

SUSTAINABLE INFRASTRUCTURE

ISSUE 11



Establishing the future urban landscape

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*Industry News on the Design &
Development of the Urban Landscape*

GreenBlue 
URBAN

Establishing the future urban landscape

A Reimagined Navy Pier

Navy Pier Chicago, Illinois



“We utilized the StrataCell system to support paving surface structure and to maximize uncompacted soil volumes”

Chicago’s Navy Pier is undergoing an extensive transformation to revitalize 50 acres of urban lakefront area. The Navy Pier is already a spectacular global destination enjoyed by millions of visitors each year. With Phase 1 now complete, this revitalization scheme will be a model of sustainability that will improve the health and vitality of the local community.

Designed by award-winning landscape architecture firm James Corner Field Operations, the plan incorporates the latest in ecological design principles and environmental best practices. **This waterfront renewal provides vibrant public spaces for recreation and social life.**

With the keen emphasis on environmental sustainability, the project contractor and architect turned to GreenBlue to provide the systems required to ensure longevity of the trees being planted. The StrataCell modules support the pavement surface and provides uncompacted soil volume for healthy root growth. The Navy Pier was able to ensure that the new trees planted would live a long and healthy life - while providing the load bearing requirements demanded by the high-traffic area.

The StrataCell system was utilized to support the paving surface structure and maximize uncompacted soil volumes in order to allow for root growth above the concrete structure of the pier. The resulting green oasis will invite visitors to escape the hard edges of the downtown city and enjoy unfettered views of the majestic waters of Lake Michigan in a more natural setting. Through this sustainable design, the Navy Pier has the potential to make a major positive



impact on the environment.

GreenBlue is proud to take part in this prestigious sustainability project. We are one step closer to realizing our mission statement of “establishing the future urban landscape”.

The Navy Pier is located in the core of Chicago.

It can be accurately described as a great American attraction with its combination of world-class character and local authenticity.





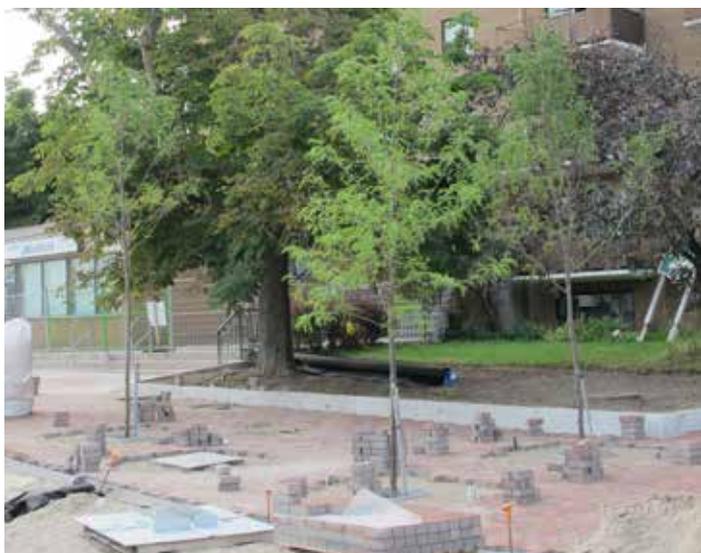
Streetsville BIA

Mississauga, Ontario

Streetsville is a historic village within the city of Mississauga, Ontario. Referred to as “the village in the city”, Streetsville is less than 30 minutes from downtown Toronto and serves as a quaint get-away from city life.



The Streetsville BIA (Business Improvement Association) sought to improve the appeal of the historic core’s Main Street, to draw visitors to the area and promote business for the local shops. The design was developed in 2013 by PMA Landscape Architects, and commenced construction in 2014. The scope of the project entailed the realignment of the road, complete resurfacing of pedestrian and vehicular areas with flush curbed unit pavers, custom pedestrian lights, abundance of shade trees, a custom architectural canopy structure complete with special AV opportunities - ultimately creating a pedestrian-priority space that has the flexibility to be closed off seasonally for special events and large gatherings. The project utilized the full GreenBlue ArborSystem, as well as the removable stainless steel Bollards.



“The required amount of soil volume would basically create a large continuous trench that would support nearly the entirety of the pedestrian areas.”

“The project was intended to support the Town’s goal in making the Main Street Plaza a significant node in Mississauga’s larger Culture Master Plan framework,” explained Fung Lee from PMA Landscape Architects. “Initial thoughts were the astonishing realization that the required amount of soil volume would basically create a large continuous trench that would support nearly the entirety of the pedestrian areas. Therefore the StrataCells had to support the pavers at the surface,” Lee continued. The design linked several tree pits together with GreenBlue StrataCells under a concrete sub-base with the paving stone surface above. “I had high expectations about the StrataCell system being that we have had experience with the product before,” Lee noted. GreenBlue assisted the landscape architect by providing full layout designs, details, and estimated costing on the soil cells for the tree planting.



At first the plan was to use a permeable surface, however this was changed to include RootRain Linear Drains with the PavingStone Grate and Belleview Tree Guard, incorporating integral electrical pedestals provided by GreenBlue.

The desired result for the project was fully achieved, and a commemorative Remembrance Day event (photo above) was held in the plaza and was a huge success based on the turnout.

The project had some known challenges with below ground utilities and the StrataCell System met these very well. “Compared to other methods of soil cells, the StrataCell is more flexible in accommodating existing and new underground piping, as well as future servicing of these pipes,” explained Lee.





Hatcher Road Community Improvement Phoenix, Arizona

Known as “the desert city where the sunset stops you in your tracks”, Phoenix, Arizona recently implemented a Community Development Improvement project that included GreenBlue’s ArborSystem being installed on a ¼ mile stretch of Hatcher Road.

The project utilized StrataCells, ReRoot root management, and RootRain irrigation/aeration systems to support a permeable concrete surface and the adjacent roadway while allowing the linked tree pits to share soil volume, therefore maximizing rooting space. The RootRain System allows for the exchange of organic gases and oxygen throughout

the soil spaces below the pedestrian surfaces and direct irrigation into the root zone.

Hot climates like Arizona face challenges with retaining water for supporting tree growth and compacted sub base areas below ground that deters root growth. This means that during the monsoon season that occurs between June and September, trees can be uprooted very easily, if not properly anchored by their rooting system. The GreenBlue ArborSystem maximized root growth; properly anchoring the trees’ root system in order to help prevent these trees from uprooting, while at the same time supporting the immediate growth during the planting period.



A view of the linked tree pit running along the side of the busy street.



The StrataCells are shown here being installed. The snap-together matrix makes the system quick and easy to install.



The linked tree pit incorporated a permeable surface to help with irrigation.

“Even though this was the contractors first experience with the StrataCell system, they found the installation very straight-forward.”



47TH OALA AGM
AND CONFERENCE

OALA Annual Conference

LANDSCAPE ARCHITECTS LEADERS FOR A HEALTHY PLANET

Landscape architects by definition are trained to be stewards of the land, and to seek balance between humans and the environment. This was the theme of the 2015 OALA Conference. The event spoke of the potential for landscape architects to lead the change in improving quality of life and environmental integrity. Concerns for our environmental sustainability, natural resources, public health, and climate change occupied the conference with a keynote speech from former Toronto mayor David Miller. The conference emphasized how landscape architects are armed with unique skills capable of developing integrated solutions in response to these complex problems. GreenBlue attended the conference as a sponsor and officially introduced the newest removable bollard design.

Between sessions, GreenBlue consultants assisted landscape architects with current projects and offered best practice advice on green infrastructure, urban tree planting, and sustainability topics. "We were pleased to show our support for this year's conference and help facilitate a movement which sees landscape architects driving change for sustainability in the urban landscape," said one of the GreenBlue consultants attending the event.



Removable Bollards

Control access to restricted areas and allow for variable use as necessary

Bollards provide a visual barrier that prevents vehicle access while preserving clear line of vision and unobstructed pedestrian flow. GreenBlue's removable bollards were designed for locations with changing access requirements. They control entry to restricted areas while allowing necessary passage for service or emergency vehicles.

Secured through embedded receivers, GreenBlue's newest removable bollard offers an unobstructive base when removed. The bollard design is one component and ADA compliant, featuring a slip resistant and heel-safe surface when removed. The removable bollard system is available in many different designs, sizes, and finishes to accommodate any existing site furnishings.

Available Finishes: **Stainless Steel** **Galvanized**
 Powder Coated **Corten**



The Removable Bollard was officially launched in March of 2015 at the OALA Annual Conference in Guelph, Ontario



Trees as Sound Barriers



It is a recognized fact that noise can reach unhealthy levels in urban areas. Cities around the world have acknowledged the impacts of noise pollution and enacted by-laws and practices to battle this increasing environmental issue. In a report entitled “Trees as Sound Barriers”, Green-Blue Infrastructure Solutions discusses the use of trees as sound barriers in urban settings. The report explains that trees soften the visual effect of a barrier, while still reducing the reverberation of sound waves. Noise abatement has become an important consideration for many municipalities as they constantly look at ways of suppressing and dampening surrounding noise from nearby roads, railways, and airports. Trees and shrubs can be effective sound barriers while doubling as a wind and visual barrier.

Selection and placement of trees is key to making this a success however. When space permits, thick strips of vegetation in conjunction with landforms or solid barriers can reduce highway noise by 6 to 15 decibels (D.I. Cook). Because trees absorb more high frequency noise than low frequency, this makes them ideal for use as sound barriers.

Although published results on the effectiveness of trees as sound barriers vary enormously, a study by Huddert in 1990 shows that in some instances noise can be reduced by 6 dB over a distance of 100ft where planting is particularly dense. Leonard and Parr (1970) and Reethof (1973) found that a dense belt of trees and shrubs between 50-100ft wide could reduce sound levels by as much as 6-8 dB. Cook and Van Haverheke (1972) found reductions in noise level of 5-10dB for belts of trees between 50-100ft wide.

Noise reduction is achieved by either deflection or absorption of the noise or a combination of the two. Most concrete barriers work solely by deflecting sound, whereas trees use absorption. Earthen berms are also used in conjunction with trees and shrubs to deflect and absorb sound when the available space is limited.

To download the free ebook, visit [resources.greenblue.com/trees-as-sound-barriers-ebook](https://greenblue.com/trees-as-sound-barriers-ebook)

Green Infrastructure Done Right

Soil Support Under Main St of Markham, ON

In the revitalization of Markham Village, Green-Blue structural soil cells were used to ensure adequate soil volumes were available to trees being planted where space was limited. The load bearing capacity of the StrataCell meant that they were able to run the cells under the roadway to support trees on the adjacent side of the road. The city wanted to transform the vehicular dominated street to one more suited for commercial activities, while still widening the traffic lanes in certain areas. And with the space available for trees along the boulevard being crowded with above and below ground utilities, this could only be accomplished by utilizing the StrataCell system. "The City decided to use GreenBlue Infrastructure Solutions because they offered a complete system, such as cells, root barriers, tree grates, and irrigation; rather than

just cells. With other systems, we would still have to purchase all the ancillary items," explained Dan Foong, the Project Manager.



An all too common problem...

GreenBlue tree guard takes one for the team

An example of what happens when a car runs into a tree in a shared space environment. Thanks to the tree guard, the tree remained in one piece. GreenBlue is now working with the client's insurance company to replace the tree guard.

ArborSystem tree guards are engineered to an extremely high standard under rigorous quality controls. GreenBlue takes product development and quality extremely seriously, always representing the latest technology in tree protection.

GreenBlue's complete range of tree guards offers the quality you would expect from the leading specialist supplier of urban tree planting products.



Visit greenblue.com/tree-guards-grates

Green infrastructure plays a vital role in sustaining our urban landscapes...

Sustainable infrastructure refers to the designing, building, and operating of urban infrastructure in a way that does not diminish the social, economic, and ecological processes required to maintain human equity, diversity, and the functionality of natural systems.

Urban trees may well have the most significant impact on sustainability in our cities. Yet, tree canopy cover in urban areas has declined by more than 30% over the last two decades - while urban areas have grown by 20%. Trees as green utilities play a vital role in sustainable urban design, and their long-term health should take priority if we are to enjoy the benefits of utilizing ecosystem services within our cities.

Our engineered systems for healthy urban trees also incorporate water harvesting technology. One of our unique products provides over 95% void space for root growth or water harvesting, and has load bearing capabilities to support heavy traffic.

At GreenBlue Infrastructure Solutions, we research and provide solutions for assisting trees in their battle to establish in urban environments and design stormwater management systems to reduce pollutants in runoff water and prevent flooding.

Establishing the future urban landscape



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