



GREEN INFRASTRUCTURE MAINTENANCE CHALLENGES

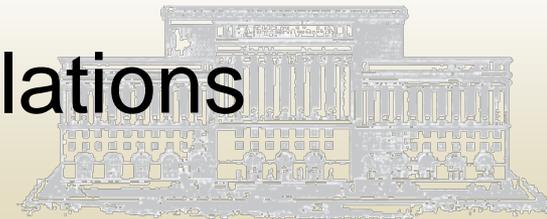


**GI DESIGN WORKSHOP
MILWAUKEE COUNTY ZOO – MAY 22, 2019
STEVE KEITH, P.E., ENV SP**



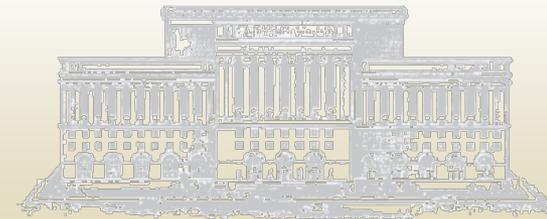
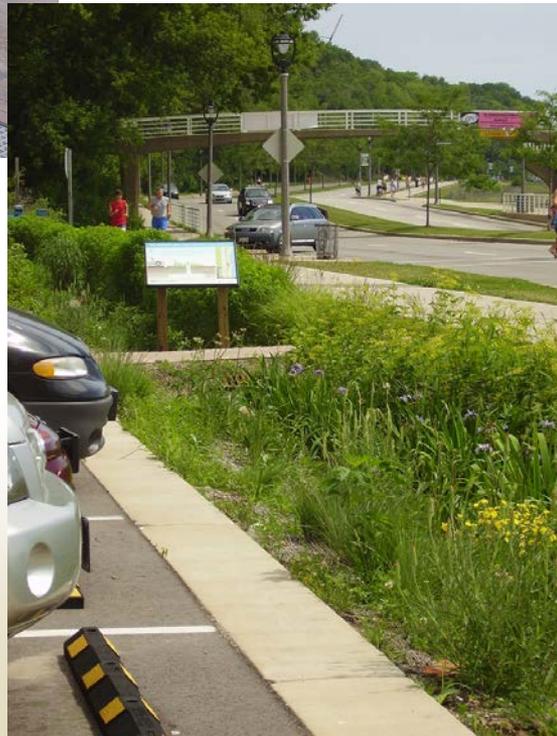
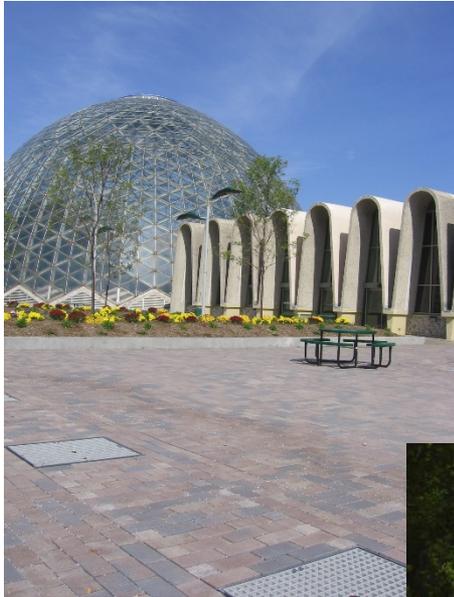
MILWAUKEE COUNTY

- Owns & maintains > 130 GI BMPs
- Parks, Zoo, MCDOT, MPM, FM, ...
- Rain gardens, bioinfiltration, permeable pavement, subsurface infilt, green roofs, rainwater harvesting, constructed wetlands, regenerative conveyance
- Parks alone has > 60 GI installations





VARIOUS GI INSTALLATIONS





O&M STUDIES

- ❖ 2015 – Hired SSE & AES to review maintenance needs and costs for 15 GI BMPs at 4 facilities
- ❖ 2016 – Surveyed O&M costs regionally
 - ❖ Parks (2016 GI): \$60-\$160K/year
 - ❖ Milw. Co (2016 GI): \$150-\$480K/year





TMDLS AND GI

- TMDL allocations released in 2018
- Rough projections of GI needed to comply
- WinSLAMM, MMSD's GI Calculator, experience
- ~\$740,000 annually to maintain the projected GI



CHALLENGES

- Budget deficits + fixed operating budget
- Deferred maintenance on aging infrastructure
- Multiple owner departments with limited experience & equipment for maintaining GI
- No stormwater utility fee

