Implementation of Green Infrastructure on Municipal Projects

Christopher Carr, PE
The Sigma Group, Inc.

James Leedom, PE, LEED AP
The Sigma Group, Inc.

Municipal Projects…What are the differences?

Work primarily happens in public right-of-way.

- More visible to public...lot of eyes on it.
- Maintenance and Aesthetics are a big issue.
- Green Infrastructure is still new to many and not always understood.

Areas are tighter, specifically when working in the corridors.

Regulatory requirements are different than private development.

Need to have understanding on impact to residents and staff utilizing areas.

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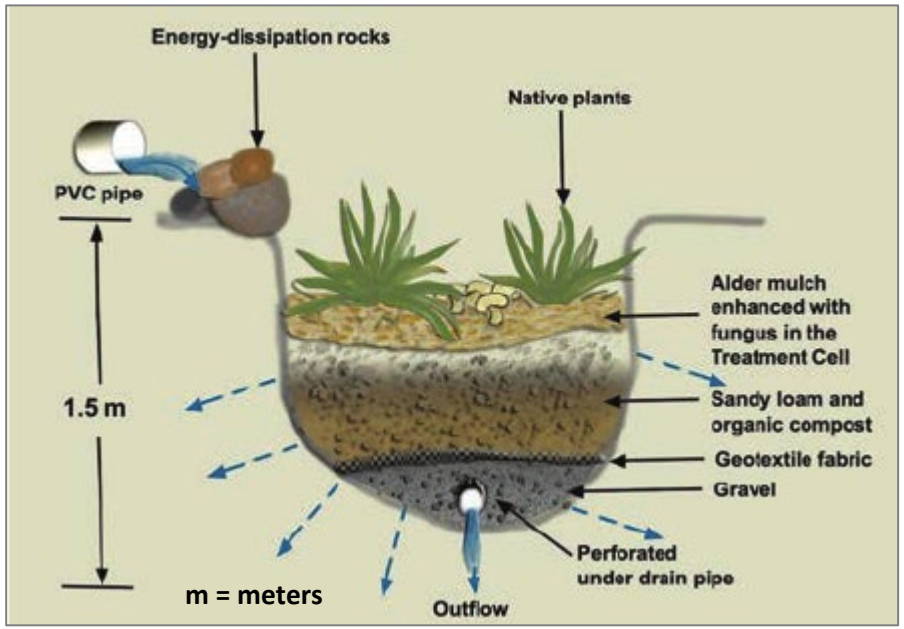
Green Infrastructure Practices

- Biofiltration, Rain Gardens, and Bioswale
- Porous Pavement
- Cisterns/Green Roof/Constructed Wetlands (Not in Detail Today)

❖ Biofiltration, Rain Gardens, and Bioswale- Key Elements to Consider

- Within Roadway or Outside Roadway
- Storm Sewer or Sheet Drainage
- Overflow Setup
- Plantings/Landscape



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TURN RIGHT
SAGE SPECIALTY PHARMACY
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Lessons Learned/Best Management Considerations for Biofiltration

- When adjacent to roadways, design systems with limited surface depth.
  - Protects against trip and fall hazards
  - Utilize sheet flow with curb cuts
  - Implement multiple locations on a roadway to limit storm sewer
  - Avoid fencing that limits access for maintenance
- Protect curb cuts with rip rap and additional protection to avoid settling and undercutting.
- Utilize overflow structures with lower orifice and drain tile for large rain events and to help with clogging.
- Landscape design is critical for long-term success. Consider location and aesthetics. Landscape design DOES NOT need to include natural, tall grasses. Design can be more formal in nature.
- Utilize liners in areas with high groundwater or environmental concerns.
- Educate staff and residents on green infrastructure so clear expectations can be set.
- Ensure that trash cleanout and maintenance is easily achievable.

❖ Porous Pavement-Key Elements to Consider

- Type of Pavement- Paver, Asphalt, Concrete
- Edging Details
- Cross Section
- Storage Layer
- Underdrain
- Maintenance

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Lessons Learned/Best Management Considerations for Porous Pavement

- Closely analyze the use of porous asphalt versus porous pavers.
  - Porous asphalt is more cost effective especially for larger area. Pavers 2-3 times more than porous asphalt.
- Choose appropriate locations.
  - Parking lane versus driving lane
  - Avoid heavy loading
  - Use less traveled parking area i.e. overflow parking
- Porous Asphalt.
  - Specify one lift installation (4” minimum) with specific placement
  - Protect the pavement for longer duration after installation
- Porous pavers.
  - Look closely at edge condition. Consider a concrete border on free edges.
  - Be specific on width of product to minimize cutting.
  - Set high at original install
- Porous pavement sections.
  - Utilize filter fabric between storage layer and base gravel
  - Utilize Geotech grid below storage layer to minimize settlement
- Design Considerations
  - Porous pavement can be flatter but still install pitch to a low point inlet
  - Utilize 5:1 run off ratio if needed

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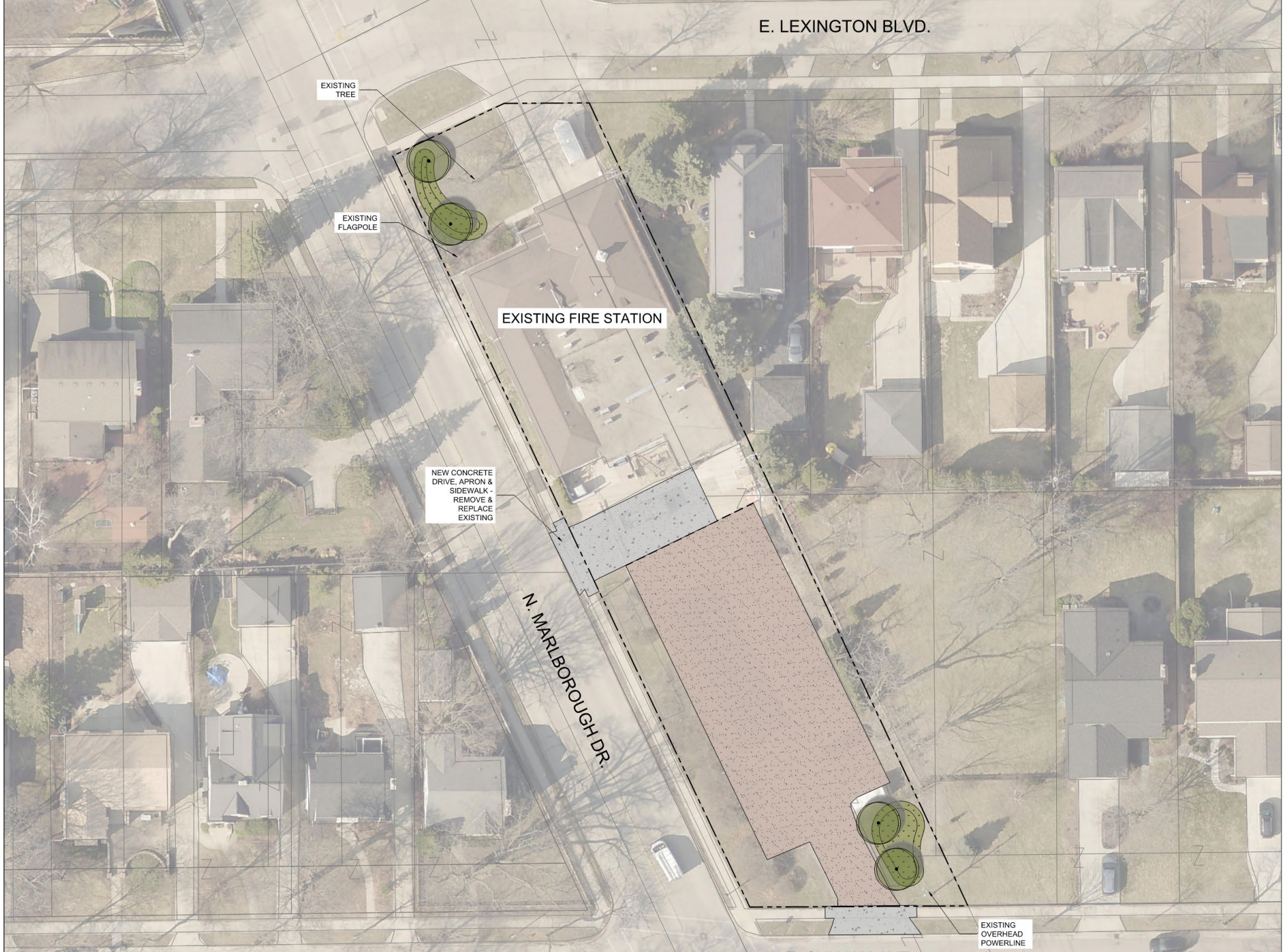

PROPOSED STORMWATER TREES:	4

LEGEND:

- PROPOSED RAIN GARDEN AREA
- PROPOSED POROUS PAVEMENT
- NEW CONCRETE PAVEMENT (REPAIR & REPLACE)
- NEW STORMWATER TREE
- EXISTING PROPERTY LINE

N

GRAPHIC SCALE

0 20 40

FIRE STATION MMSD GIPP GRANT
825 E LEXINGTON BLVD
WHITEFISH BAY, WI 53217

OVERALL SITE PLAN

SCALE:	
PROJECT NO:	20760
DESIGN DATE:	2/12/2012
PLOT DATE:	3/3/2022
DRAWN BY:	MJK
CHECKED BY:	CTC

MKENYON

EX1

SITE AREA SUMMARY:

PROPOSED POROUS PAVEMENT AREA:	1,630 SF
PROPOSED BIO-SWALES AREA:	4,910 SF
PROPOSED STORMWATER TREES:	7

LEGEND:

- PROPOSED BIO-SWALE AREA
- PROPOSED POROUS PAVEMENT
- NEW STORMWATER TREE

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

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GRAPHIC SCALE
0 40 80

WILSON DRIVE MMSD GIPP GRANT

WHITEFISH BAY, WI 53217

OVERALL SITE PLAN

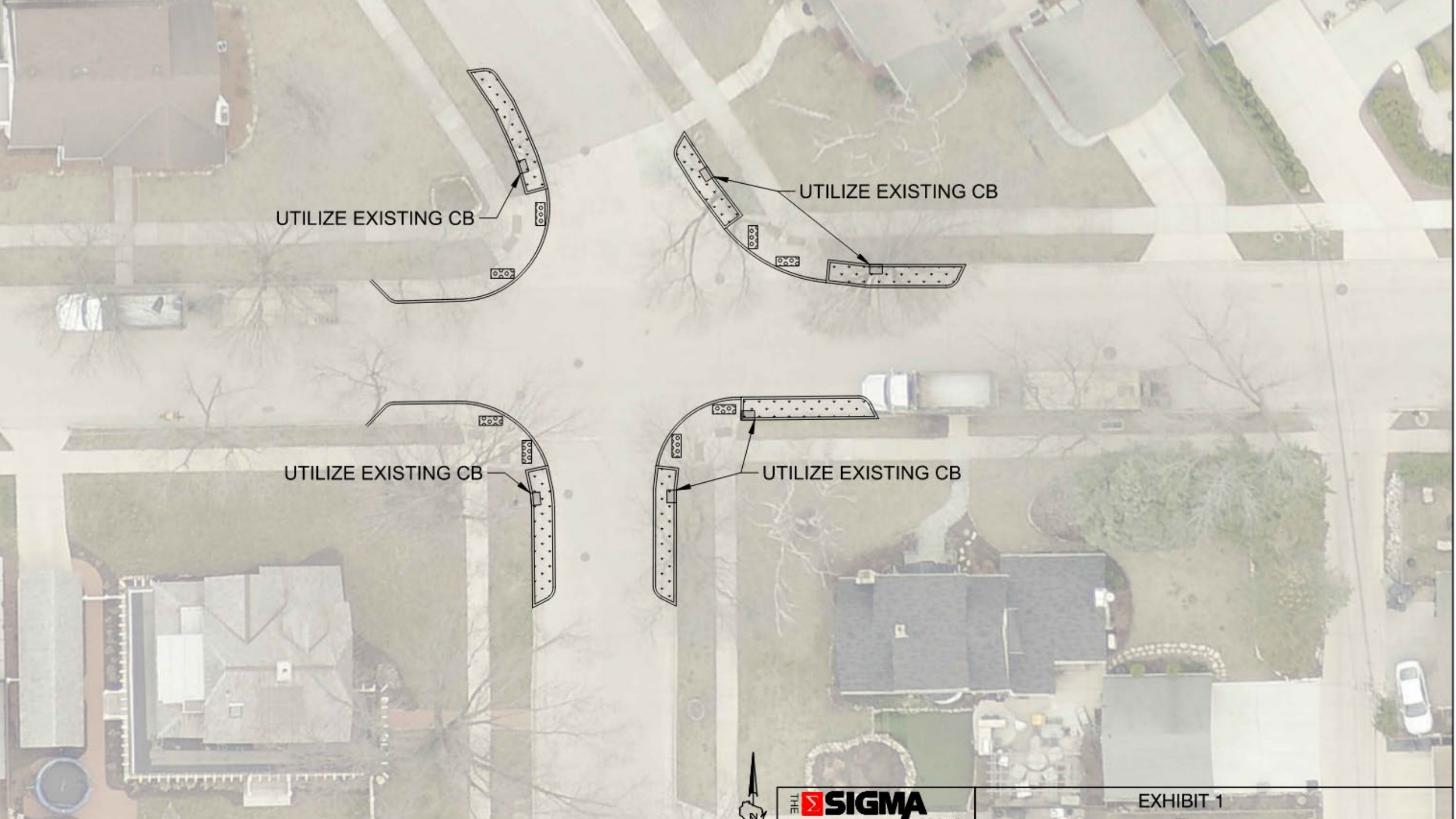

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EXHIBIT 1

Closing Comments on Green Infrastructure

- Use of green infrastructure on municipal projects can be very successful in providing water quality improvements in urban settings.
- Significant funding available through MMSD, WDNR, and Fund For Lake Michigan that can be utilized offset tight budgets for road and facility improvements and meet regulatory requirements.
  - MMSD GIPP Program Funding will come out end of the month
  - FCPP, Green Solutions

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