Department of Community Planning and Economic Development
Communications Department
City of Minneapolis
105 Fifth Avenue South, Ste. 200
Minneapolis, MN 55401

News Release

Contact: Krista Bergert, CPED Communications, 612 673 5015, or by cell, 612 360 8702; email, Krista.Bergert@ci.minneapolis.mn.us

Greening of Target Center Roof is Complete!

2.5 acre green roof—the largest green roof in Minnesota—will reduce the heat island effect downtown and prevent one million gallons of storm water drainage into the Mississippi

September 15, 2009 (MINNEAPOLIS)—The City of Minneapolis celebrated the greening of the Target Center roof at a completion celebration today on top of the arena. The roof is the largest green roof in Minnesota and, at the time of design, the fifth largest green roof in the United States. The Target Center is also the first arena in North America to install a green roof.

"We lead best by example," said **Council Member Lisa Goodman**, "and building one of the nation's largest green roofs will allow us to ask others to do the same."

"With the redesign of the Target Center roof, Minneapolis has again proven that sustainability and economic progress can go hand in hand," said **Minneapolis Mayor R.T. Rybak**. "Green initiatives such as this will not only improve the environment for city residents, but continue to cast Minneapolis as a leader when it comes to green industry."

"For years we have worked to reduce the City's negative effect on the Mississippi's stormwater quality," said **Barbara A. Johnson, City Council President**. "This is a big step forward, built by hard-working Minneapolis citizens and area laborers."

Benefits of the Green Roof
Green roofs provide ecological benefits by reducing the negative effects of hard surfaces, like traditional roofs, on stormwater quality, volume, rate, and temperature on the receiving waterbody, in this case, the Mississippi River. It is estimated the green roof will capture one million gallons of stormwater annually, preventing drainage into the Mississippi River.

The green roof will also help in mitigating the heat island effect in downtown Minneapolis by reducing the roof's temperature by as much as 80 degrees Fahrenheit.

There are opportunities, under public contract, to provide jobs for Minneapolis residents; 75% of the workers who worked on the installation of the roof were Minneapolis residents. Twenty of the workers were graduates of training programs at Summit Academy OIC.

Construction of the Vegetated Roof
Pre-grown mats of sedum plants create the base of the green roof system. Mats were laid on a state-of-the-art waterproofing membrane which includes a leak detection system called Electro Field Vector Mapping (EFVM). The membrane will help withstand constant dampness, high alkalinity, and exposure to plant roots, fungi, and bacterial organisms as well as varying hydrostatic pressures.

The green roof features a 1.75” growing zone in the center of the main arena roof structure and a deeper 2.5” growing zone around the perimeter where the structural capacity is greater to maximize storm water retention and plant vigor. The roof uses the pre-grown mats as the base of the green roof system and contains a variety of Sedums and Minnesota prairie plants, including Columbine, Lanceleaf Coreopsis, Wild Strawberry, Dotted Blazing-Star, and Lupine. It includes lupines to target the Karner Blue Butterfly, a federally listed endangered butterfly that needs lupines to survive. Prairie seed was also used to increase long-term resilience of the green roof.

More than 11 miles of sustainable, water-efficient irrigation lines were installed and 14,000 cement pavers for firebreaks and roof protection laid.

While the project called for 50% recycling of materials, the Tecta team set its own goal of recycling 100% of the old roof, resulting in an estimated 450 tons of existing rock and 590 tons of existing pavers, 140 tons of existing roofing membrane and more than 60 truckloads of existing roof insulation.

Minneapolis as an Environmentally-Friendly City

Minneapolis is recognized as one of the most environmentally friendly cities in the country. Target Center’s green roof is just one of many examples of how City government has led by example and taken advantage of the benefits of being green. City Hall is also home to a green roof, and several Public Works and Fire Department facilities use solar arrays to help generate power. The City has also adopted a Leadership in Energy and Environmental Design (LEED) Silver standards, which require new or significantly renovated City facilities to meet some of the highest standards for sustainability in their planning, design, construction and commissioning. A new ordinance limits vehicle idling in the city to reduce emissions, and Minneapolis is the first U.S. city to require higher fuel efficiency for taxis. The City’s innovative stormwater utility program has dramatically increased the use of rain gardens and other effective practices to protect our lakes from stormwater runoff. Minneapolis has also created a unique program to provide microgrants to community organizations to support their efforts to fight climate change.

Since Minneapolis’ sustainability initiative was launched in 2003, City leaders have developed a series of 25 indicators, including things like air quality, bike paths, green jobs, and tree cover. Each indicator includes specific numeric targets, which serve as goals for Minneapolis to reach in the coming years. To learn more about Minneapolis’ sustainability efforts, visit www.ci.minneapolis.mn.us/sustainability.

The green roof design team includes Leo A Daly, Kestrel Design Group, and Inspec; locally-operated Stock Roofing, a Tecta America company, is replacing all of the roofs on the Target Center and installing the extensive green roof.

The installation and ongoing maintenance of the green roof is the last stage of a necessary roof replacement project that also includes replacing all 29 smaller roofs on five levels. The cost of roof replacement for all 30 roofs is $5.32 million and is paid for using a set-aside capital fund for improvements.

About Summit Academy OIC

Located in the Heritage Park neighborhood of North Minneapolis, Summit Academy OIC is the only community-based vocational training and job placement program in North Minneapolis. Summit Academy OIC assists individuals in developing their ability to earn and to become contributing citizens in their community; supports the development of self-sufficiency in every person, regardless of background, economic status, or level of ability; strengthens the community by preparing individuals to assume their roles as workers, parents, and citizens.

About LEO A DALY

LEO A DALY is an international architecture, planning, engineering, interior design and program management firm with 1100 professionals in 30 offices worldwide. The firm has a 40-year history in designing sustainable buildings including the award

winning Gold LEED® regional headquarters for the National Park Service in Omaha, NE, and is currently designing a platinum LEED® building in Doha, Qatar. LEO A DALY's Minneapolis office comprises 134 professionals and it is currently completing 12 sustainable buildings, aimed at Silver LEED for the U.S. Army at Fort Carson near Colorado Springs.

About Kestrel Design Group
The Kestrel Design Group is a Minneapolis-based, sustainable landscape architecture firm specializing in green roofs, living walls, storm water and urban trees and sustainable site solutions. An emerging leader in both green roof technology and tree cell technology, it co-authored Minnesota's *Sustainable Building Guidelines* and *The Minnesota Soil Bioengineering Handbook*. Its recent green roof projects include Minneapolis City Hall, the Minneapolis Central Library, Edgewater Condominiums and the Green Institute/Phillips Eco-Enterprise Center.

About Inspec
INSPEC, Inc. is an engineering/architectural firm specializing in roof, exterior wall, pavement and waterproofing design, construction observation, and management services. It employs more than 65 engineers, architects, project managers, technicians, and office support in offices located in Minneapolis, Milwaukee, and Chicago. Inspec has been providing sustainable roofing, waterproofing, and other building envelope solutions for over 35 years. The firm has completed over 40 projects in which the waterproofing membrane has a vegetated or otherwise landscaped overburden.

About Stock Roofing, a Tecta America Company
The Stock Roofing Company, LLC. was founded in 1987 Warren Stock, a small business owner and operator in Minneapolis, Minnesota. For nearly twenty years, Stock Roofing has grown in capacity and capability to meet the residential and commercial roofing needs of the Twin Cities metropolitan and surrounding areas. In 2003, Stock Roofing Company, LLC. joined Tecta America Corp. Stock Roofing has installed the most square footage of any other green roof contractor in the State,

About Tecta America Corp.
Tecta America Corp., headquartered in Skokie, IL, is the largest commercial roofing company in the U.S. and provides roofing solutions nationwide with over 50 locations and more than 3,500 employees. Services include roof installation, roof replacement, new construction, disaster response, repair, restoration, maintenance, full service national roofing management and, through its Tecta ES [Environmental Solutions] division, green roof systems, photovoltaic systems, and day lighting systems. Tecta is also the largest green roof contractor in the nation.

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TARGET CENTER GREEN ROOF FACT SHEET

- Fifth largest extensive green roof in the United States at the time of design and the largest in Minnesota. The green roof is part of an overall project undertaken by the City of Minneapolis to replace 29 conventional roofs on five levels of the Target Center.
- First green roof installed on an arena in North America.
- The consultant team of LEO A DALY, Kestrel Design Group and Inspec, Inc. designed the green roof. Stock Roofing, a Tecta America company, is installing the green roof.
- 2.5 acres and approximately 113,000 square feet in area.
- Consists of a 2.75 inch growing zone in the center of the main arena roof structure and a deeper 3.5-inch growing zone around the perimeter where the structural capacity is greater. The roof is deeper at the perimeter to maximize possible storm water retention and plant vigor.
- A pregrown mat creates the base of the green roof system and is complemented by additional plantings to enhance plant diversity and ecological resilience. The roof features a mix of sedum and native plants. A drip irrigation system will provide water to the plants during plant establishment and droughts.
- The green roof features a state-of-the-art waterproofing membrane that will withstand constant dampness, high alkalinity, exposure to plant roots, fungi and bacterial organisms as well as varying hydrostatic pressures. A leak detection system called Electro Field Vector Mapping (EFVM) will be used to pinpoint leaks in the waterproofing membrane.
- While the City's goal is to recycle 50 percent of the materials, Stock Roofing, a Tecta America Company, has set a goal to capture 100 percent of the old roof.
- The green roof will handle up to 0.9 inches of rainfall without runoff, capturing an estimated 1 million gallons of storm water draining into the Mississippi River per year.
- The green roof will also help in mitigating the heat island effect in downtown Minneapolis by reducing the roof's temperature by as much as 80 degrees Fahrenheit.
- The green roof has a 20-year warranty and maintenance agreement.
- The green roof waterproofing membrane is expected to last 40 years.
- The green roof provided job opportunities for area laborers: 75% of the 41 workers live in Minneapolis; 66% were minorities; 6% were women. Twenty workers were graduates of training programs at Summit Academy OIC; seven moved into long-term positions at Stock Roofing.

Minneapolis
City of Lakes

TARGET CENTER GREEN ROOF PLANT LISTS
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A) PREGROWN MAT SPECIES

- SPECIES IN PLANS:

Sedum album
Sedum floriferum 'Weihenstaphaner Gold'
Sedum hybridum 'Immergrauch'
Sedum kamtschaticum
Sedum reflexum
Sedum sexangulare
Sedum spurium 'Fuldaglut'
Sedum divergens
Sedum ternatum

- SPECIES INSTALLED:

Sedum album Coral Carpet
Sedum acre
Sedum sexangulare
Sedum rupestre
Sedum spurium Dragons Blood
Sedum floriferum
Sedum alacondium
Sedum pulchellum

supplemented with the following species of cuttings on-site:

- Sedum flor. 'Weinenstaphaner Gold'
- Sedum hybridum 'Immergrünchen'
- Sedum kamtschaticum
- Sedum middendorffianum diffusum
- Sedum spurium 'Fuldaglut'

LEO A DALY PLANNING ARCHITECTURE ENGINEERING INTERIORS EST. 1915
730 Second Avenue South, Suite 1100
Minneapols, MN 55402-2455 USA
Tel 612-338-8741 Fax 612-338-4840 ©

The Kestrel Design Group
7101 Ohms Lane
Minneapols, MN 55439
Tel 952-928-9600 ©

INSPEC
5801 Duluth Street
Minneapols, MN 55422
Tel 763-546-3434 ©

B) PLUGS PLANT PALETTES

Scientific Name	Common Name	%	Total #
Allium canadense	Wild Garlic	4	1029
Allium stellatum	Prairie Onion	5	1286
Anemone patens	Pasque Flower	5	1286
Antennaria neglecta	Pussytoes	7	1801
Aquilegia canadensis	Columbine	3	772
Aster ericoides	Heath Aster	5	1286
Aster oolentangiensis	Sky Blue Aster	5	1286
Aster sericeus	Smooth Aster	5	1286
Campanula rotundifolia	Harebell	5	1286
Cassia fasciculata	Patridge Pea	5	1286
Coreopsis lanceolata	Lanceleaf Coreopsis	5	1286
Fragaria virginiana	Wild Strawberry	5	1286
Geum triflorum	Prairie Smoke	5	1286
Heuchera richardsonii	Alumroot	7	1801
Liatris cylindracea	Cylindric blazing-star	3	772
Liatris punctata	Dotted blazing-star	3	772
Lupinus perennis	Lupine	8	2058
Penstemon grandiflorus	Large Flowered Beard Tongue	5	1286
Tradescantia occidentalis	Western Spiderwort	5	1286
Viola pedata	Bird's Foot Violet	5	1286
Total		**100**	**25729**

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730 Second Avenue South, Suite 1100
Minneapolis, MN 55402-2455 USA
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C) SEED MIXES

Species	Common Name	% of mix
Allium stellatum	Prairie Onion	10
Asclepias verticillata	Whorled Milkweed	5
Aster ericoides	Heath Aster	5
Aster oolentangiensis	Sky Blue Aster	5
Aster sericeus	Silky Aster	5
Cassia fasciculata	Partridge Pea	10
Campanula rotundifolia	Harebell	4
Coreopsis palmata	Prairie Coreopsis	5
Heuchera richardsonii	Alumroot	5
Liatris aspera	Rough Blazing Star	6
Liatris cylindracea	Cylindric blazing-star	5
Liatris punctata	Dotted blazing-star	5
Lupinus perennis	Wild Blue Lupine	15
Penstemon grandiflorus	Large Flowered Beard Tongue	5
Solidago nemoralis	Grey Goldenrod	5
Tradescantia occidentalis	Western Spiderwort	5
Total		**100**

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