

Green Roofs and Walls

Their value as Green Infrastructure

Dave MacKenzie

LiveRoof/LiveWall, LLC

Germany

Home of the Modern Green Roof



Extensive Green Roofs



Succulent Plants



Intensive Green Roofs (Garden Roofs)



Extensive Green Roofs for food production



Plantable Retaining Walls



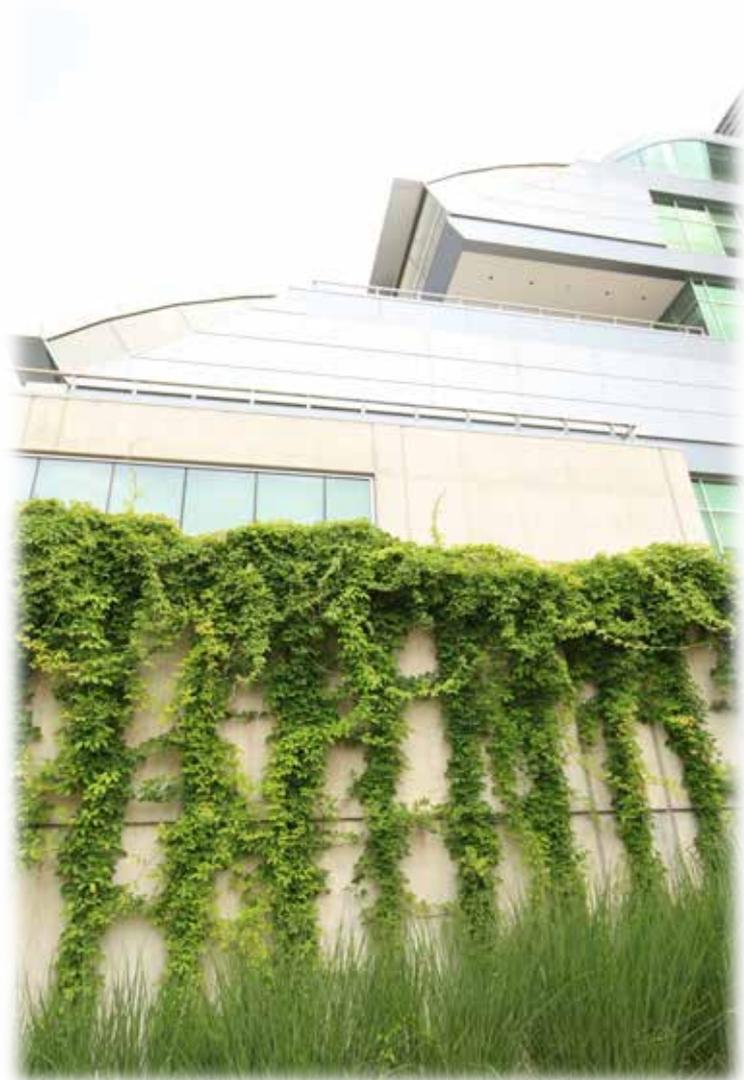
Perennial Plants work
as do Annuals



Clinging Vines-most basic way to green the side of buildings



Cable Systems (for growing twining vines)



Screens

(for supporting twining vines)







uica

DIVISION

KCAD: Master of Architecture

Planted Living Walls

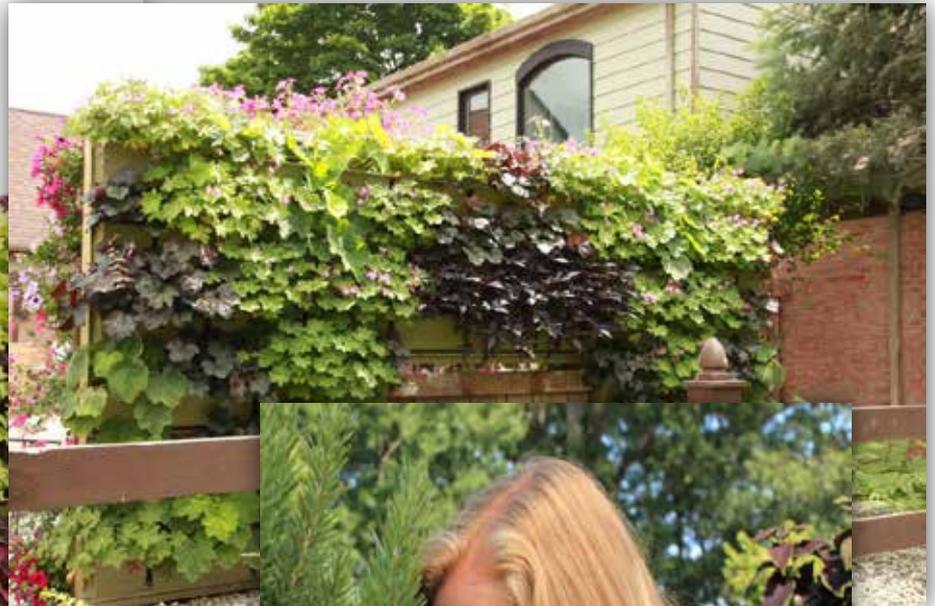
(For the Broadest Range of Benefits)



Installation Sequence of LiveWall System



Outdoors with Perennials, Annuals or Food



Indoor Living Walls

For Tropical Plants



Beautification for Quality of Life and Social Wellness

Green Roofs Contribute...

When Visible



Planted Walls are usually more
Visible



Opportunities to Beautify

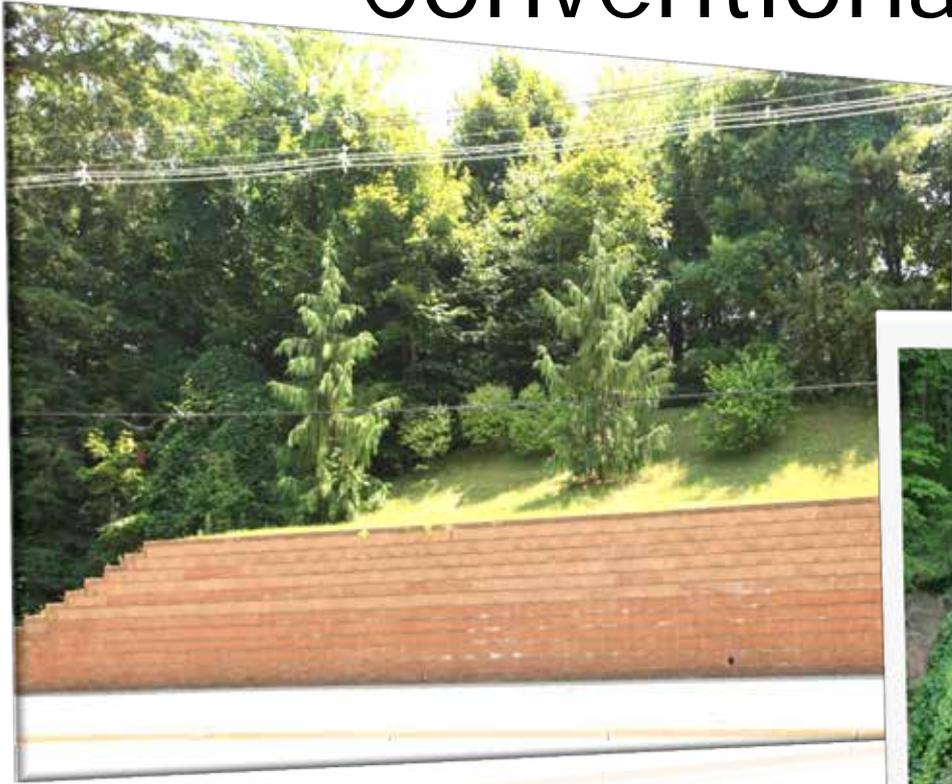


Conventional vs. Green

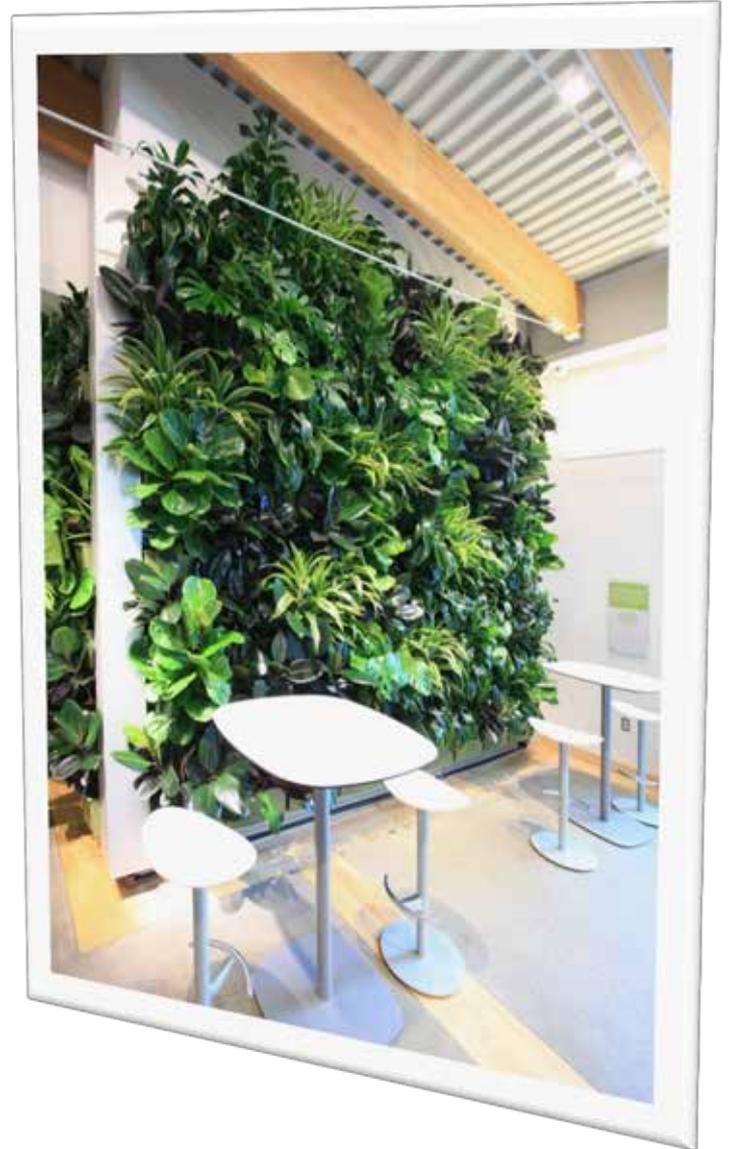




Conventional vs. Green



Then and Now



Space Transformation

From Stark
To Inspiring



From this To this....



Or this

To this....

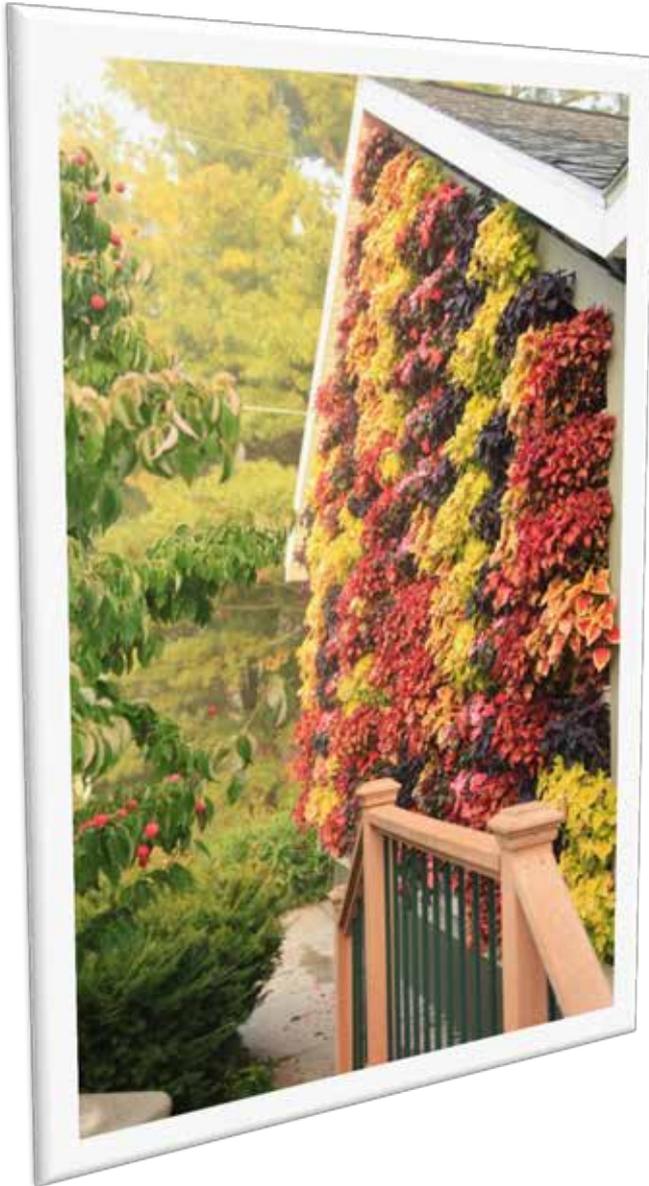


Change can be fun





Fall and Winter



Grand Rapids, an Urban Heat Island

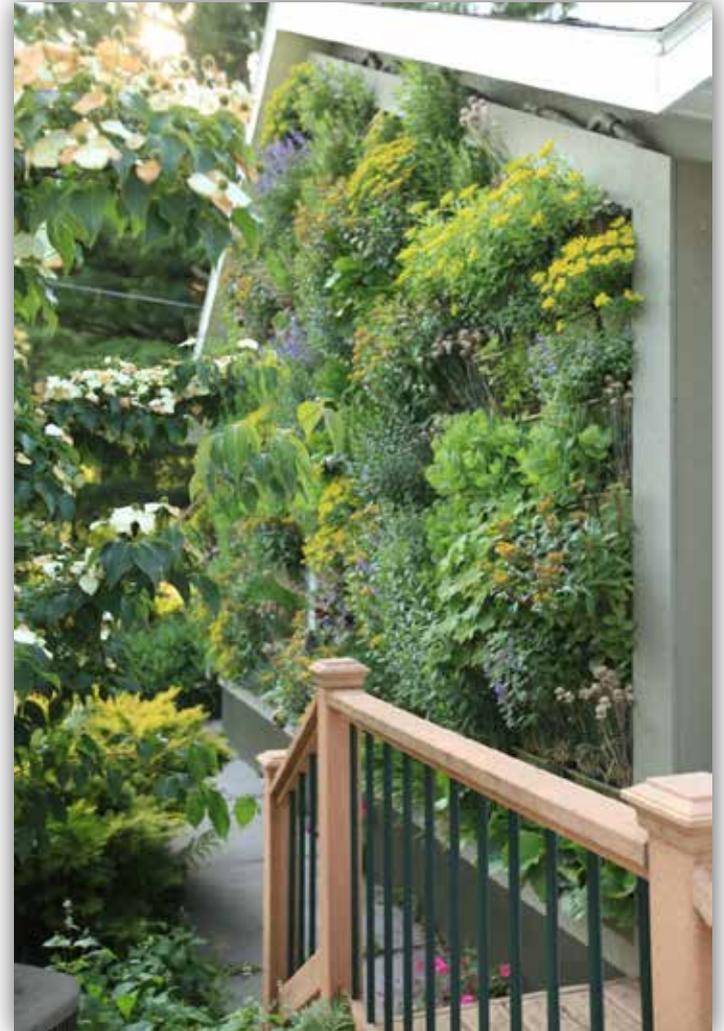
Photo Taken 9 Years Ago—when LiveRoof, LLC was formed.



VanAndel Institute Does a good job with Heat Island Mitigation



Planted Walls also help with Heat Islands



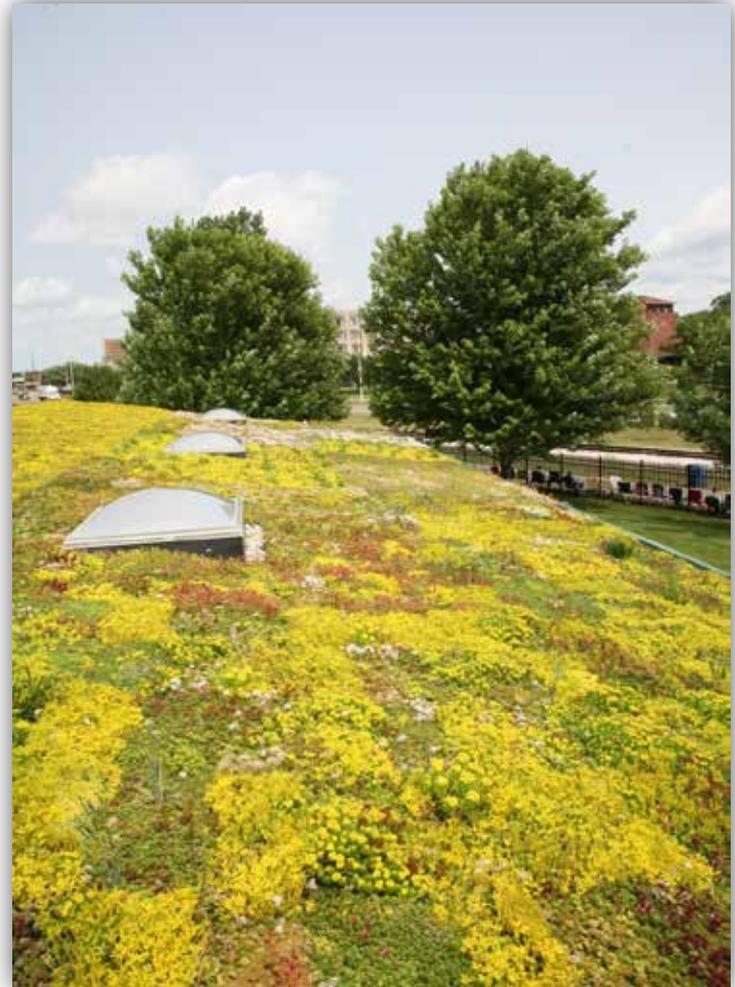
Water Conservation & Stewardship

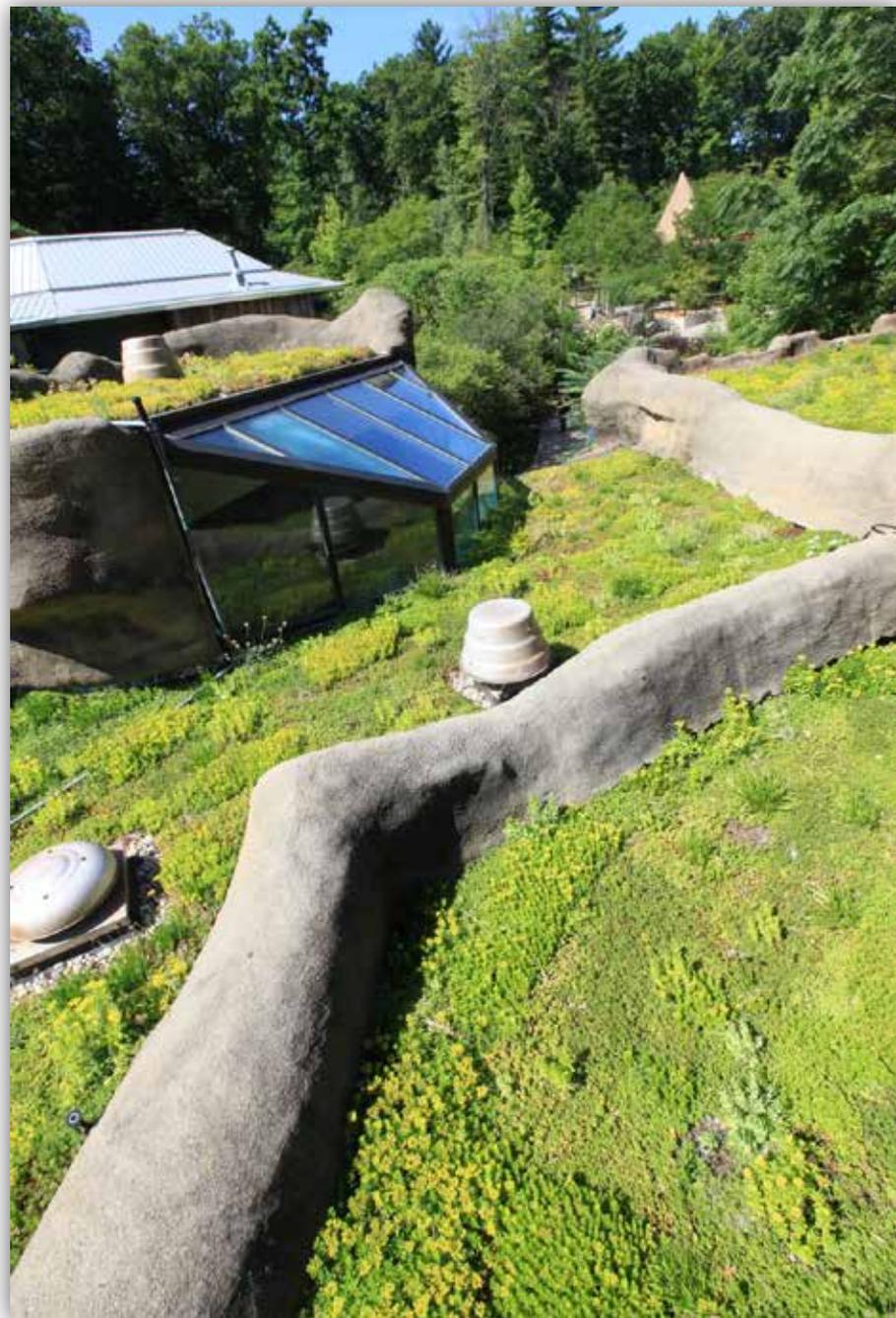
Retain/Cleanse up to 75 % of Precipitation

Condos on Muskegon Lake



GVSU Boat House Mkg. Lake





On their Own Green Walls don't do much for Storm Water



But, combined Technologies can be very Impactful



Green Roofs + Bioswales + Underground Storage for Landscape Irrigation



Green Roof / Blue Roof

the latest in storm-water management



More Plants = Better Air Quality



Air Purification & Oxygenation



People of all ages Get It





Habitat generally brings Desirable Animal Species

Roofs



Walls





Green Roofs Greatly Reduce Noise

Up to 40
Decibels



**Walls too, can cut noise by
40 decibels**





Food Growing on Roofs



Food on Walls



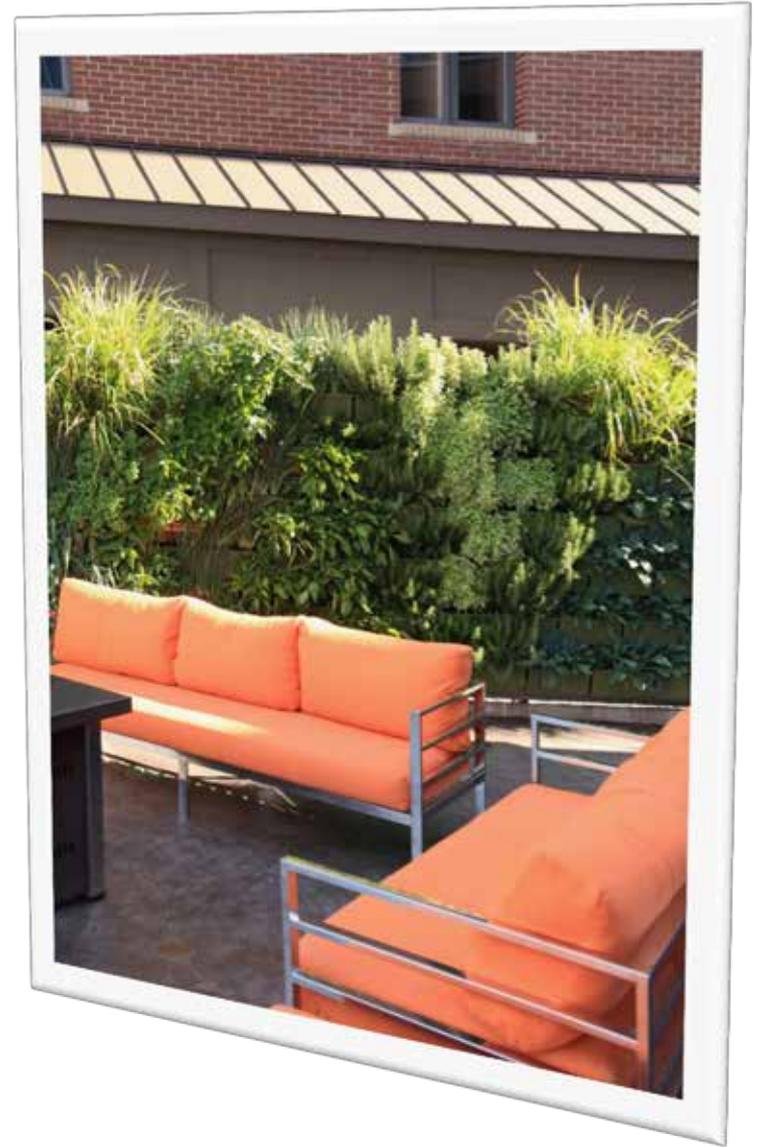
Root Crops to Leafy Greens



Tomatoes and Peppers



Herbs – where
the value is.



Marketing Value...

to be Seen
is to be Heard





Educational Signs can be big or small.
And, some roofs are accessible.



People are
Visual



First Impressions are Lasting





Last Impressions Count too



Educational Opportunities



Healing Roofs – at Hospitals and medical complexes









- Natural Views are part of the Therapy



Natural Views Speed Healing



Wellness and Therapeutic Activities



Walls Can be Accessible



A source of Pride





Caring for Nature is Meaningful and Rewarding



Socially and Artistically Worthwhile



Art is Relevant





Same Roof Different Seasons



Living Art On Walls

Simple Patterns



Plants as Paint



People Crave Visual Inspiration











Green Roofs Last appx. 3X Longer



Enhanced Real Estate Value

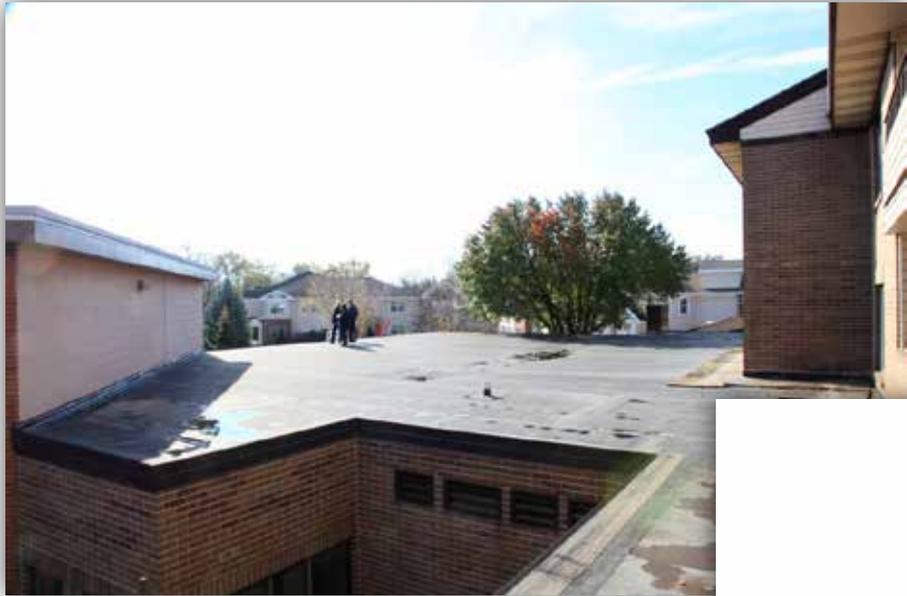
Value Reducing



Vs. Value Adding



Concept: Roof View vs. Garden View



Easier to Rent,
and at Higher Prices





Additional Amenity Space



¼ Mile Walking Tracks and Wheel Chair Accessible Patios



Nice Spaces Facilitate Contentment



**For Staff , Customers
and Tenants**



Save 1/3 on Energy



Walls too, Save Energy



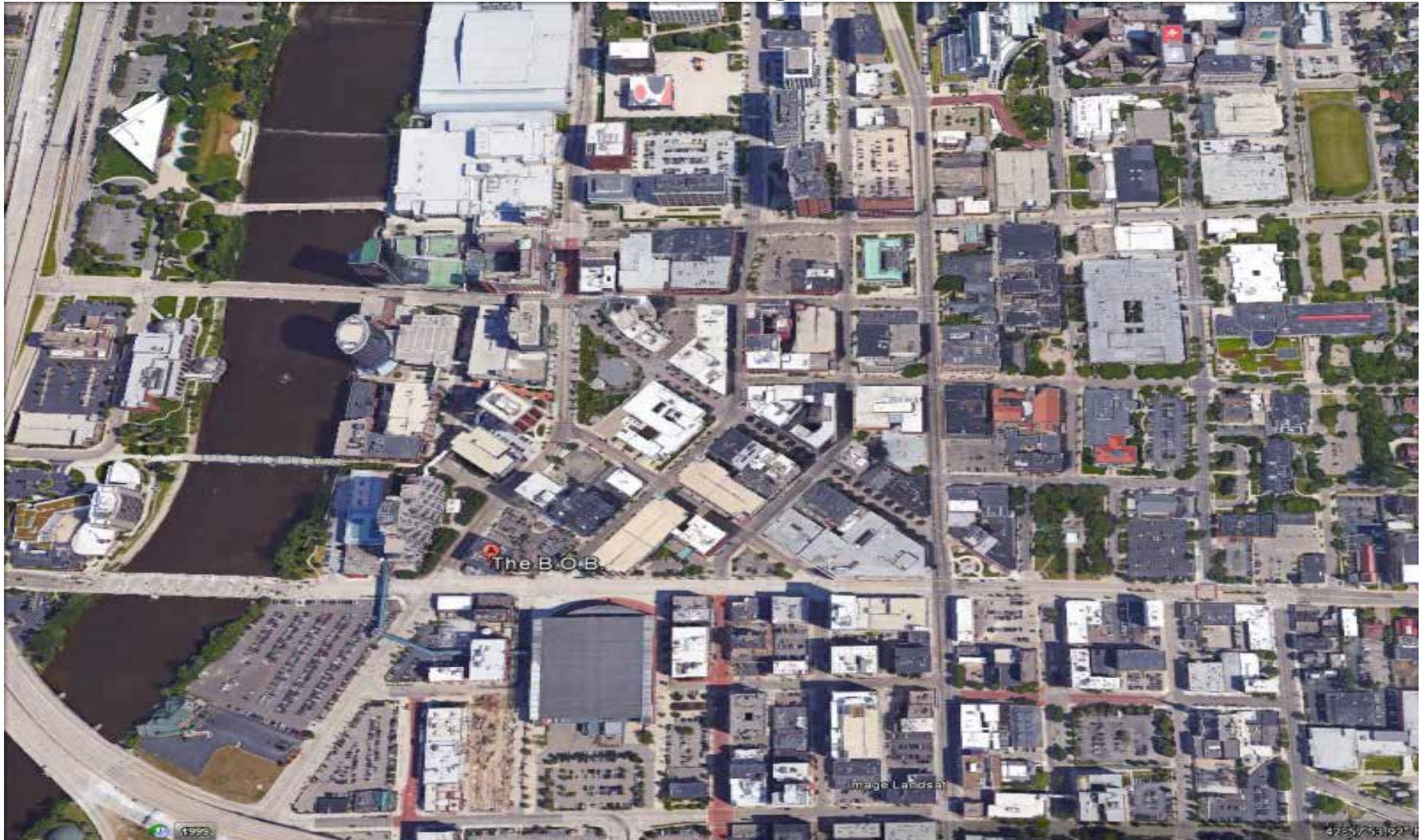
Solar Panels are enhanced by Green Roofs



Downtown Grand Rapids 9 Years Ago



Downtown Grand Rapids Today



Five Green Roofs



Imagine The Future



Thank You