and streams.

Benefits of a Rain Garden

- Soaks up 30% more runoff than lawns

When picking a location for your rain garden you will want to “go with the flow.” Locate the garden in a natural low spot: near sidewalks,

driveways or other impervious surfaces; or down-slope from roofs, gutters, downspouts and sump pump outlets. Avoid septic system drainfields. Use a channel or buried plastic pipe to direct water into the rain garden. Most importantly, the soil must drain!

Rain garden design features are flexible. There is no standard size or shape. Kidney, teardrop, etc. seem to work well. The rule of thumb is that your rain garden area should be 5-10% of the drainage area you are directing toward it.

What plants should you choose?

Select plants that tolerate both wet and dry spells (put plants that tolerate saturated soils in the deepest part), tolerate de-icing salts (if near roads), and match up with existing soil and light conditions. Grasses can help support flowers, and their roots help crowd out weeds. Generally, you will need 1 plant per square foot of rain garden, with a third of the plants for the wet zone, and two-thirds of the plants for the upland zone.

Where can I see rain gardens?

- ▶ Victory Drive, in front of Bandana Brewery, Mankato
- ▶ Lion’s Lake, Mankato (coming soon)
- ▶ City of Maplewood — residential streetside gardens
- ▶ 806 Rushmore Drive, Burnsville — residential
- ▶ MN Landscape Arboretum, Chanhassan
- ▶ Swede Hollow Café, St. Paul
- ▶ Como Park — Lexington Pkwy & Nebraska Ave., St. Paul
- ▶ Mount Calvary Lutheran Church, Excelsior
- ▶ Marcy-Holmes neighborhood, Minneapolis
- ▶ 706 14th Ave SE (condos), Minneapolis
- ▶ 1205 7th Ave SE (single family home), Minneapolis
- ▶ North corner of 4th St SE and 8th Ave SE (Andrew-Riverside Park), Minneapolis
- ▶ Downtown Wayzata
- ▶ Kwanzaa Community Church, 2100 Emerson Ave. N, Minneapolis
- ▶ El Colegio Charter School, 4137 Bloomington Ave. S, Minneapolis

Native plants have many advantages: they are adapted to the climate and native pests, deep rooted, tolerate dry spells, have long roots to draw water deep from the soil and evapotranspire, and they are havens for butterflies, birds, and beneficial insects. However, traditional ornamental garden plants may be more appropriate in a refined cultural setting.

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Duncan Named 2005 Young Engineer of the Year

Congratulations to Joe Duncan, P.E., on being named the 2005 Young Engineer of the Year by the Minnesota Society of Professional Engineers (MSPE). The award recognizes outstanding educational, technical, professional and community achievements by an engineer under the age of 35.

Joe is a Senior Project Manager in our Mankato office. He has more than 11 years of experience and has been with Bolton & Menk since 1997. He is an active member of the Traverse des Sioux Chapter of the MSPE, participating yearly in the Mathcounts program and the annual golf outing fundraiser. Joe is also an adjunct professor in the newly accredited Civil Engineering program at Minnesota State University, Mankato. He had the distinction of teaching Introduction to Hydraulics and Hydrology to the first class of graduating seniors enrolled in the program.

Joe currently serves as the consulting city engineer for many area client communities.

For one of his more notable design projects, Bolton & Menk received the Department of Transportation Merit Award for Construction Excellence for the project management of the reconstruction of Trunk Highway 99 through Nicollet.



Joe Duncan, P.E.
Senior Project Manager

The MSPE honored Joe previously in 2003 with the W.R. "Bill" Coffin Memorial Public Service Award in recognition of outstanding contributions to the engineering profession and the citizens of Minnesota. Joe is a member of the Key City Sertoma Club and he has been active in church activities all his life, including assisting with 3-4 year old Sunday school classes.



Bolton & Menk's Burnsville Office Open House July 14th

Thanks to the confidence and trust of our valued clients, Bolton & Menk continues to grow and expand our staff. This growth in personnel, combined with on-going expansion of services to better meet our clients' needs, has led to our moving on April 30, 2005 into a 14,000 square-foot office building in Burnsville.

Join us for our Open House on July 14, 2005 from 4:00 to 7:00 p.m.

Please note the new address of our Burnsville office:
12224 Nicollet Avenue
Burnsville, MN 55337-1649
Our phone and fax have stayed the same.
Phone: (952) 890-0509 Fax: (952) 890-8065

Students Gain First-Hand Experience Working with Bolton & Menk

A group of urban planning students from Minnesota State University, Mankato gained valuable field experience this spring when they collaborated with Bolton & Menk to undertake data collection for a comprehensive wastewater plan for the German-Jefferson Lakes Sanitary Sewer District.

Students from the university's Urban and Regional Studies Institute collected the field data and performed data entry for the project



The German-Jefferson Lakes region, with the lakes outlined in green.

under the supervision of Bolton & Menk's Jon Peterson, Mark Schulz and John Shain. The German-Jefferson Lakes region is a resort-style community comprised of year-round homes and seasonal cabins. The development of new homes around the lakes, added to the already high number of existing homes, threatens to adversely impact the lakes' area environment due to relatively high density development and associated concerns regarding wastewater treatment and disposal facilities.

The community decided to address the problem sooner rather than later, and hired Bolton & Menk to analyze the feasibility

of installing an area-wide sewer system. But their foresight in addressing the situation was not without serious concerns about the costs associated with a new system. Bolton & Menk worked with students from MSU's Urban Studies Community-Based Problem Solving class to develop a cost-effective method of collecting field data for the plan. The team was made up of students Ben Boike, Nick Gfrerer, Andy Hingeveld, Kasey MacCallum and Charlie Seipel, with the support of faculty members Bob Hugg and Perry Wood.

This team collected all of the on-site data over the course of three weeks in February, compiling information on a total of 785 homes. The data was assembled using ArcView software, and Bolton & Menk will now use the information to develop a comprehensive wastewater plan for the area.

Claremont Project

In a separate collaboration with MSU, Bolton & Menk worked with a group of students to produce a Proposed Land Use and Zoning Map for the City of Claremont, located 10 miles east of Owatonna.

The goals of the project were to:

- conduct a utility inventory
- build an official city map
- complete an existing land use map
- build a proposed land use map and land use plan, and
- build a proposed zoning map.

Students conducted the fieldwork over the course of this past spring and presented maps and ideas to Claremont city council members and civic leaders on April 14.



The Minnesota State University, Mankato Community-Based Problem Solving Class.

The Claremont project team was made up of Jon Noerenberg, Steve Scheurer, Mike Paulsen, Dennis Fields and Kasey McCabe.

Real-World Experience

From the students' perspective, the opportunity to work with Bolton & Menk on these projects provided a number of benefits. It gave them an opportunity to experience a real-world project, helping prepare them for their future careers in urban planning and related fields. They became familiar with GPS and GIS technology, learned effective teamwork and project management skills, and gained a close-up look at what their future workplace might look like.

To read the executive summary of the German-Jefferson Lakes Sewer District study or view the Claremont presentation, visit our website at www.bolton-menk.com/studentprojects

A Comprehensive Plan: The Key to Orderly Development for Communities

One of the keys to logical and orderly expansion of a city's infrastructure is a clear plan to guide decision-makers. In some cases, a comprehensive plan is required by law.

Bolton & Menk has helped develop or update comprehensive plans for several Minnesota cities. It is a process that fully taps into the multidisciplinary composition of the firm.

In the planning process, we cover issues relating to transportation, stormwater management, sanitary sewer, surface water management, water supply and numerous other elements that make up a community's infrastructure. Our approach includes

working closely with the city's staff, or consultant planner, to integrate these elements with the land-use planning.

Developing implementation plans is also an important step that we can facilitate.

Plan updates from Metro Area LGU's are due by December 31, 2008

The primary goal of a comprehensive plan is to develop a working "road map" for meeting the current and future needs of a community. Local government units in the seven-county Twin Cities Metro Area are among those entities required by state law to develop comprehensive plans, with the next round of updates due to the

Metropolitan Council by December 31, 2008.

Generally, communities start the planning process one to two years before the updates are due. This summer, communities in the seven-county metro area will receive individualized System Statements from the Metropolitan Council, reflecting the various components that must be included in their comprehensive plan updates. The System Statement serves as the starting point from which each community begins its update.

To find out more about Comprehensive Plans and the planning process, contact Jon Huseby at (507) 625-4171 or jonhu@bolton-menk.com.

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Handling Storm Water with Rain Gardens

Regardless of whether you pick native species or ornamentals, make sure the plants can handle getting their feet wet occasionally. If your rain garden will be exposed to road de-icing salts, pick plants that can handle those conditions.



Photo courtesy of the City of Maplewood

Some salt-tolerant native species are columbine, purple coneflower, black-eyed Susan, showy goldenrod, rough blazing star and big bluestem grass.

Some salt-tolerant ornamental species are hosta, coral bells, Stella D'Oro day lily, Silver Mound artemisia, Autumn Joy sedum, Blue Lyme grass and fountain grass.

How much will it cost?

If you do it yourself, it will generally cost \$3

to \$5 per square foot, including plants. If you hire professionals, it will generally cost \$10 to \$12 per square foot.

Bolton & Menk's, Chantill Kahler-Royer, the author of this article, gave presentations on rain gardens to the Bolton & Menk

offices as a brown bag lunch meeting last December and at the 2nd annual Environmental Sustainability Conference at Minnesota State University, Mankato in February. For more information on rain gardens, contact Chantill at chantillka@bolton-menk.com.

For an expanded version of this article, including step-by-step instructions for building your own rain garden, log on to our website at www.bolton-menk.com/raingardens

Where can rain gardens be integrated into our communities?

- ▶ New residential developments
- ▶ New commercial/industrial/institutional developments
- ▶ Roadway projects
- ▶ Redevelopment
- ▶ Revitalization and smart growth projects
- ▶ Urban retrofit storm water management projects
- ▶ Streetscaping projects
- ▶ Private residential landscaping
- ▶ Parks and trailways
- ▶ Commercial/industrial/public landscapes
- ▶ Curbless and curbed parking lot perimeters
- ▶ Parking lot islands/medians
- ▶ Adjacent swales



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