

# Maple Street Drainage Improvements

## Preliminary Engineering Report – Scope of Work

### Introduction

The purpose of the preliminary engineering report is to evaluate the proposed configuration and magnitude of stormwater improvements within the System 6 drainage area located in North Lawrence. The preliminary engineering report will focus on refining the proposed concept presented in the HNTB report, which includes replacing the existing pump station with a larger pump station, and increasing the capacity of the drainage system.

The preliminary engineering report will be based on the City's Stormwater Drainage Manual, and industry accepted engineering practices. In addition, the preliminary engineering report will be based on existing available data provided by the City. No new data will be collected as part of the evaluation.

### Task Description

**Task 1 – Progress Meetings.** Consultant will conduct two meetings with the Owner to discuss the progress of the preliminary engineering report. The first meeting will serve as the Kickoff meeting, to review the scope of services and request available information. The second meeting will be focused on reviewing the preliminary results.

**Task 2 – Hydrologic and Hydraulic Analysis.** Consultant will conduct a hydrologic and hydraulic analysis of the System 6 drainage area to simulate existing and future conditions. Consultant will build upon the City's existing XP-SWMM model to simulate the drainage features. This will involve refining the City's existing XP-SWMM by reviewing and confirming the model input parameters. Typical model inputs to be reviewed include: time of concentration values, impervious/pervious surface cover, infiltration assumptions, pipeline hydraulics, and assumed flood elevations at the Kansas River. Once the model is updated, Consultant will simulate the 2, 5 and 10-year design storms for existing conditions. In addition, Consultant will estimate the peak flow reduction under the 2, 5 and 10-year design storms by providing stormwater detention. Two stormwater detention basin locations will be evaluated: 1) southeast corner of 7<sup>th</sup> and Lincoln Street, and 2) northwest corner of 6<sup>th</sup> and Maple Street.

**Task 3 – Drainage Improvement Evaluation.** Consultant will conduct a drainage improvement evaluation using the XP-SWMM model to determine the size and extent of the proposed stormwater improvements. This evaluation will include: 1) replacing the existing pump station to provide 10-year pumping capacity, 2) enclosed pipelines and drainage swales, 3) detention basin (if determined to be beneficial), 4) pump station force main and near-surface gravity line to the Kansas River, and 4) Kansas River outfall structure. The pump station will be located in the same general vicinity of the existing pump station (6<sup>th</sup> and Maple). A plan view concept schematic that depicts the proposed improvements,

and a construction cost estimate will be provided. The draft and final results of the Task 3 will be provided in a summary email.

Tasks not included in Scope of Services:

- Topographical and/or boundary Surveying
- Meetings with the Corps of Engineers, Railroad, and residents
- Permit applications & supporting documentation
- Design of any of the recommended improvements

**Exhibit B**

**Maple Street Drainage Improvements - Preliminary Engineering Report**

City of Lawrence, Kansas

Task	Description	Professional Fee Estimate										
		B&W	CDM Smith									
		Sr. Project Manager	Sr. Technical Specialist/PIC	Technical Specialist	Senior Professional	Professional II	Professional I	Technician	Admin Support	Total Hours	Reimbursable Expenses	Total
Hourly Rate	\$175	\$215	\$175	\$150	\$130	\$110	\$95	\$85				
1	Project Meetings	4	4		4	4				12	\$ 350	\$ 3,030
2	Hydrologic and Hydraulic Analysis		1	8	24	60			2	95		\$ 13,185
3	Drainage Improvement Evaluation		1	8	40	120		12	2	183		\$ 24,525
<b>Total</b>		<b>4</b>	<b>6</b>	<b>16</b>	<b>68</b>	<b>184</b>	<b>0</b>	<b>12</b>	<b>4</b>	<b>290</b>	<b>\$ 350</b>	<b>\$ 40,740</b>