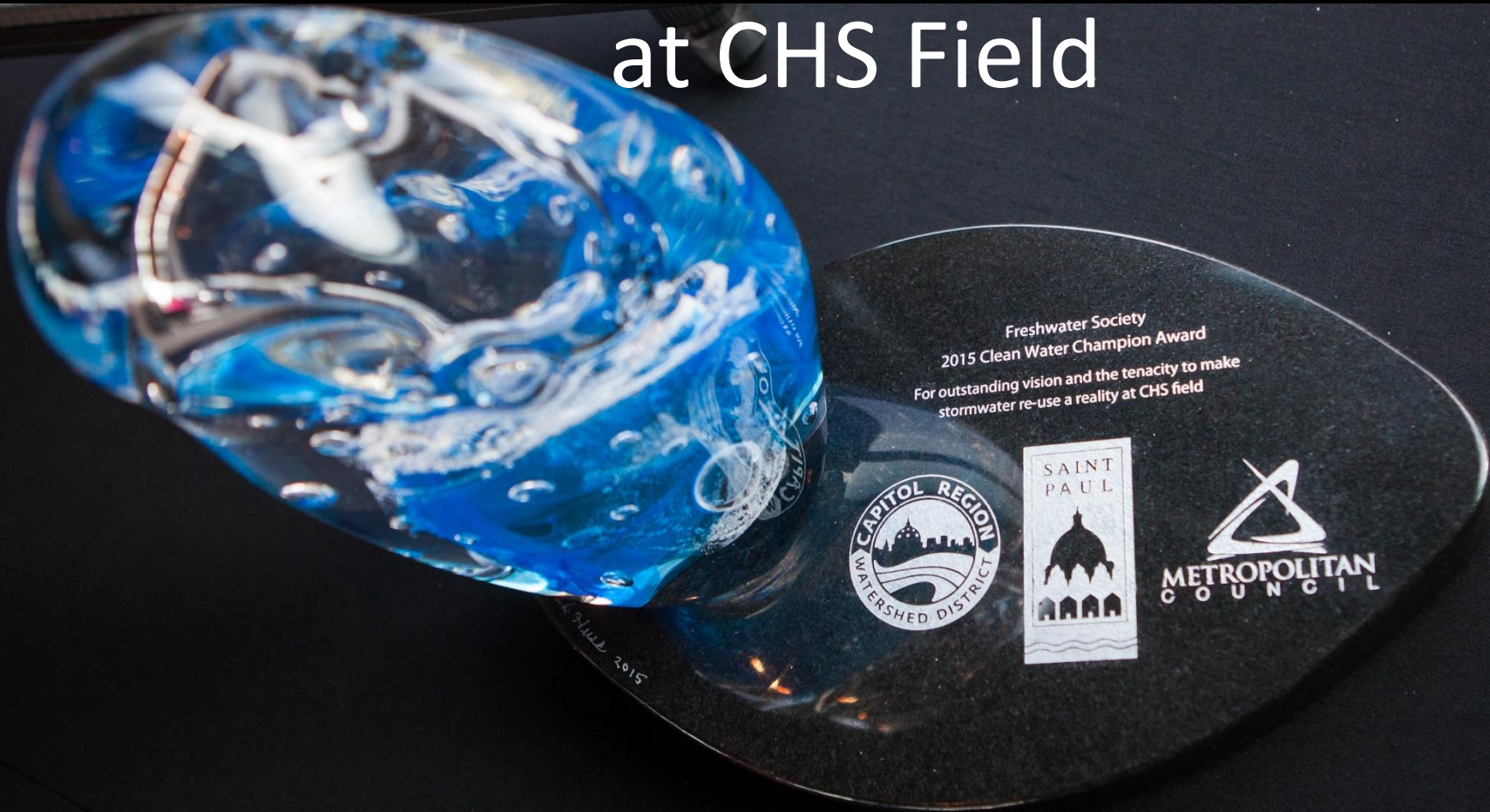


# Unpacking the Partnership and Process for Rainwater Harvesting at CHS Field



# Saint Paul's CHS Field

- Public-private partnership
- Brownfield redevelopment
- Sustainability focused
- *Rainwater harvesting across properties*





# Partnership

## Agencies

- Capitol Region WD
- Metropolitan Council
- Metro Transit

## Project Team

- St. Paul Saints
- City of Saint Paul Parks and Recreation
- Ryan Companies
  - Schadegg Mechanical
  - Solution Blue, Inc.
  - Rainwater Management Solutions



# Rainwater Harvesting Drivers

- Audience
  - 180 events
  - 400,000 annual visitors
- Location
  - Mississippi River
  - Green Line
  - Brownfield site
- Placemaking
  - “Greenest” ballpark
  - Showcase innovation





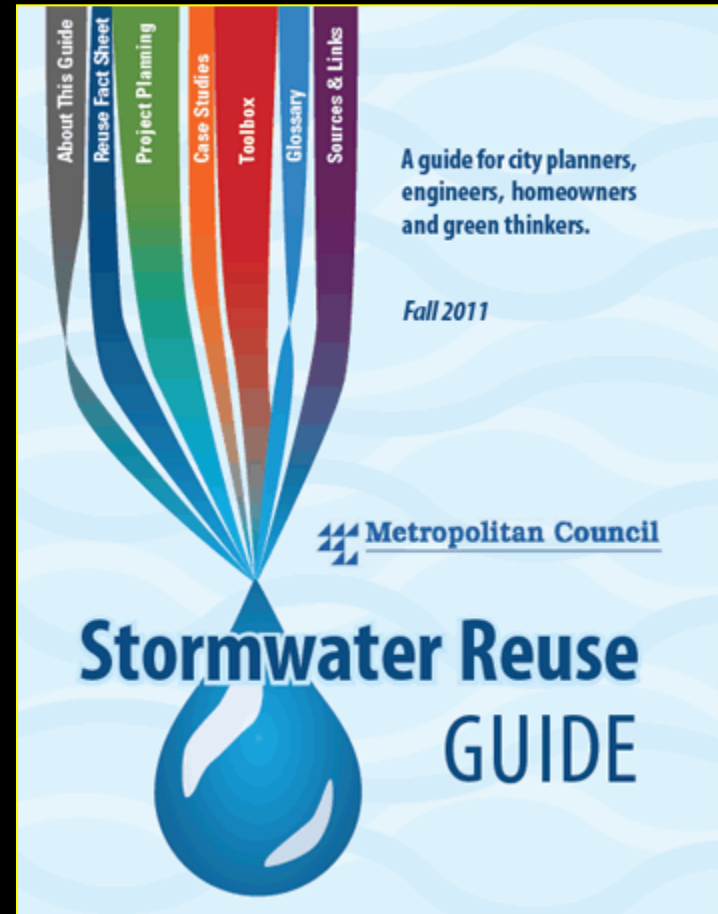
# Rainwater Harvesting Drivers

- Facility demand
- Community commitment
  - Greater Lowertown Master Plan
  - Comprehensive Plan Water Chapter

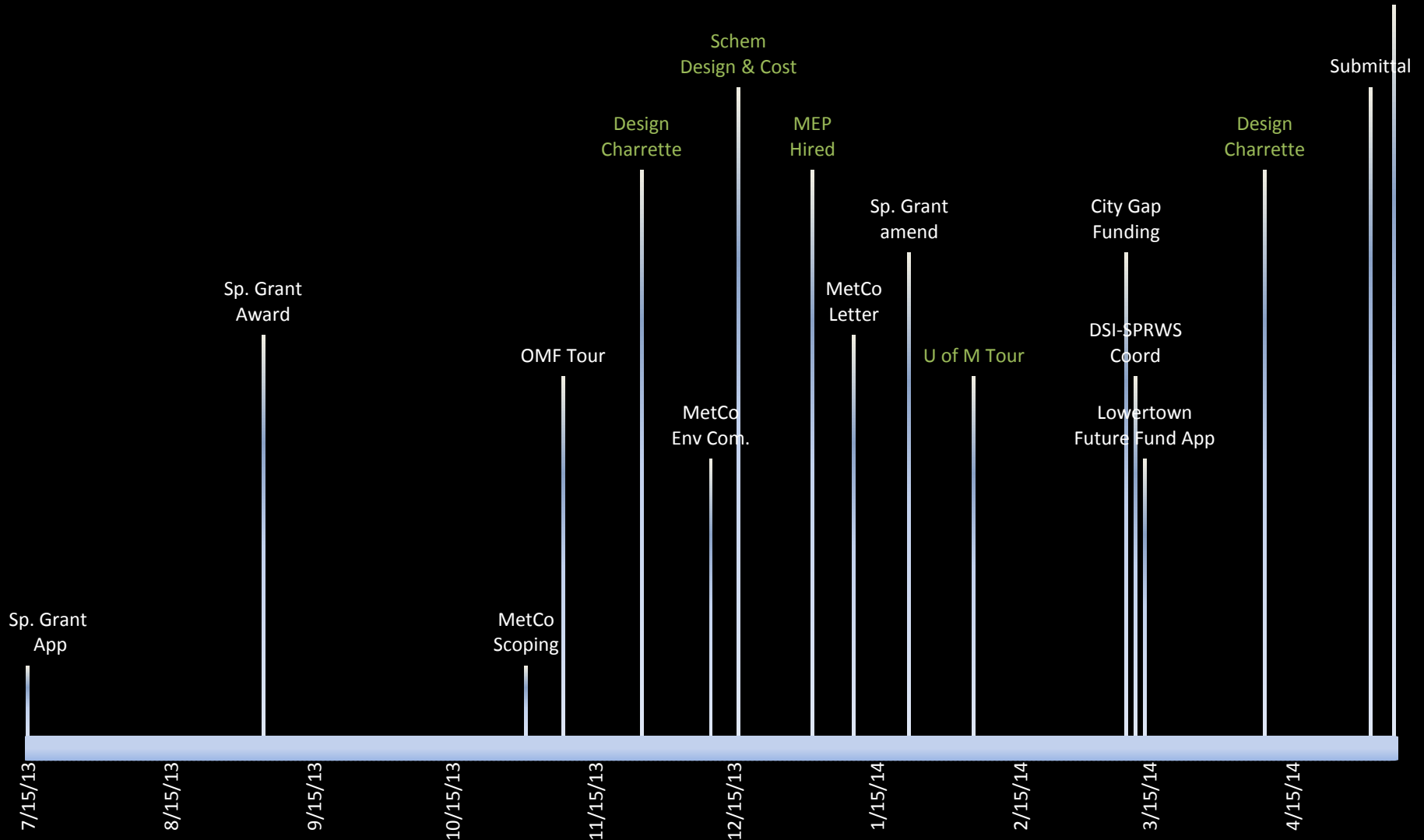


# Broad Challenges

- Lack of standards
- No defined process
- Multiple jurisdictions
- O & M impacts
  - Cost
  - Oversight
- Water economics



# Process and Milestones



# Design Charrette

- Facilitated by outside reuse expert (Stark Rainwater / RMS)
- Developed 3 possible alternatives
- Schematic design and prelim cost estimates



MEP contractor not on project team yet



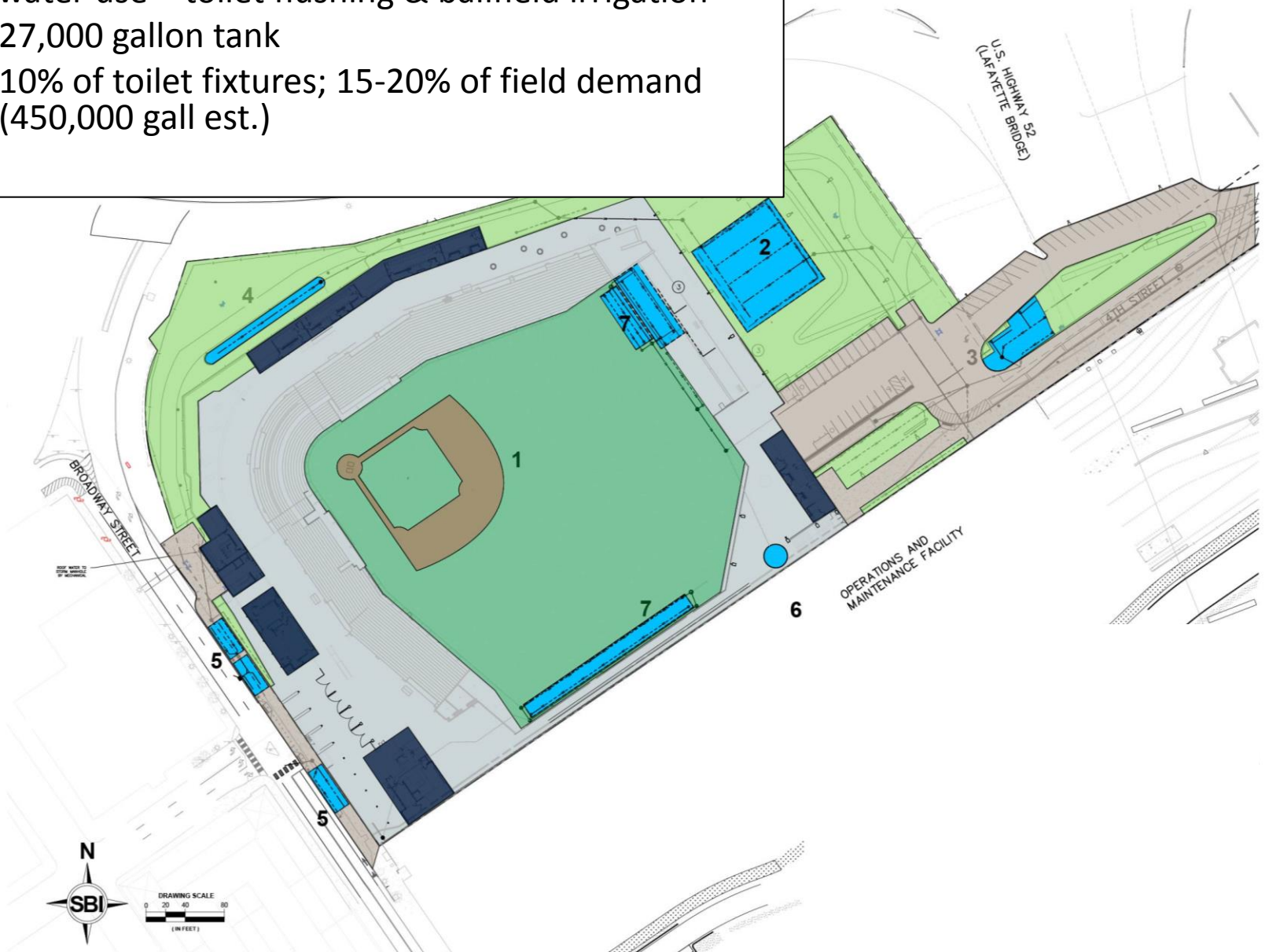
# Stormwater “Double Play”



# Preferred Alternative – Option C

Rainwater use – toilet flushing & ballfield irrigation

- 27,000 gallon tank
- 10% of toilet fixtures; 15-20% of field demand (450,000 gall est.)





# Design Refinement: U of M tour



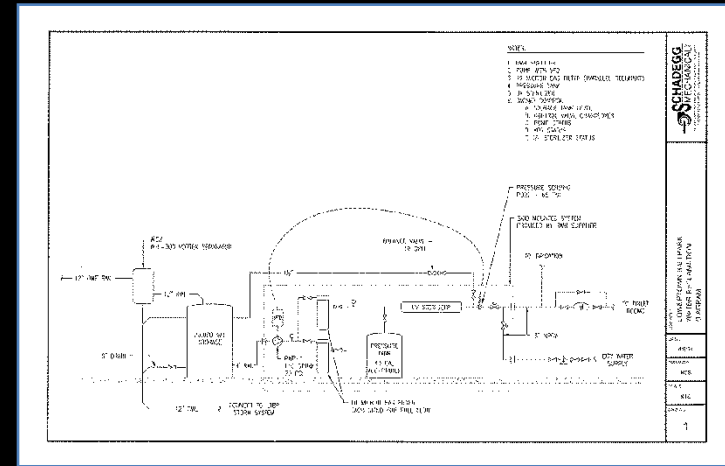


# Design Refinement: U of M tour



# Vetting and Coordination

- State, local reviewers; funding partners; project team
- Facilitate transparency
- Receive comments, perspective, or technical input



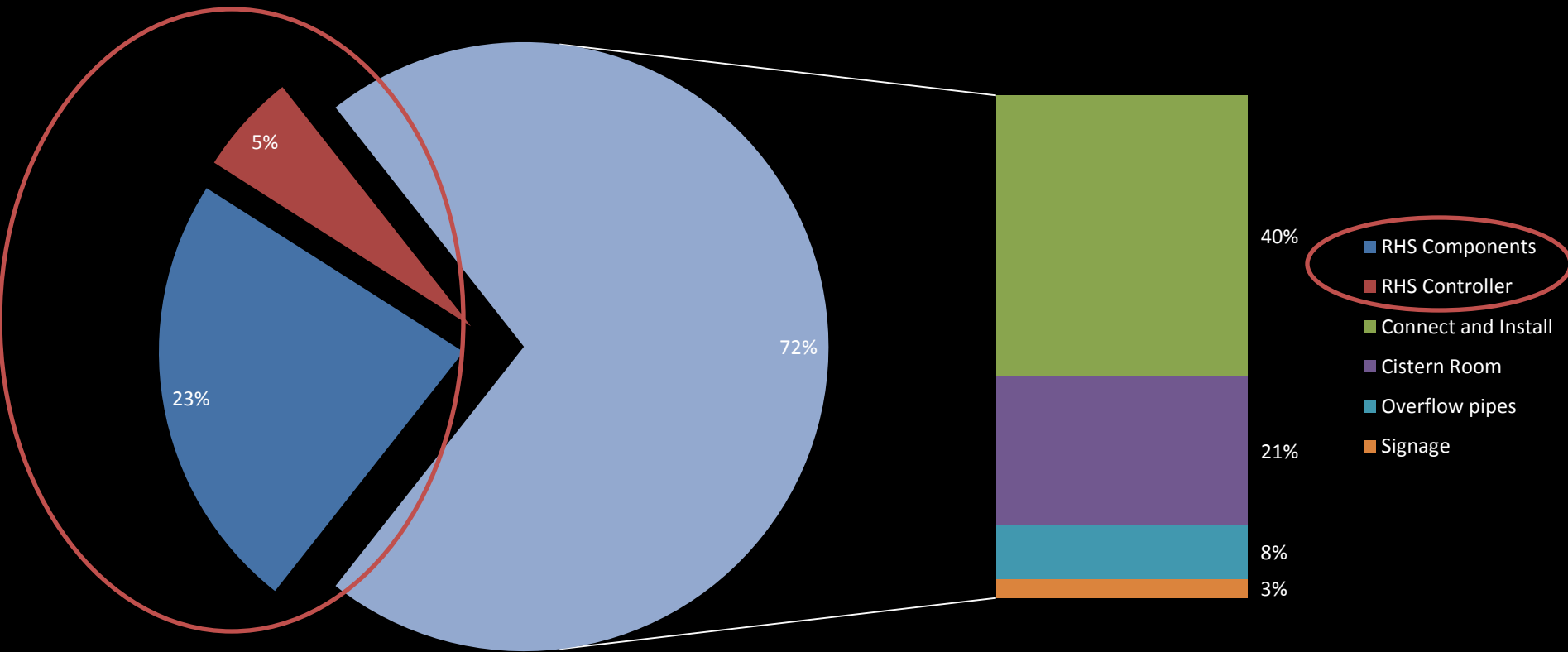
# Enhanced Water Sustainability

• Total Ballpark cost .....	\$ 63,000,000
• Total cost* .....	\$ 487,000
— <b>Rainwater harvesting system</b> .....	<b>\$ 300,000</b>
— Enhanced stormwater items .....	\$ 68,000
— Design and Admin/Fees .....	\$ 75,000
— Contingency .....	\$ 44,000
• Total grants .....	\$425,000

\*Does not include cost to re-route OMF rain leaders

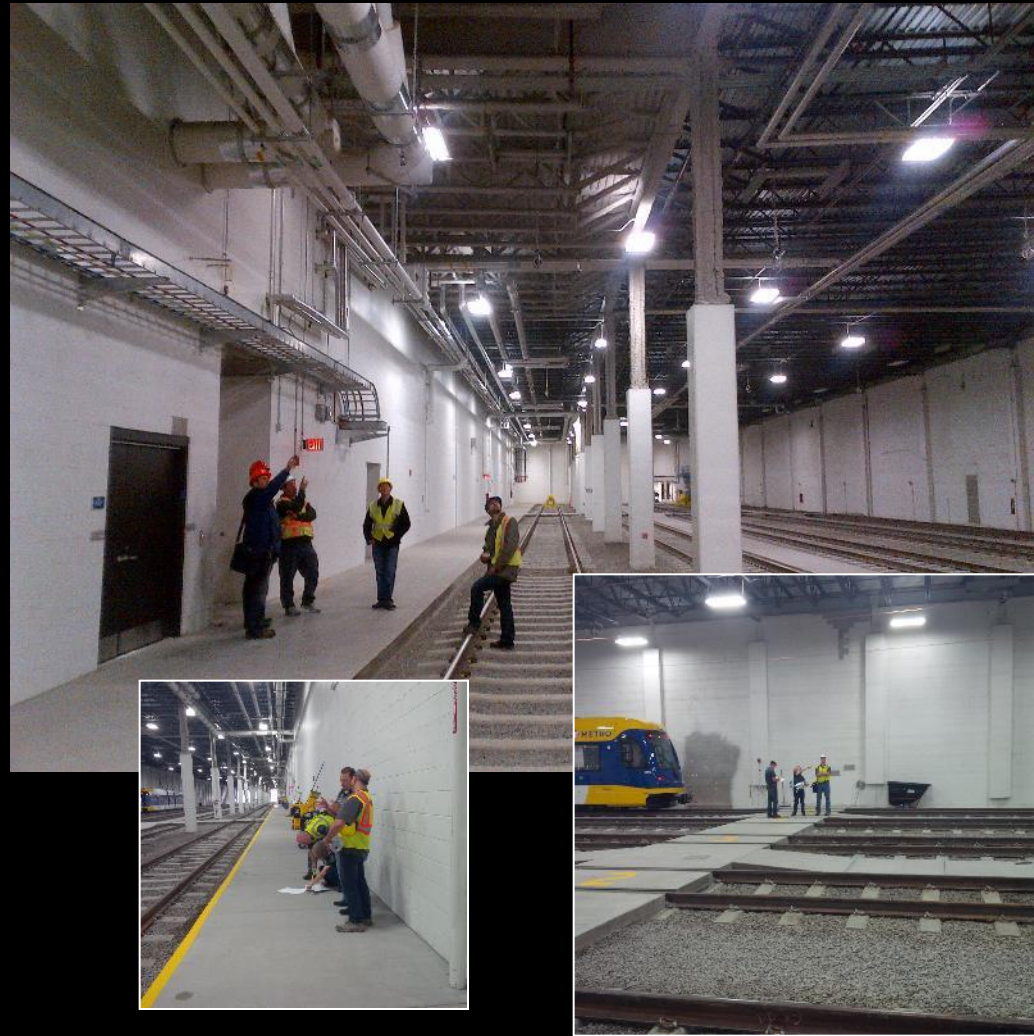


# Rainwater Harvesting



# Met Transit “OMF”

- Operation & Maintenance Facility
- 4-acre facility for storing light rail trains
- Roof drained away from CHS Field site
- Active train electrical grid near rain leaders



# Performance Results

- Operated  
August - October
- Water quality  
standards met
- Toilet reuse:  
22,500 gallons
- Irrigation reuse:  
118,500+ gallons



141,000 gal total (or 18,850 ft<sup>3</sup>) reused/conserved



# Partnership Hurdles

- Determining end use standards
- Sharing runoff between buildings
- Initial operation troubleshooting
- Meaningful visibility

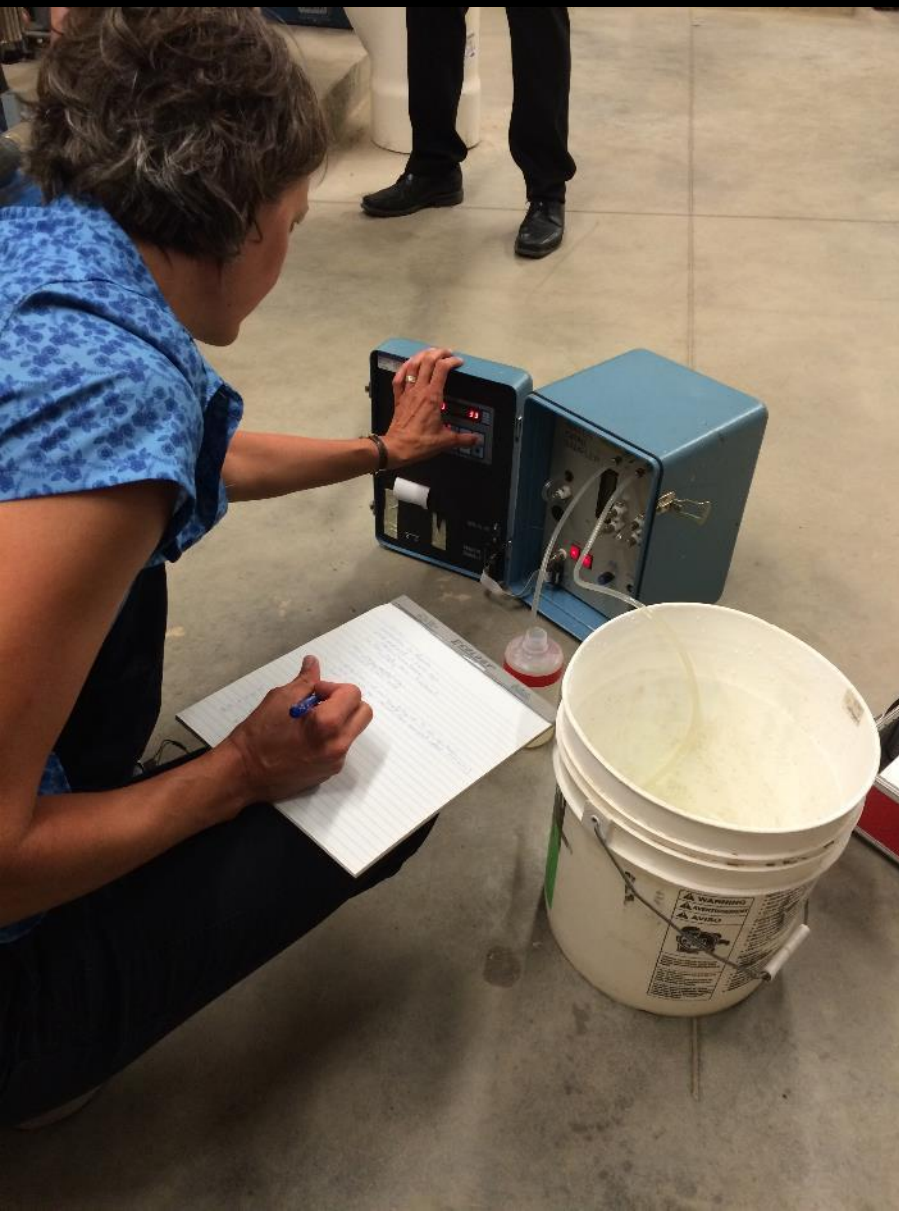


# Water Quality Testing





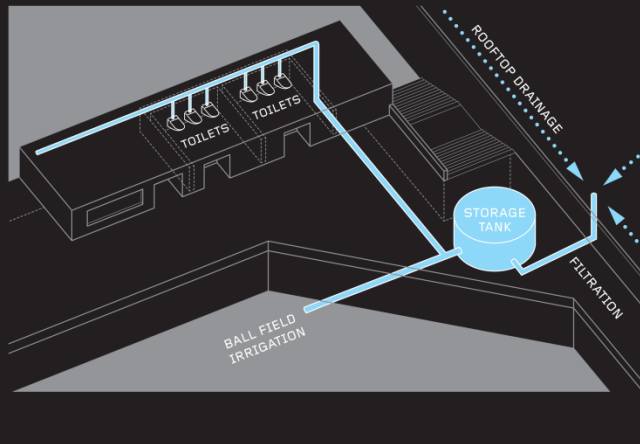
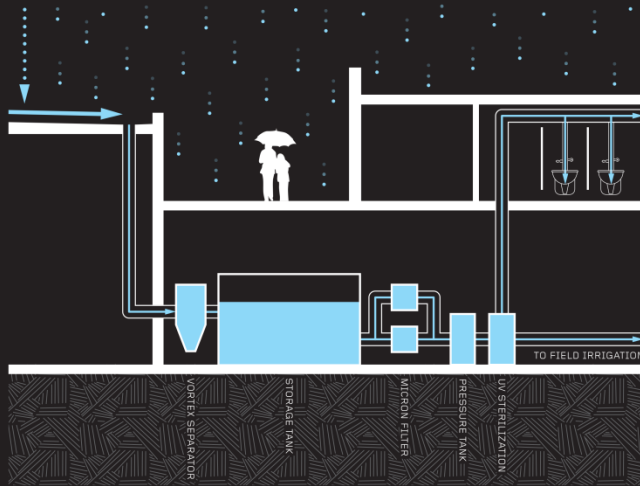
# Water Quality Testing



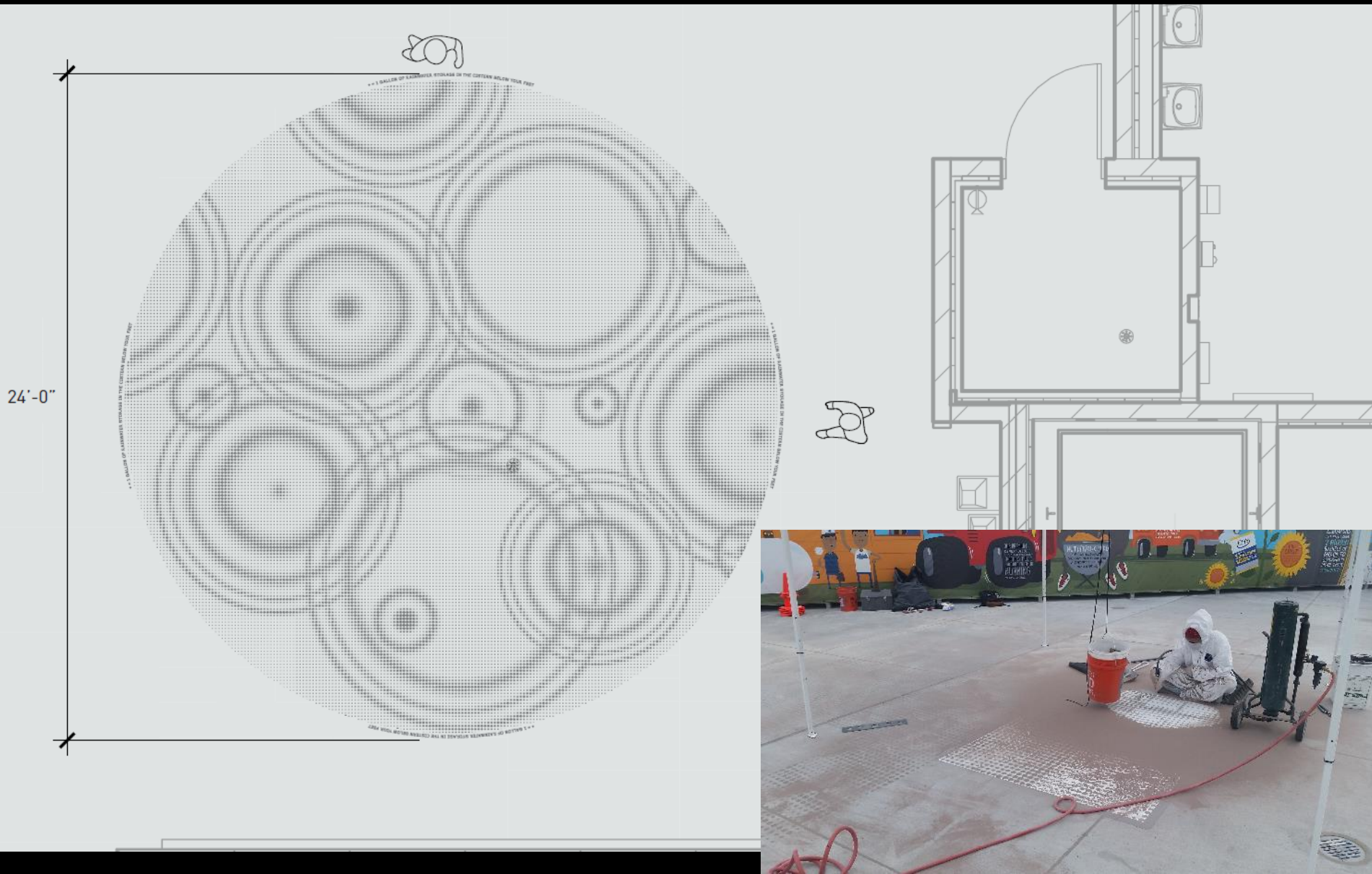


# Visibility/Education

## WATER HARVESTING



# Visibility/Education





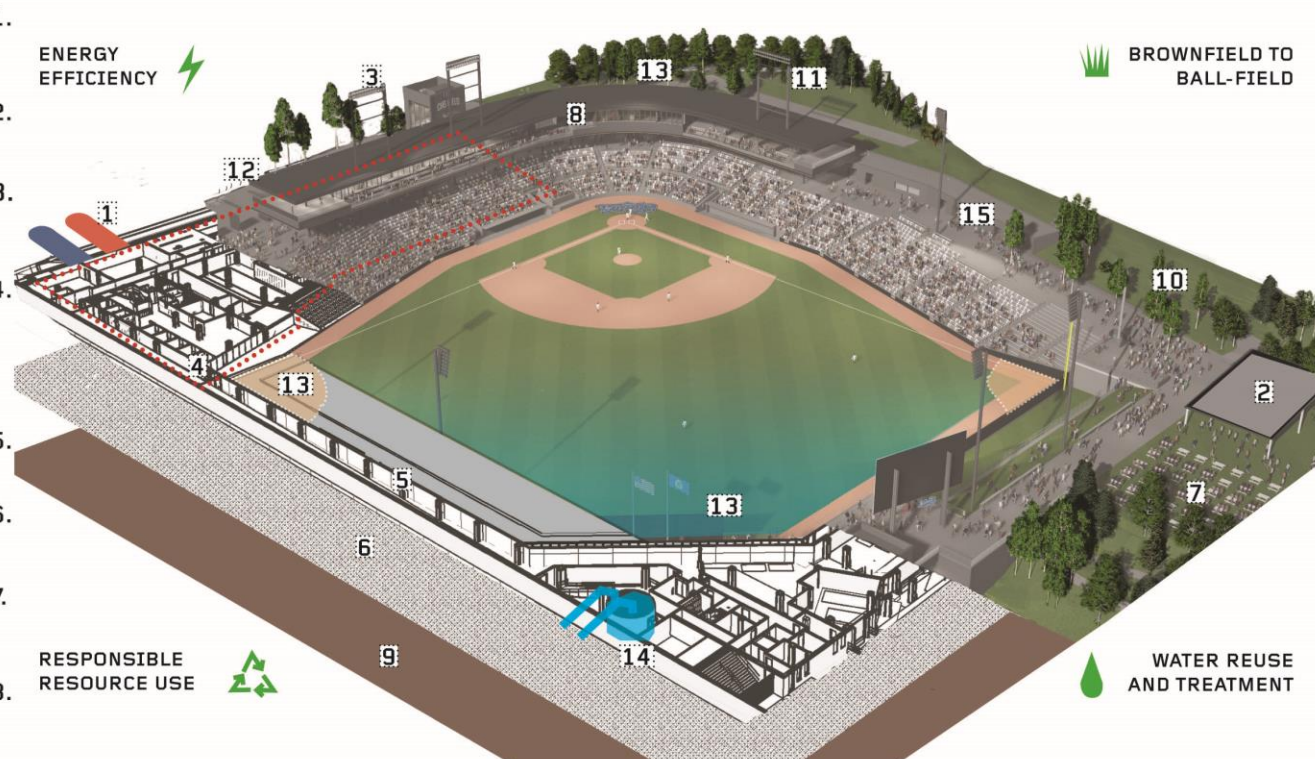
# 1<sup>st</sup>

## Major sports venue to meet B3 Standards + MN SB 2030

### LEED Silver Equivalent

- Use rainwater for toilet flushing and field irrigation

## CHS FIELD: THE GREENEST BALLPARK IN AMERICA



- DISTRICT ENERGY: 1.**  
CHS Field connects to one of the best district energy systems for heating and cooling loads. District energy is ~35% more efficient than traditional grid supply.
- RENEWABLE ENERGY: 2.**  
Xcel Energy helped fund 100kW of solar arrays to supply 12.5% of the ballpark's power.
- FIELD LIGHTING: 3.**  
Innovative fixtures focus light on the field, reducing spill into adjacent areas and the total number of fixtures by 40% compared to Midway Stadium.
- BUILDING FOOTPRINT: 4.**  
80% of interior spaces are below the concourse, requiring less open space and less energy to operate.
- BUILDING REUSE: 5.**  
230 foundation piers, 5,120 SF of concrete wall, and 168,000 SF of slab were reused in the ballpark.
- RECYCLED MATERIALS: 6.**  
Virtually all concrete from the existing Gillette building was crushed and used as structural fill beneath the field.
- REDUCING WASTE: 7.**  
Ryan diverted 98% of construction waste from landfills. The Saints are introducing composting and recycling with the goal of operating a zero-waste facility.
- INDOOR ENVIRONMENTS: 8.**  
Low VOC finishes and occupant-sensor lighting were used in all interior spaces. Nearly all offices and the press box have access to natural light and air flow.

- 9. SITE TRANSFORMATION:**  
8.5 acres of contaminated, impervious site were transformed into almost 60% green space with an environmental cap to minimize contaminated runoff.
- 10. GREEN SPACES:**  
135 trees and 138,800 SF of natural grass, including the playing field, will remove 22.5 tons of CO<sub>2</sub> from the atmosphere each year.
- 11. COMMUNITY CONNECTION:**  
Part of the site was turned into a neighborhood dog park and rain garden featuring local artwork.
- 12. SUSTAINABLE TRANSIT:**  
CHS Field's urban location and walk score of 88/100 encourages fans to bike, walk, or use nearby bus and LRT lines to commute to games.
- 13. CLEAN STORMWATER:**  
Virtually all stormwater runoff is treated through sand filters, tree trenches, or rain gardens to remove pollutants before entering the Mississippi watershed.
- 14. WATER RECLAMATION:**  
A 27,000 gallon cistern collects rainwater for reuse in toilets and field irrigation, saving up to 450,000 gal. of H<sub>2</sub>O each year.
- 15. RESPONSIBLE USE:**  
Metered, dual-flush, and low-flow fixtures are installed in public restrooms and locker rooms to control water waste.

### BENCHMARKS

1<sup>st</sup>

major sports venue to:  
- meet B3 standards + MN SB 2030  
- use rainwater for field irrigation

LEED Silver  
equivalent

### ANNUAL SAVINGS

~36 kWh/seat  
from renewables

~40 kWh/seat  
less operating energy

~65 gal/seat  
reused rainwater

### SITE BENEFITS

88  
neighborhood  
walk score

~60%  
more green  
space

~22.5  
tons CO<sub>2</sub>  
sequestered annually

RYAN  
BUILDING LASTING RELATIONSHIPS

# Questions?

