

**DRAINAGE INVESTIGATION  
FOR  
ELGIN O'HARE EXPRESSWAY AND ROSELLE ROAD**

**ELGIN O'HARE - WEST BYPASS  
P-91-443-06**

*Prepared for:*

Illinois Department of Transportation  
201 West Center Court  
Schaumburg, IL 60196

*Prepared By:*

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November 30, 2010



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**DRAINAGE INVESTIGATION  
FOR  
ROSELLE ROAD DRAINAGE INVESTIGATION  
ELGIN O'HARE – WEST BYPASS**

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# TECHNICAL MEMORANDUM

Prepared by: Donald R. Dressel, PE, CFM – CBBEL

Subject: Elgin O'Hare-West Bypass  
Elgin O'Hare Expressway and Roselle Road Drainage Investigation

Project Number: P-91-443-06

Date: November 30, 2010

The purpose of this memorandum is to summarize a Christopher B. Burke Engineering, Ltd. (CBBEL) drainage investigation of the southwest quadrant of the Elgin O'Hare Expressway interchange at Roselle Road. According to the Cook County Department of Highways (CCDOH), the Village of Roselle had asked CCDOH to help resolve chronic flooding of the area. This memorandum details existing drainage problems and provides recommendations to help reduce flooding risks within the concerned area.

## **A. FLOODING HISTORY**

The Village of Roselle (Village) owns and maintains the Heather Green stormwater management facility (Heather Green) located north of the Marion Street/Arthur Avenue intersection within the Cook County portion of the Village of Roselle. Heather Green drains by gravity southwardly and then eastwardly at Devon Avenue through a storm sewer. The storm sewer outlets into Turner Pond located southeast of the Roselle Road/Devon Avenue intersection. The Heather Green watershed includes Village residential area, unincorporated Cook County residential areas located north and south of the Elgin O'Hare Expressway, and a portion of the expressway drainage. Heather Green is located within the Meacham Creek watershed. Exhibit 1 is a location map for the study area.

There are approximately 130 acres within the Heather Green watershed. Prior to 2004, the configuration of Heather Green was:

- Normal Water Level (NWL) = 777.1'
- Road (Arthur Avenue) Overtop Elevation = 781.63'
- Road Overtop Elevation Storage Volume = 6.88 acre-feet
- 100-year Storm Event High Water Level (HWL) = 782.2'
- HWL Storage Volume = 11.4 acre-feet

The TR-20 hydrologic model analysis completed by CBBEL for the Village in 2001 indicated that a 2-year storm would fill the basin spill on the road (Arthur Avenue). The overtopping flow inundates downstream roadways and yards. At that time, several alternatives were analyzed to increase the level of protection provided by Heather Green. These alternatives included the expansion of the existing facility under both a gravity and pump station outflow scenario. In addition, the construction of a new stormwater management facility located north of the Elgin O'Hare Expressway was investigated.

## **B. REMEDIAL MEASURES**

In 2004, the Village of Roselle expanded Heather Green by an additional 4.8 acre-feet of stormwater storage below 781.63'; for a total of 11.68 acre-feet. The storage was added by excavation of existing ground to the east of the facility. The excavated material was placed in a stock pile located east of the expanded facility. The Village of Roselle acquired the land needed for the expansion from the property owner. The hydrologic analysis indicates that the additional stormwater storage allows the 5-year storm to be contained within the facility. The expanded facility will overtop the Arthur Avenue for storm events greater in magnitude than the 5-year.

## **C. EXISTING DRAINAGE PATTERNS**

Pertinent sections of the Location Drainage Study (LDS) for the FAP 426 (Elgin O'Hare) project were reviewed along with the Elgin O'Hare Expressway grading and drainage plans. The LDS indicates that if the median area located west of Roselle Road and the ramp and infield areas associated with Elgin O'Hare Expressway/Roselle Road interchange were to be rerouted eastwardly to a different outlet, no detention storage would be required at a proposed 10' x 4' reinforced concrete box culvert (RCBC) outlet.

The expressway contract plans, dated August 1990, confirm that the majority of drainage west of Roselle Road within the Elgin O'Hare Expressway right-of-way (ROW) is conveyed eastwardly away from the pre-project outlet location where the 10' x 4' box culvert was installed subsequently. The westernmost Elgin O'Hare Expressway drainage boundary is located approximately 2,800 feet west of Roselle Road centerline. The 10' x 4' RCBC is located approximately 1,400 feet west of the Roselle Road centerline. Based on the Elgin O'Hare Expressway plans, approximately 40% of the pre-Elgin O'Hare Expressway project ROW within the Heather Green basin was rerouted eastwardly to a proposed detention pond located at the northwest quadrant of the Elgin O'Hare Expressway interchange at Medinah Road.

## **D. RECOMMENDATIONS**

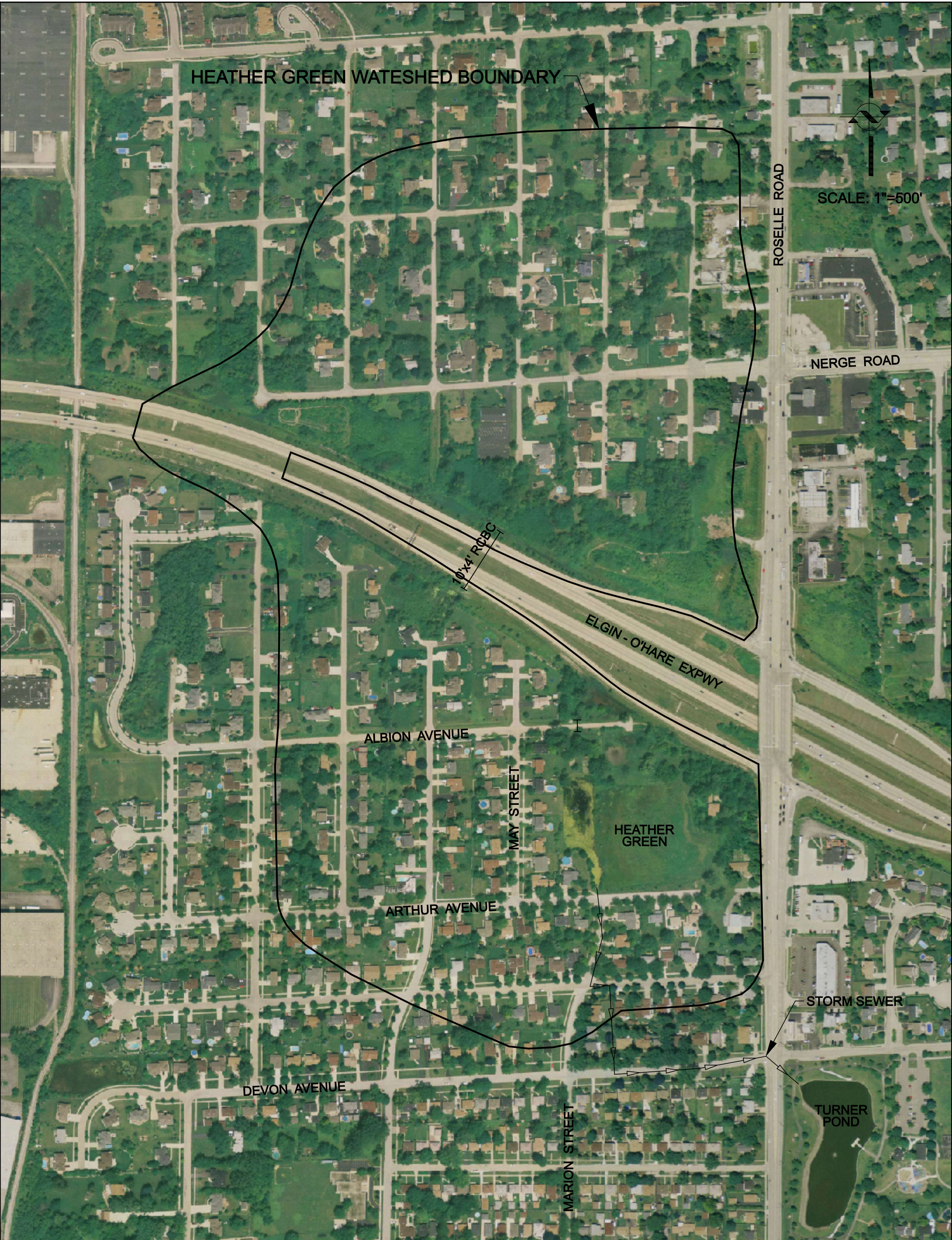
Based on a review of the Elgin O'Hare Expressway LDS and plans, 40% of the land within the highway right-of-way that originally went to Heather Green was rerouted eastwardly. The construction of the Elgin O'Hare Expressway reduced the stormwater runoff volume and peak discharge from the highway right-of-way area that is tributary to Heather Green. If future plans require that the Elgin O'Hare Expressway be widened in this reach, detention storage shall be provided. Heather Green is volume sensitive and shall not encounter any increase in flow from the surrounding developments.

## **E. REFERENCES**


The following references were used in the preparation of this report:

1. Location Drainage Study – FAP 426 (Elgin-O’Hare) from U.S. 12/45 to U.S. 20 Bypass, Station 812+00 to Station 966+00, Meacham Creek Watershed.
2. Plans for proposed Federal Aid Highway – F.A.P. Route 426 (Elgin-O’Hare Expressway) from Mitchell Boulevard to East of Plum Grove Road dated August 2, 1990.
3. Stormwater Study of the Northwest Drainage Area, prepared for the Village of Roselle by CBBEL dated June 2001.
4. Village of Roselle Aerial Topography and Storm Sewer/Sanitary Sewer Atlas, prepared by Aero-Metric Engineering, Inc., dated May 6, 1978.





SCALE: 1"=500'

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	<b>ELGIN O'HARE – WEST BYPASS ROSELLE DRAINAGE INVESTIGATION LOCATION MAP</b>	DATE 12/1/2010
	<b>EXHIBIT 1</b>	