

The Principal Components

- Load bearing soil cell or panel structure
- Root Management
- Control Chamber - Inlet & outlet control
- Drainage
- **ArborFlow**
 - Curb Inlet
 - Permeable Paving
 - Traditional gutter



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 - Linear drain



The ultimate LID tree pit design

- Sustainable, effective, environmentally robust
- Reduces velocity and flow rate of run-off
- Meets discharge rates discharges into subsoil
- Absorbed by tree root system
- Passes into flow-control chamber



02.

Maintenance

Utilizing trees for Sustainable stormwater management



Maintaining LID tree pits

Drainage requirements

Spring

Check and clear stormwater inlets.

Late Fall

Clear leaf debris from inlets.

Summer

Inspect and clear debris from inlets.

Maintaining LID tree pits

Tree requirements

Summer

Irrigate regularly until establishment.
Check canopy for pest and disease.

Early Winter

Inspect canopy and branch structure for defects etc.

Early Spring

Inspect tree ties.
Clear leaf debris from inlet channels.
Top up mulch levels.

Late Fall

Clear fallen leaves.
Prune as required.

03.

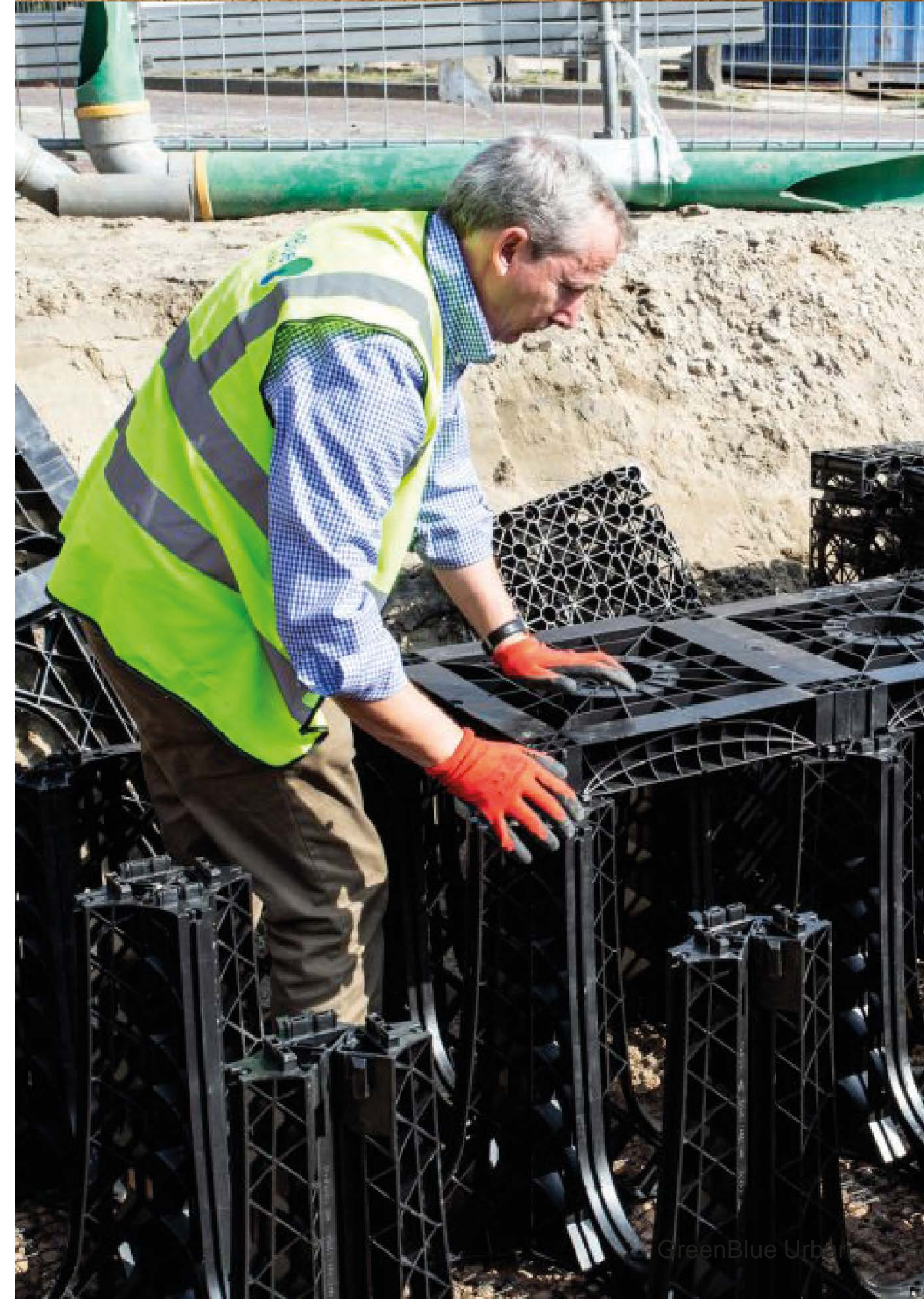
Water Resilient Cities

Utilizing trees for Sustainable stormwater management



Water Resilient Cities

- Improve adaptation to heavy rainfall
- Innovative and creative LID in retrofit
- Increase awareness of retrofit issues
- Mitigate climate change
- Network of private and public sector partners
- Shared knowledge



Cities Making a Difference in Sustainable Stormwater Management

City of Toronto, Ontario

Stormwater Quality

80% removal of Total Suspended Solids from site runoff

E. coli removal of <1000 / 100 ml (during wet periods of Jun - Sep) and <100 / 100 ml (during dry periods of Oct - May)



Cities Making a Difference in Sustainable Stormwater Management

City of Toronto, Ontario

Urban Forest

Enhance the extent and longevity of the urban forest
Increase tree canopy to 40% by 2022

Mitigate urban heat island effect

Enhancing air quality

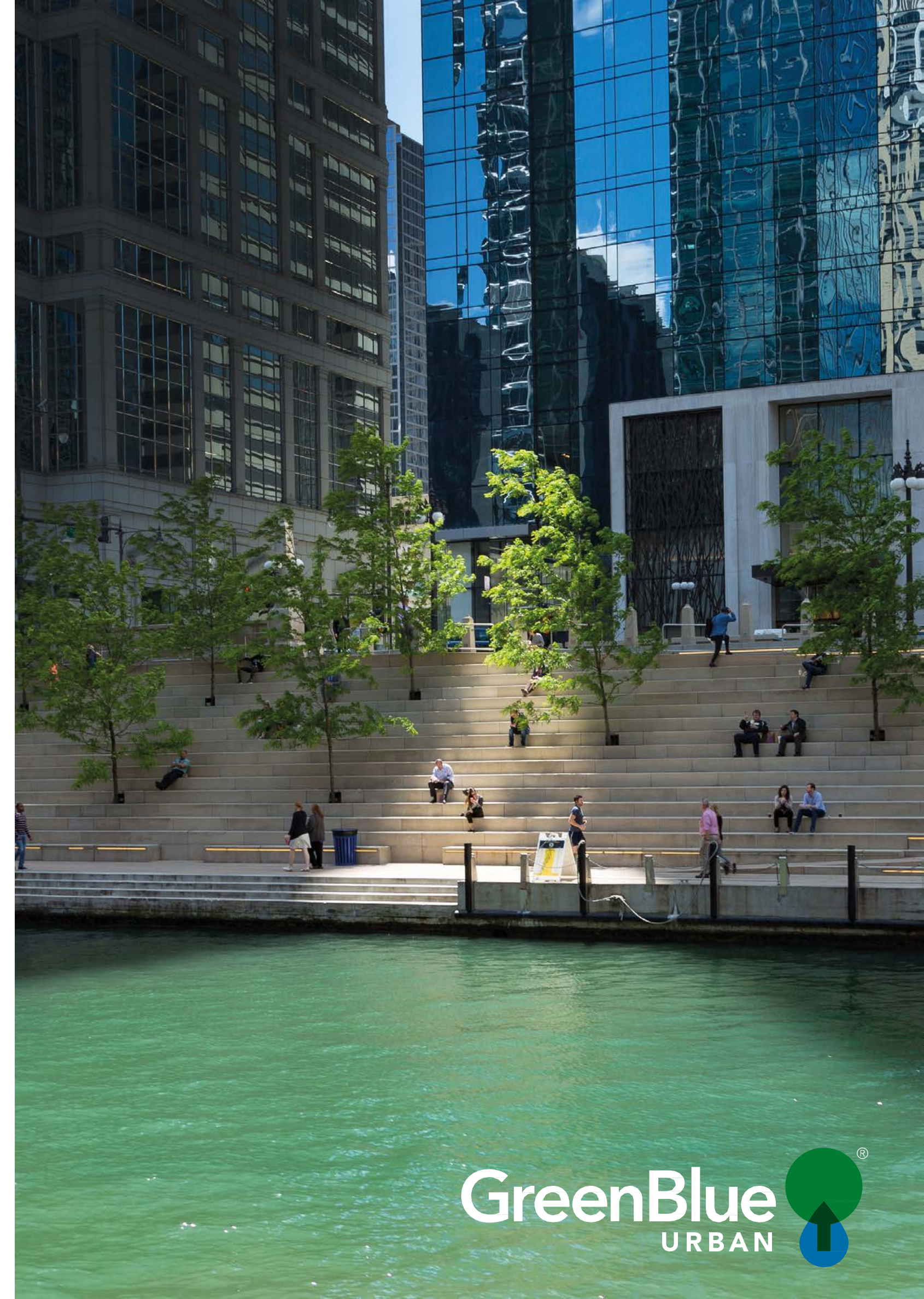


04.

Case Studies

Successful LID systems implemented.

Utilizing trees for Sustainable stormwater management



Case study: Gregory Road - West Palm Beach, FL

A residential project on with RootSpace was specified by the civil engineer as stormwater storage as a more cost-effective alternative to gravel drywell due to:

- Reduced excavation requirements
- Reduced waste removal
- Reduced infrastructure damage



Case study: Jack Layton Ferry Terminal Toronto, ON

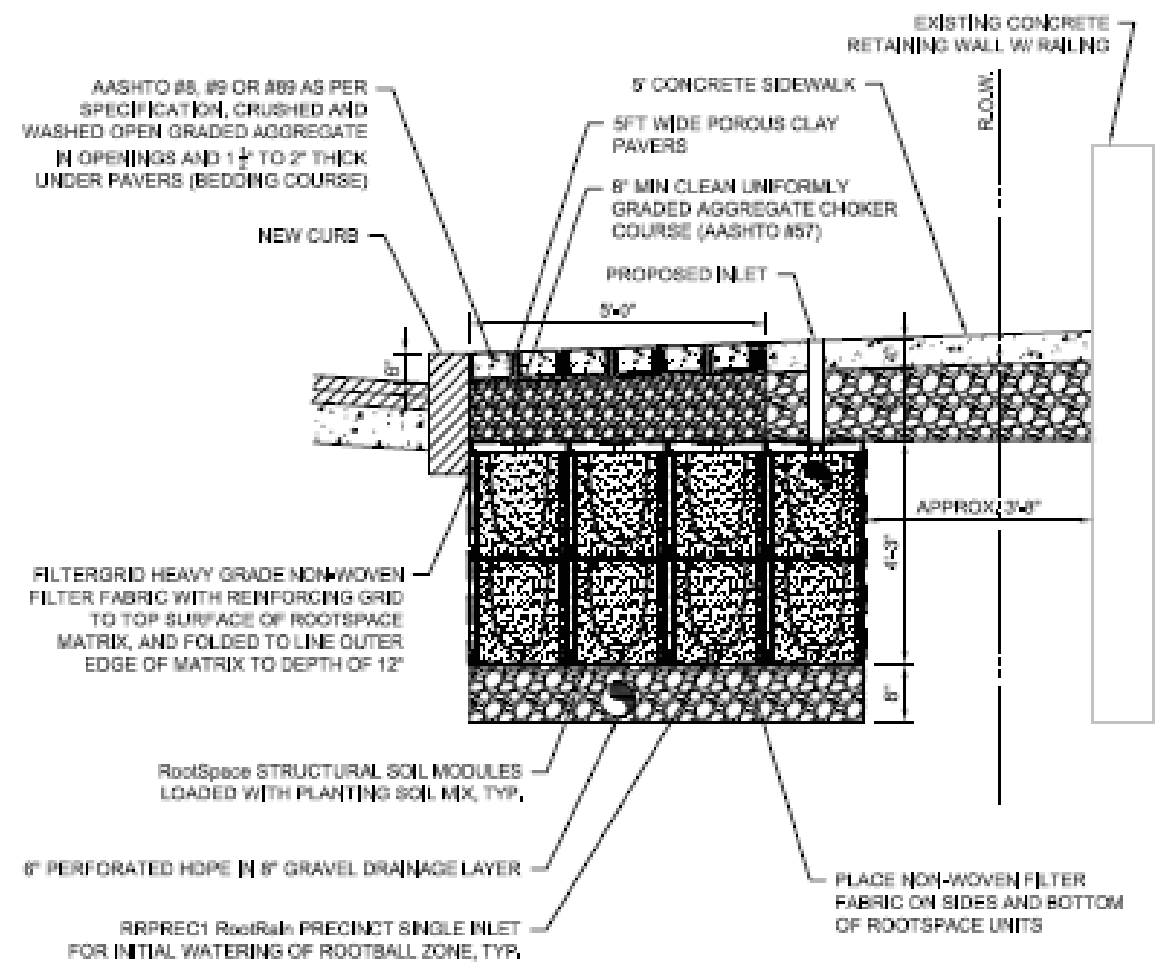
RootSpace was used to provide uncompacted soil volume for 19 trees. A linear drain channeled surface water runoff into the RootSpace system.



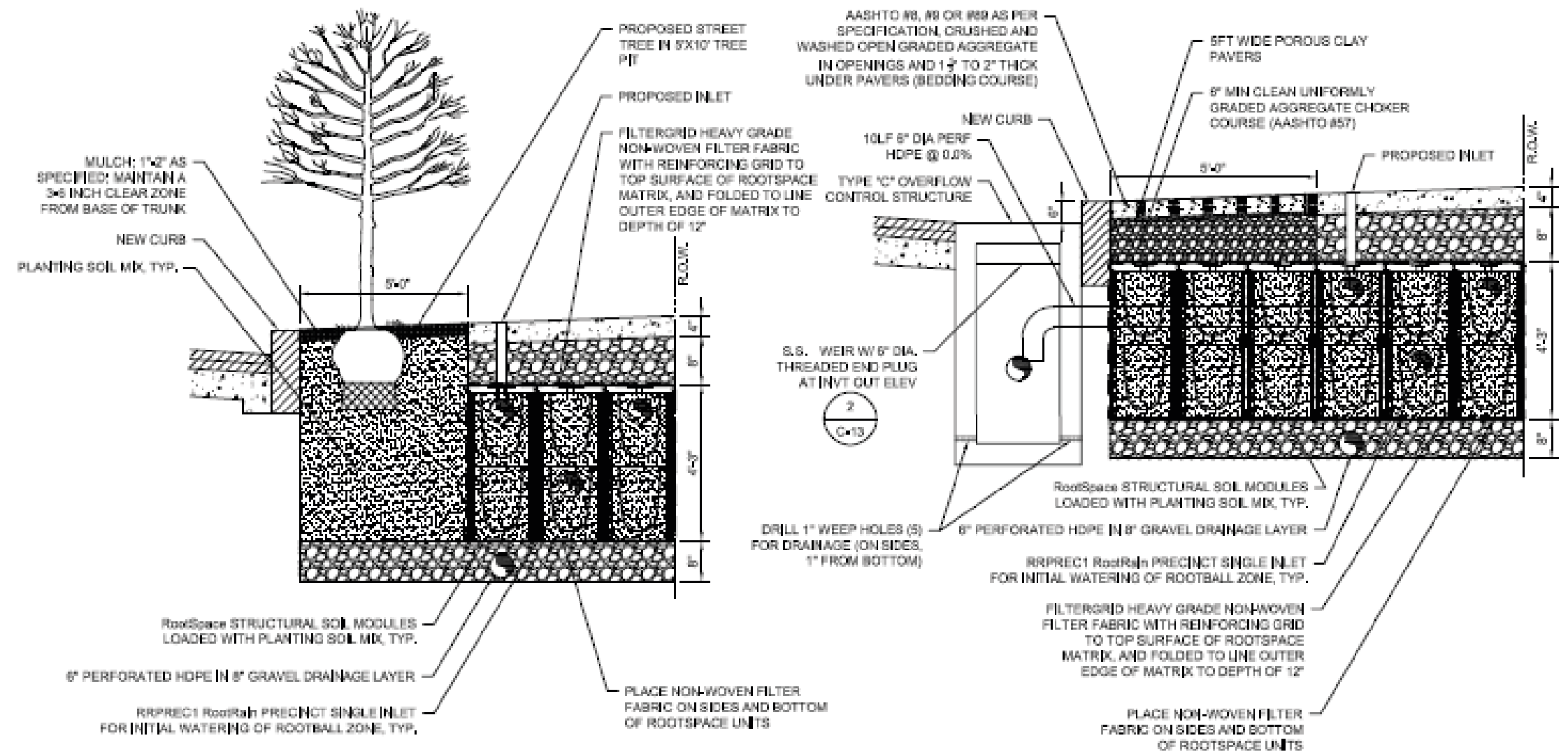
Case study:
Jack Layton Ferry Terminal
Toronto, ON



Case study: City of Lancaster, Pennsylvania



1 INFILTRATION TRENCH #4 AT RETAINING WALL
N.T.S.
C-4 & L-1



2 INFILTRATION TRENCH #4 WITH TREE
N.T.S.
C-4 & L-1

3 INFILTRATION TRENCH #4
N.T.S.
C-4 & L-1

NOTE: ENSURE THE PIT BASE IS SCREEDED AND LEVELLED PROPERLY BEFORE PLACING CELLS ON BASE, TO ALLOW FOR EASE OF INSTALLATION OF OVERALL MATRIX.

Cities Making a Difference in Sustainable Stormwater Management

City of Lancaster, Pennsylvania

\$2.8 million in air quality, energy, and climate related benefits annually

Reduced gray infrastructure capital costs of \$120 million

Reduced wastewater pumping and treatment costs of \$661,000

Reduced stormwater volumes

Improved stormwater quality

Enhanced aesthetics

Reduced air pollution

Improved public health

Increased property values

Reduced energy costs associated with cooling and heating buildings

Reduced heat island affect

05.

About GreenBlue Urban

Utilizing trees for Sustainable stormwater management



About GreenBlue Urban

History



Provide guidance to local authorities, landscape architects, engineers.



Unrivalled support service in the urban tree-planting world.

Founded in 1992 to research and provide urban tree planting solutions.



Market leader in specialist tree pit products.



About GreenBlue Urban

Consulting



Landscape architecture and design



Stormwater management & services



Support & training

06.

Conclusion

Utilizing trees for Sustainable stormwater management



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The challenge for the urban designer is that for trees to succeed and achieve their potential, they require access to **large volumes** of uncompacted soil. With space in cities being at a premium, and below ground congested with services and utilities, *specialized products* are required to overcome these challenges.

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The principal considerations

Best Management Practices for LID stormwater management

Load bearing
Pavement Support
System

Irrigation & Aeration
for healthy soil

Drainage &
Overflow provision

Adequate
uncompacted soil
volume

Root management
to protect
infrastructure

Source control
maintainable inlets



