

# MMSD Green Vendor Qualifications

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Prepared by:



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## Firm Profile

Serving the public and private sectors since 1991, Sigma assists clients through managing planning, project delivery, and costs for land development, redevelopment and infrastructure improvements as well as navigating the myriad of environmental, health and safety regulations. Sigma's Wisconsin-based staff includes registered Professional Engineers in the civil, environmental, and chemical disciplines; Professional Land Surveyors; Construction Inspectors; asbestos and lead supervisors/inspectors; Certified Hazardous Materials Managers, Professional Geologists/Hydrogeologists, engineering technicians, inspectors, scientists and compliance specialists. Sigma focuses on creating functional, innovative solutions that optimize results for the project, the client and the community that sensitively balance economics and the protection of natural resources.

### Sigma & Green Infrastructure

Sigma is especially versed in integrating green infrastructure strategies with urban sites and infrastructure. We have been involved in a wide range of green infrastructure projects. From small-scale rain barrels that capture run-off from the 35th Street Viaduct to area-wide constructed wetlands to relieve flooding in the Menomonee River Valley. Sigma applies practical solutions for challenged sites addressing environmental contamination, soil conditions, and the desire to optimize. We are skilled at modeling and designing smart stormwater management strategies for parks, parking lots, roadways, and brownfield redevelopments applying the guidelines established by the WDNR and the MMSD's Fresh Coast Guardian initiatives.



	Professional Engineers
	Professional Geologists/Hydrogeologist
	Professional Surveyors & Technicians
	Certified Small UAS Remote Pilots

### AWARD WINNING | Driven by results

- Top 20 Wisconsin Engineering Firms – Business Journal 2018
- 5<sup>th</sup> Largest Milwaukee Area Environmental Consultants – Business Journal, 2018
- 2015 Social Impact Award – The Valley Passage Brownfield Redevelopment
- 2009 Phoenix Award Winner – Menomonee Valley Brownfield Redevelopment
- 2006 Phoenix Award Winner – Sheboygan
- Escuela Verde 2017 Business Award for Wellness
- 2008 Governor's Award for Excellence in Environmental Performance – H-D Museum
- Mandi Award 2018 - Chase Economic Development Award – Menomonee Valley

### TECHNICAL & FIELD EXPERTISE | Sigma Staff

- Civil, environmental, chemical, and mechanical engineers
- Geologists, hydrogeologists, and scientists
- Professional land surveyors
- Certified hazmat inspectors and supervisors
- Certified Hazardous Materials Managers
- Computer-based modeling specialists
- UAS pilots
- Construction and stormwater specialists

### SUSTAINABILITY FOCUSED | Brownfield Redevelopment

- Sigma headquarters are located on a former brownfield site
- Several staff are LEED accredited
- Redevelopment projects in the urban setting
- Ecologically-minded restoration initiatives
- Green infrastructure leaders

### ADVANCED TECHNOLOGY | Highly-skilled professionals

- Computer-based modeling
- Aerial imaging/surveying
- 3-D laser scanning
- GIS services

## Sigma Headquarters



In 2003, The Sigma Group completed construction of a new 28,000 SF corporate office located on a 3-acre Brownfield site in the heart of the Menomonee Valley. The property was originally a shallow marsh that over time was filled with a variety of materials and adapted for industrial use. Significant efforts were made to characterize the site, plan and design the building and grounds, and coordination of project elements with agencies and stakeholder groups.

### Civil/Site Engineering with Green Infrastructure

Sigma self-performed the site civil design for the project including the development and design of stormwater management measures meeting City of Milwaukee, MMSD and WDNR requirements. Several best stormwater management practices were implemented at the site to meet applicable stormwater management regulations, reduce initial construction costs, reduce long-term maintenance costs, and reduce long-term municipal stormwater fees. Strategies implemented include the surface discharge of the majority of roof runoff from the building (rather than hard piping to public storm); use of overland flow to convey stormwater across the site (rather than collection and conveyance in storm sewers); use of **native planting** areas to attenuate storm discharge rates and provide treatment; use of **bioswales** to capture, convey and treat stormwater runoff from the site prior to discharge and discharge of stormwater directly to the Menomonee River (rather than discharge to public storm sewer). The implementation of these strategies has resulted in a significantly reduced municipal quarterly stormwater fee for the site.

### Site Development

Obtained exemptions from WDNR to build on a landfill (NR506) and to excavate and reuse impacted soil near a navigable waterway, within a flood plain,

and within 1 meter of the high groundwater level (NR 718). The back-filled former boat slip located in proximity to the corner, was a factor as the soil conditions were particularly poor and methane generation was the highest at this area of the site. As a result, the building footprint was shifted 200 feet east of the corner to avoid the higher cost of deeper piles and a more aggressive methane control system. The site also accommodates public access to the Menomonee River with a walkway that borders the site's river edge and loops from Canal Street linking up with the Hank Aaron Trail.

### Brownfield Redevelopment

Several grants were observed to help off-set the environmental repair of the site including the Wisconsin Dept. of Commerce and the Redevelopment Authority of the City of Milwaukee.

### Phase I Environmental Site Assessment

An environmental site assessment conforming to ASTM and the WDNR Phase I Guidance was completed by Sigma. The process involved the review of many historical records and regulatory documents, local area geology and hydrogeology information, and conducting a site inspection. The Phase I revealed environmental conditions such as land filling and the release of petroleum hydrocarbon substances.

### Site Investigation

Sigma performed a soil, groundwater, methane, and geotechnical investigation to characterize the subsurface conditions. Collecting soil samples from borings and test pits, installing and sampling monitoring wells to determine groundwater quality and to define the presence of methane gas being generated by underlying natural deposits and imported fill. Sigma elected to partner with the WDNR by participating in the VPLE Program with a goal of obtaining a certificate of completion upon closure.

### Site Remediation

Based on investigation data and consistent with the WDNR regulations, Sigma developed a remedial action plan integrating building and site design elements to a cap soil, apply attenuation to address groundwater impacts, and passively vent potential methane. Nearly all impacted soils that were disturbed during construction were managed on-site and placed beneath engineered barriers, including the new building, asphalt parking lot, and green space areas. Methane being generated by the underlying fill is vented by a passive collection and venting system. Vent pipes placed beneath the building were embedded in a porous aggregate called Minergies, a beneficial reuse by-product

primarily made of fly ash. Natural attenuation groundwater monitoring was completed at the property following building construction to evaluate post-construction groundwater conditions and position the site for WDNR case closure.

#### **Building Features**

The building and site incorporate several aspects of “**Green Building**” concepts. Features include natural daylighting, maximizing sunlight in occupied areas, **specialized stormwater management**, beneficial reuse of materials for constructing the floor slab, and high efficiency HVAC system. A prominent building element was the use of bow truss structure for the main roof, which created an open space and added a window course for natural light

#### **Funding Sources**

Several grants were secured to help off-set the environmental repair of the site including the Wisconsin Dept. of Commerce and the Redevelopment Authority of the City of Milwaukee.

#### **Awards**

2003 Wis. Builders Association Top Projects Award

2003 Mayor’s Design Award (City of Milwaukee)

2003 Business Humanitarian Award (Community Shares of Greater Milwaukee)

2004 Milwaukee Award for Neighborhood Development Innovation (LISC)

State Farm Insurance Building Blocks Award (LISC)

2004 Wis. Business Friend of the Environment Award

2004 Certificate of Special Recognition - Relocation to the Menomonee Valley

2005 Wisconsin Sustainability & Energy Efficiency Leadership Award (WGBA)

## **Customer Service Approach**

### **Listen**

Our first priority is to listen to our clients

### **Identify**

We ask the correct questions in order to properly identify the need and work toward a proactive implementation strategy

### **Implement**

We provide thoughtful, thorough solutions based on the identified challenges and client need

### **Collaborate**

We work hard to integrate with all team members and stake holders, blending our role to match the team need, leading, following, or merely supplementing, as conditions merit

### **Build**

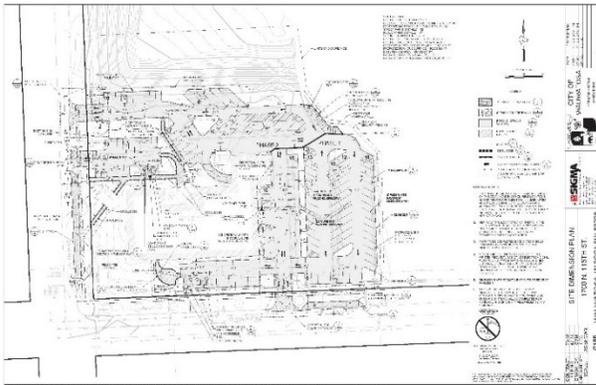
Our goal is always clients for life with emphasis on value and personal relationships

We always look to problem solve and immediately evaluate our role in the resolution of an issue and champion solutions. Conflict is not in our vocabulary.

Problem solving is constant and on-going, as with any continuous improvement process, and also as it relates to any project delivery process—regardless of the complexion of the team. Project challenges arise and it is our company desire to address them in a proactive manner that provides thoughtful solutions that minimize risk and maximize value to our clients. And ultimately, we believe in taking responsibility for our role in every project and not pointing the finger at others.

## City of Wauwatosa Police Station Green Parking Lot

1700 North 116th Street | Wauwatosa | WI | 53226



**Project (Property) Owner Information:**

**Owner's Name:** City of Wauwatosa  
**Reference:** Bill Wehrley  
**Phone:** 414.479.8927

**Project Construction Information:**

**Construction Management Vendor:** Poblocki  
**Contract Amount:** \$1,900,000  
**Construction Start date:** Spring 2020  
**Construction End date:** Fall 2020 (*projected*)

**Green infrastructure installed:**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Green Roofs                       | <input type="checkbox"/> Rain Barrels               | <input type="checkbox"/> Rain Gardens    |
| <input type="checkbox"/> Constructed Wetlands              | <input checked="" type="checkbox"/> <b>Cisterns</b> | <input type="checkbox"/> Soil Amendments |
| <input type="checkbox"/> Native Landscaping                | <input type="checkbox"/> Stormwater Trees           | <input type="checkbox"/> Other           |
| <input checked="" type="checkbox"/> <b>Porous Pavement</b> | <input type="checkbox"/> Bioswales                  |  |

**Area of specialty for this project:**

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

**Project Description**

The Wauwatosa Police Station Green Parking Lot project involved the complete reconstruction of the existing parking lot. The green parking lot included permeable pavements and an underground stone detention layer.

The stone detention layer was sized to capture and store runoff from the 100-year storm event with zero discharge, involving a complex design. The stored stormwater will be beneficially reused for irrigation purposes.

Part of the site is constructed on a historic landfill site and as such required extensive environmental permitting and preparation of a soil management plan for handling of contaminated soils.

## Milwaukee County War Memorial Center North Parking Lot

750 North Lincoln Memorial Drive | Milwaukee | WI | 53202



### **Project (Property) Owner Information:**

**Owner's Name:** Milwaukee County / WMC

**Reference:** Julie Bastin, P.E.

**Phone:** 414.278.3948

**Email:** Julia.bastin@milwaukeecountywi.gov

### **Project Construction Information:**

**Construction Management Vendor:** Payne & Dolan

**Contract Amount:** \$1,300,000

**Construction Start date:** Spring 2020

**Construction End date:** Fall 2020 (*Projected*)

### **Green infrastructure installed:**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Green Roofs                          | <input type="checkbox"/> Rain Barrels                       | <input type="checkbox"/> Rain Gardens                      |
| <input type="checkbox"/> Constructed Wetlands                 | <input type="checkbox"/> Cisterns                           | <input checked="" type="checkbox"/> <b>Soil Amendments</b> |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input checked="" type="checkbox"/> <b>Stormwater Trees</b> | <input type="checkbox"/> Other                             |
| <input checked="" type="checkbox"/> <b>Porous Pavement</b>    | <input checked="" type="checkbox"/> <b>Bioswales</b>        |  |

### **Area of specialty for this project:**

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

### **Project Description**

Sigma led the multi-disciplined consulting team for the *Greenprint - Milwaukee Shoreline Vision Plan*, a conceptual plan guided in sustainable design focused on stormwater management green infrastructure strategies, enhancing bike and pedestrian connections, and prescriptions to improve the Veterans Park user experience. The effort was stakeholder-driven with strong engagement from the War Memorial Center, Milwaukee County, the Milwaukee Art Museum, the Rotary Club of Milwaukee, and the Milwaukee Metropolitan Sewerage District.

Sigma is serving as the lead consulting engineer for the first phase of the *Greenprint - Milwaukee Shoreline Vision Plan*, the War Memorial Center north lot. The project focused on implementing various stormwater management and green infrastructure strategies receiving over \$900,000 in grant funding. The design reconfigured the parking lot and access road with of the existing parking lots pulverized and repaved with portions being converted to permeable pavers. A third parking lot will be removed creating green space along Lake Michigan and replaced with lighted asphalt lot tucked along the Mason Street ramp wall. A new access road and intersection with Lincoln Memorial Drive and the Mason Street Bridge ramp was also created. Sigma worked closely with the County to provide detailed engineers cost estimates for design alternatives, final plans and specifications, environmental investigation and soil management, field survey, bidding assistance, grant administration, and public engagement services.

## McKinley Marina North Parking Lot

1720 North Lincoln Memorial Drive | Milwaukee | WI | 53202



### Project (Property) Owner Information:

**Owner's Name:** Milwaukee County

**Reference:** Dave Gulgowski, P.E.

**Phone:** 414.278.4942

**Email:** David.Gulgowski@milwaukeecountywi.gov

### Project Construction Information:

**Construction Management Vendor:** Payne & Dolan

**Contract Amount:** \$1.5 million (Phase I)

**Construction Start date:** Fall 2019

**Construction End date:** Summer 2020

### Green infrastructure installed:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Green Roofs                          | <input type="checkbox"/> Rain Barrels                | <input type="checkbox"/> Rain Gardens                      |
| <input type="checkbox"/> Constructed Wetlands                 | <input type="checkbox"/> Cisterns                    | <input checked="" type="checkbox"/> <b>Soil Amendments</b> |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input type="checkbox"/> Stormwater Trees            | <input type="checkbox"/> Other                             |
| <input checked="" type="checkbox"/> <b>Porous Pavement</b>    | <input checked="" type="checkbox"/> <b>Bioswales</b> |  |

### Area of specialty for this project:

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

### Project Description

Milwaukee County selected the Sigma led team to evaluate the current and future needs of McKinley Marina parking, entry road, and boat launch/storage. The Sigma team developed a conceptual plan focused on sustainable design and water quality enhancement while achieving the functional objectives of multiple stakeholder groups. The plan focused on improving traffic flow, way finding, and maritime functions. With the magnificent natural assets for the Lake Michigan lakeshore combined with the diversity of uses, and in recognition the current pavement that serves traffic flow and parking being in poor condition, Milwaukee County was keenly interested in having a conceptual plan developed to address the needs of stakeholders that can also function in a manner to improve water quality associated with stormwater and effectively service boating related activities.

Given the variety of stakeholders, users, and visitors, it was important to engage with the community, present alternatives and seek input for this high-profile project.

After completing the conceptual plan, Sigma completed detailed design for Phase 1 of the McKinley Marina parking lot including widening and improvements to the access road at Lincoln Memorial Drive, curb cuts that drain to green infrastructure bioswales, and a large lot using permeable pavers.

## South Shore Park

2900 South Shore Drive | Milwaukee | WI | 53207



**Project (Property) Owner Information:**

**Owner's Name:** Milwaukee County  
**Reference:** Dave Gulgowski, P.E.  
**Phone:** 414.278.4942  
**Email:** David.Gulgowski@milwaukeecountywi.gov

**Project Construction Information:**

**Construction Management Vendor:** Terra Engineering and Construction  
**Contract Amount:** \$4 Million  
**Construction Start date:** January 2017  
**Construction End date:** June 2017

**Green infrastructure installed:**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Green Roofs                          | <input type="checkbox"/> Rain Barrels                       | <input type="checkbox"/> Rain Gardens                      |
| <input type="checkbox"/> Constructed Wetlands                 | <input type="checkbox"/> Cisterns                           | <input checked="" type="checkbox"/> <b>Soil Amendments</b> |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input checked="" type="checkbox"/> <b>Stormwater Trees</b> | <input type="checkbox"/> Other                             |
| <input checked="" type="checkbox"/> <b>Porous Pavement</b>    | <input checked="" type="checkbox"/> <b>Bioswales</b>        |  |

**Area of specialty for this project:**

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

**Project Description**

South Shore Park beach has been designed as the country's 8<sup>th</sup> worst beach due to poor water quality. Sigma served as the planner, designer, and construction engineer improvements to the park's parking lot, beach access and marina operations with much-needed realignment for South Shore Park's traffic flow, way finding, biking/pedestrian use of the Oak Leaf Trail and to enhance maritime experience.

Sigma led the planning and design of green infrastructure features for improving the water quality and quantity of parking lot stormwater run-off. Focusing on improving the near shore Lake Michigan water quality, the team employed a stormwater strategy doing more than simply meeting current regulated pollutant reductions (NPDES, WDNR, and MMSD). The bioremediation layout directly integrates with roads, lighted parking lots, bike path, and sidewalks within a comprehensive green infrastructure system. Sigma directed infrastructure improvements including a new entry road, reconfigured lighted parking lot, boat launch, pedestrian promenade along the shoreline and a naturalized beach. Stakeholder participation by neighbors, park users, boaters, the South Shore Yacht club, and the biking community were key to establishing concepts, communicating project design, and construction aspects.

- Was the project completed on time?**  Yes  
**Was the project completed on budget?**  Yes  
**Was the project completed to the owner's satisfaction?**  Yes

## Freshwater Plaza

1320 South 1st Street | Milwaukee | WI | 53204



**Project (Property) Owner Information:**

**Owner's Name:** Wangard Partners  
**Reference:** Mark Lake  
**Phone:** 414.935.4014

**Project Construction Information:**

**Construction Management Vendor:** CATCON  
d/b/a Catalyst Construction  
**Contract Amount:** \$700,000  
**Construction Start date:** Spring 2015  
**Construction End date:** Winter 2017

**Green infrastructure installed:**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Green Roofs                          | <input type="checkbox"/> Rain Barrels                | <input type="checkbox"/> Rain Gardens                                      |
| <input type="checkbox"/> Constructed Wetlands                 | <input type="checkbox"/> Cisterns                    | <input checked="" type="checkbox"/> <b>Soil Amendments</b>                 |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input type="checkbox"/> Stormwater Trees            | <input checked="" type="checkbox"/> <b>Other: Blue Roof, Water Feature</b> |
| <input checked="" type="checkbox"/> <b>Porous Pavement</b>    | <input checked="" type="checkbox"/> <b>Bioswales</b> |  |

**Area of specialty for this project:**

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

**Project Description**

Freshwater Plaza serves as a symbolic and sculptural gateway to the Milwaukee's Harbor District and the "front door" to UWM's School for Freshwater Science on the corner of Greenfield and 1st Street. Sigma served as the environmental consultant and site design manager, representing Wangard and the City of Milwaukee; leading a team of architects, engineers, scientists, students, and contractors for the delivery of a cutting edge sustainable brownfield redevelopment as a grocery store, mixed-use retail and apartment building, outbuildings, surface lot with green infrastructure, and an eye-catching water feature.

The project demonstrated innovative stormwater management techniques to harvest, treat, and store rainwater from the building's roof and plaza for irrigation reuse. The water feature extends about two city blocks along the main entrance to the development with a recirculating pool fed primarily by stormwater from the building's roof and site pavement. The project was recognized by the MMSD and received the MMSD Green Luminaries Award, an award recognizing leaders who not only address the need to manage stormwater, but also the need to innovate and grow, to create lasting good works that connect people and prosperity to the environment. Sigma also designed the surface parking lots which featured green infrastructure bioswales and native plantings.

Freshwater Plaza sits on a former century old foundry 8.4-acre site. The project team worked closely with WDNR to obtain necessary permits and approvals for the development of this brownfield.

- Was the project completed on time?**  Yes  
**Was the project completed on budget?**  Yes  
**Was the project completed to the owner's satisfaction?**  Yes

## Reed Street Yards

222 South Third Street | Milwaukee | WI | 53204



**Project (Property) Owner Information:**

**Owner's Name:** City of Milwaukee & Peter Moede (Developer)  
**Reference:** Peter Moede (Developer)  
**Phone:** 414.273.0711  
**Reference:** Dan Casanova (City of Milwaukee)  
**Phone:** 414.286.5921

**Project Construction Information:**

**Construction Management Vendor:** Northtrack Construction  
**Contract Amount:** \$6,000,000  
**Construction Start date:** August 2013  
**Construction End date:** on-going

**Green infrastructure installed:**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Green Roofs                          | <input type="checkbox"/> Rain Barrels                | <input type="checkbox"/> Rain Gardens  |
| <input type="checkbox"/> Constructed Wetlands                 | <input type="checkbox"/> Cisterns                    | <input checked="" type="checkbox"/> <b>Soil Amendments</b>   |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input type="checkbox"/> Stormwater Trees            | <input checked="" type="checkbox"/> <b>Other: Water Feature, "Purple pipe" wastewater treatment and reuse system</b> |
| <input checked="" type="checkbox"/> <b>Porous Pavement</b>    | <input checked="" type="checkbox"/> <b>Bioswales</b> |  |

**Area of specialty for this project:**

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

**Project Description**

Located on the south bank of the Menomonee Canal with over 1,000 feet of water frontage, Reed Street Yard is an urban research and technology business park focused on Milwaukee's growing water industry. This 17-acre site is just south of downtown and adjacent to the Global Water Center. Reed Street Yards is a showcase of water technologies and practices including green infrastructure, native restoration, and a development-wide water recycling system.

Sigma was retained to complete civil engineering design, environmental investigation and remediation, and surveying and mapping on this complicated Brownfield parcel. Sigma designed the entire public infrastructure system including roads, parking lanes and utilities, an extension of the Hank Aaron State Trail, a Riverwalk, an interactive public plaza, and a master stormwater system.

Sigma assisted to obtain funding from the City of Milwaukee (TIF Funding), Milwaukee Economic Development Corporation (MEDC - Grant for Site Assessments), Milwaukee Metropolitan Sewerage District (MMSD - Grant for stormwater management infrastructure), Fund for Lake Michigan (stormwater management design), and a Wisconsin Coastal Management Grant (for additional riparian restoration activities).

- Was the project completed on time?**  Yes  
**Was the project completed on budget?**  Yes  
**Was the project completed to the owner's satisfaction?**  Yes

## Three Bridges Park/Urban Ecology Center Menomonee Valley Branch

610 South 35th Street | Milwaukee | WI | 53215



**Project (Property) Owner Information:**

**Owner's Name:** WisDOT & Menomonee Valley Partners

**Reference:** Corey Zetts

**Phone:** 414.221.5506

**Email:** corey@thevalleymke.org

**Construction Management Vendor:**

Lunda Construction and Zenith Tech

**Contract Amount:** \$25 Million

*(Park and UEC center)*

**Construction Start date:** May 2010

**Construction End date:** July 2013

**Green infrastructure installed:**

- |   |   |  |
|---|---|--|
| <input checked="" type="checkbox"/> <b>Green Roofs</b>        | <input checked="" type="checkbox"/> <b>Rain Barrels</b>     | <input type="checkbox"/> Rain Gardens                      |
| <input type="checkbox"/> Constructed Wetlands                 | <input type="checkbox"/> Cisterns                           | <input checked="" type="checkbox"/> <b>Soil Amendments</b> |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input checked="" type="checkbox"/> <b>Stormwater Trees</b> | <input type="checkbox"/> Other:                            |
| <input type="checkbox"/> Porous Pavement                      | <input checked="" type="checkbox"/> <b>Bioswales</b>        |  |

**Area of specialty for this project:**

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

**Project Description**

This effort has transformed an abandoned brownfield into an urban environmental oasis in the heart of the Menomonee Valley along the south bank of the Menomonee River. What was once 24-acres of abandoned industrial rail yard is now a revitalized gathering place for the Milwaukee community providing a great route for biking and pedestrian use, community gardens, an environmental classroom for the Urban Ecology Center (UEC) and nearby neighborhoods. The project involved multiple stakeholders including the City of Milwaukee, WDNR, Menomonee Valley Partners and was administered by the WisDOT. The project also included renovation a neighborhood bar into a branch of the UEC as a catalyst to the neighborhood and a way to active the new park. The UEC building feature rain barrels, as section of green roof, a rain garden, and other sustainable aspects.

Sigma served as the surveyor, environmental consultant and construction engineers supporting the design team. The project includes three signature pedestrian bridges connecting two miles of new multi-use trail. Construction debris and contaminated soil left behind by industries in the area was safely covered, and the existing fill was reconfigured at the site to develop an interesting topography for the park including mounds imitate the natural glacial landforms of Southeast Wisconsin. The project included the rehabilitation of the Menomonee River to bring it closer to its original form. Large boulders were brought into the river to break up the currents and carve new bends and pools into the riverbed that would foster fish and other aquatic organism habitats. Coordination with the WDNR was important for habitat and environmental restoration. Several precautions needed to be made throughout design and construction that include existing stands of protected mature native trees along the riverbank.

- Was the project completed on time?**  Yes
- Was the project completed on budget?**  Yes
- Was the project completed to the owner's satisfaction?**  Yes

## Urban Ecology Center Riverside Parking Lot & Road Extension

1500 East Park Place | Milwaukee | WI | 53211



### Project (Property) Owner Information:

**Owner's Name:** Urban Ecology Center  
**Reference:** Kim Forebeck  
**Phone:** 414.964.8505  
**Email:** kforbeck@urbanecologycenter.org

### Project Construction Information:

**Construction Management Vendor:** Rivet LLC & CG Schmidt  
**Contract Amount:** \$250,000  
**Construction Start date:** 2009  
**Construction End date:** 2012

### Green infrastructure installed:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Green Roofs                          | <input type="checkbox"/> Rain Barrels                | <input type="checkbox"/> Rain Gardens                      |
| <input type="checkbox"/> Constructed Wetlands                 | <input type="checkbox"/> Cisterns                    | <input checked="" type="checkbox"/> <b>Soil Amendments</b> |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input type="checkbox"/> Stormwater Trees            | <input type="checkbox"/> Other:                            |
| <input checked="" type="checkbox"/> <b>Porous Pavement</b>    | <input checked="" type="checkbox"/> <b>Bioswales</b> |  |

### Area of specialty for this project:

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

### Project Description

The goal of the Urban Ecology Center redevelopment, a donated 40-acre parcel of land along the eastern side of the Milwaukee River that had historically been used for a variety of industrial purposes including manufacturing of brakes and a woolen mill, was to create a recreational and educational green space, natural habitat, and outdoor classroom for experiential learning as an urban oasis.

Sigma was retained to design a new parking lot and road extension to service the parking adjacent to the provide access to the Milwaukee Rotary Centennial Arboretum. The 50-space lot is located on land owned by the MMSD and was encumbered by numerous facilities. Extensive coordination with the MMSD was required during design and construction. Emphasis was given to ecologically friendly stormwater management of parking lot runoff including the use of pervious pavements and biofiltration swales for stormwater storage and treatment. Sigma prepared plans and specifications for City plan review, permitting, and construction. Sigma also provided construction administration services for the project including contractor submittal review, RFI response, site visits/inspections, and preparation of final punchlist.

Additionally, Sigma served as the Environmental Engineer, conducting due diligence activities to assess soil and ground water impacts, prepared a remedial action plan, and obtained approval from the WDNR. Sigma also completed asbestos, lead-based paint, and hazardous materials inspections; abatement and demolition bidding documents; cost estimates; contractor bidding assistance; and abatement and demolition oversight.

- Was the project completed on time?**  Yes  
**Was the project completed on budget?**  Yes  
**Was the project completed to the owner's satisfaction?**  Yes

## University of Wisconsin-Milwaukee Sandburg Hall

3400 North Maryland Avenue | Milwaukee | WI | 53211



### Project (Property) Owner Information:

**Owner's Name:** University of Wisconsin-Milwaukee

### Project Construction Information:

**Construction Management Vendor:** Pagosa Construction

**Construction Start date:** 2014

**Construction End date:** 2014

### Green infrastructure installed:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Green Roofs                          | <input type="checkbox"/> Rain Barrels                | <input type="checkbox"/> Rain Gardens                      |
| <input type="checkbox"/> Constructed Wetlands                 | <input checked="" type="checkbox"/> <b>Cisterns</b>  | <input checked="" type="checkbox"/> <b>Soil Amendments</b> |
| <input checked="" type="checkbox"/> <b>Native Landscaping</b> | <input type="checkbox"/> Stormwater Trees            | <input type="checkbox"/> Other:                            |
| <input type="checkbox"/> Porous Pavement                      | <input checked="" type="checkbox"/> <b>Bioswales</b> |  |

### Area of specialty for this project:

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> <b>Design</b>      | <input checked="" type="checkbox"/> <b>Landscaping</b> | <input type="checkbox"/> Downspouts and Gutters       |
| <input checked="" type="checkbox"/> <b>Engineering</b> | <input checked="" type="checkbox"/> <b>Maintenance</b> | <input checked="" type="checkbox"/> <b>Inspection</b> |
| <input type="checkbox"/> Construction                  | <input type="checkbox"/> Plumbing                      |   |

### Project Description

This Department of Facilities Development project involved the design and construction of a series of stormwater bioswales and a 5,000 gallon underground rainwater cistern to manage and mediate stormwater runoff issues adjacent to the east side of the Sandburg Hall parking garage and student residence hall. Runoff collected in the cistern is beneficially reused for watering of adjacent community gardens and the project contributes to the Universities ultimate goal of zero stormwater discharge from the campus.

Sigma was responsible for evaluation and development of plans for the project; preparation of construction documents, providing bidding services, providing construction administration services and project closeout.

The project was delivered using the Department of Facilities Development standard bidding and specification documents and following the Department of Facilities Development delivery process including the use of the WisBuild website.

- Was the project completed on time?**  Yes
- Was the project completed on budget?**  Yes
- Was the project completed to the owner's satisfaction?**  Yes