

PROJECT PROFILE / **UNIFIED GOVERNMENT IMPLEMENTING GREEN AT NEW JUVENILE JUSTICE CENTER**

# CREATING SUSTAINABLE ENVIRONMENTS WITH GREEN STORMWATER INFRASTRUCTURE

With the ability to implement green stormwater infrastructure into the design, a local project is giving the Unified Government of Wyandotte County and Kansas City, Kansas (UG) an opportunity to put a plan into action that helps meet EPA goals of the Clean Water Act.



# PROJECT SETS PRECEDENT FOR FUTURE COMMUNITY UPDATES

The new Juvenile Justice Center in Wyandotte County serves as an example for future development projects in the community.

## PROJECT STATS

### CLIENT

Unified Government of Wyandotte County and Kansas City, Kansas

### LOCATION

Kansas City, Kansas

# 1st

**OPPORTUNITY FOR UG TO ANALYZE THE IMPACT TO STORMWATER BY USING GSI**

# 100%

**STORMWATER CAPTURE FOR STORMS WITH LESS THAN 1.37" OF RAINFALL**

# 57

**STORMWATER TREES**

# 9,040

**SQUARE FEET PERMEABLE PAVERS**

Municipalities have increasingly been subject to Environmental Protection Agency (EPA) mandates intended to reduce pollution from stormwater runoff and wet weather sewer system overflows. Combined sewers, built decades ago, convey both sewage and stormwater in the same pipe system and deliver the combined flow to a wastewater treatment plant. Problems occur when it rains, and combined sewer system capacity is exceeded, causing both stormwater and sewage overflow into rivers and streams.

The UG is among many communities across the country under federal obligation to reduce or eliminate the volume of combined sewer overflow. The UG is under federal mandate via partial consent decree to reduce the frequency and volume of combined sewer overflows due to the impact on human health and the environment.

Burns & McDonnell is leading the UG integrated overflow control plan (IOCP) team in addressing system overflows in the area.

As redevelopment and infrastructure improvements are analyzed and designed for combined sewer areas of the UG, efforts are underway to understand the constraints and impacts of the downstream pipe system in addition to long-term obligations of the UG. With development of a new Juvenile Justice Center underway, the UG IOCP team is utilizing the project as an opportunity to pilot green stormwater infrastructure implementation in lieu of traditional stormwater management techniques to fulfill consent decree obligations and meet EPA goals.

The new Juvenile Justice Center is being developed to provide efficient





*Green stormwater infrastructure at Wyandotte County Juvenile Justice Center. From top left: 1. Curb — provides a physical protective barrier to the GSI while creating the ponding storage area for stormwater. 2. Inlet — brings stormwater runoff from the parking lot surface to the GSI. 3. Outlet — controls the release of stormwater from the subsurface of the GSI. 4. Tree — assists in stormwater management through transpiration and provides “greened” Aesthetic benefits. 5. Bioretention Soil Media — blend of soil, compost and sand that promotes infiltration, filters pollutants and provides a suitable growing media for vegetation.*

and effective services for juveniles in a more positive environment. The current Juvenile Detention Center is located in the same facility as adult inmates, which has created operational challenges and overcrowding issues in the past.

The UG went under contract with Newkirk Novak Construction Partners in late 2017 for the new Juvenile Justice Center. In early 2018, the UG IOCP team met with the lead architecture design firm, TreanorHL, to discuss plans for

managing stormwater at the new site. The original plans included traditional stormwater installations, which risked increasing system overflows and backups, both of which could be detrimental to the community. The team strategized ways to incorporate green stormwater infrastructure into the design. Based on schedule, IOCP efforts and our previous stormwater experience, it was decided that the IOCP team would provide the green stormwater infrastructure design

and collaborate with TreanorHL to incorporate it into the overall design plans. This project serves as the UG’s first opportunity to analyze the impact of green stormwater infrastructure in the area as part of the federal consent decree improvements.

The two primary development sites for this project include the new Juvenile Justice Center and the accompanying parking lot. Before project initiation, both sites contributed to a combined sewer overflow point on the Kansas River, the second-largest overflow location in the UG combined sewer system with about 180 million gallons of overflow annually.

The UG IOCP team is implementing green stormwater infrastructure into the design to address and reduce combined sewer overflows. This includes reducing stormwater connections to the existing system, which is a primary objective of the UG to meet EPA goals. The project incorporates a series of green stormwater infrastructure practices to treat stormwater generated from the project’s impervious area. The three primary types of green stormwater infrastructure include bioretention, stormwater tree planters, and permeable pavers to capture and infiltrate stormwater runoff from the parking lot surface, building roof leaders and adjacent streets.

The new Juvenile Justice Center is scheduled to be complete within the first quarter of 2020. In addition to improving services for the juveniles and their families, and providing an improved space for facility staff, the project has created an exciting opportunity for the UG to work toward meeting EPA goals and raising the standard for stormwater management. Based on findings from the project, the UG will be better able to set precedent for green stormwater infrastructure in future community updates.



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