DRAINAGE INVESTIGATION

ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
P-91-443-06

COOK COUNTY, ILLINOIS

Prepared for

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EXECUTIVE SUMMARY

The following is a Drainage Investigation for the I-294 Industrial Park in the Village of Franklin Park. The Industrial Area is located north of Belmont Avenue, south of Franklin Avenue and east of County Line Road. The study area experiences recurring flooding in moderate to severe storm events.

The purpose of this study is to analyze the existing drainage system for the 50-year and 100-year design storm events and evaluate the effectiveness and feasibility of proposed improvements. Improvements include creating flood storage, new storm sewer infrastructure, installing a backflow preventer at the Silver Creek, regrading the ditch along the east Wolf Road right of way and installing a new storm sewer system along Wolf Road. This study is also performed to complement the drainage study that is ongoing for the EOWB and to incorporate EOWB detention requirements into the Drainage Investigation.

This report summarizes the anticipated results of proposed improvements designed to increase the level of flood protection in the identified flood areas.

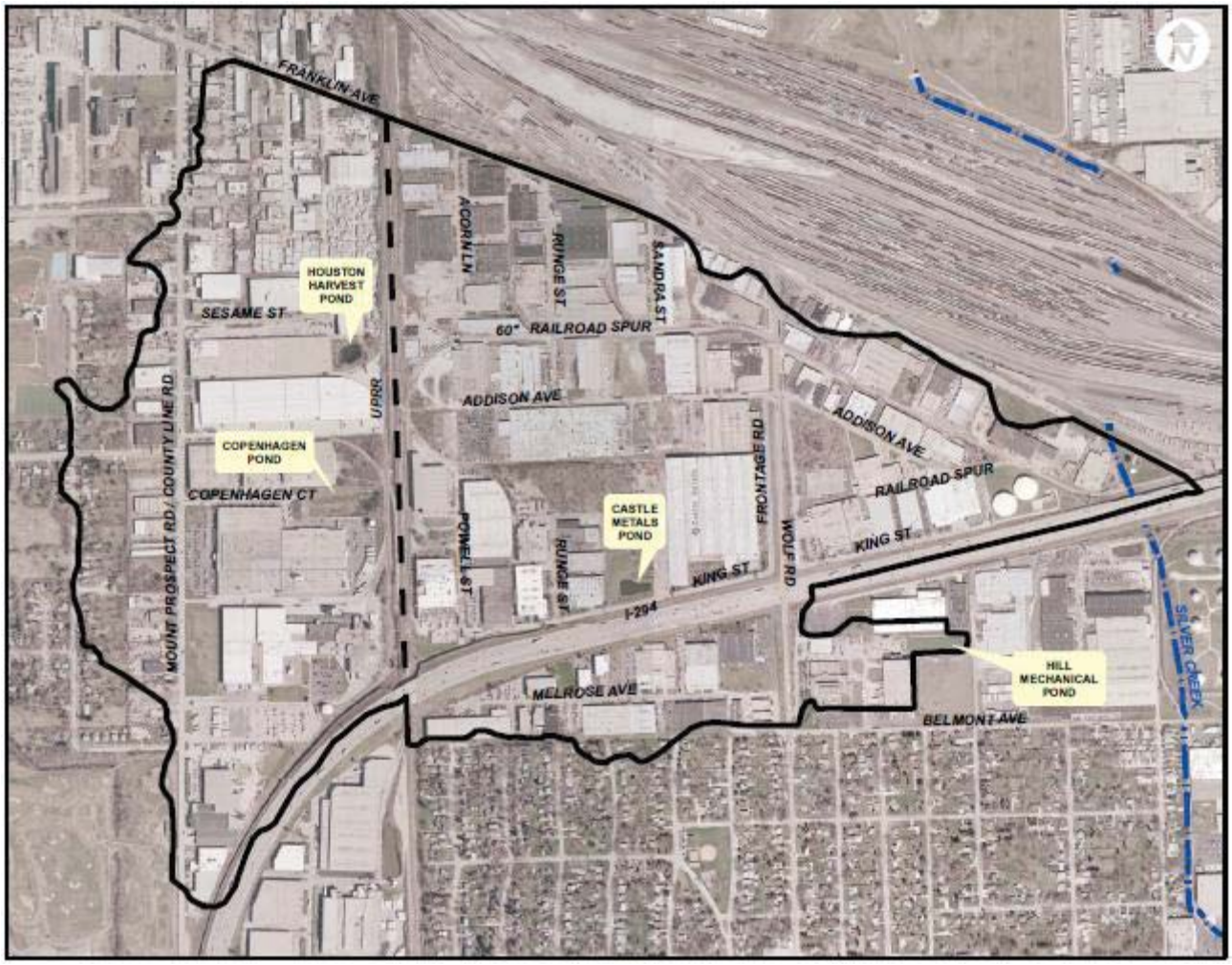


Figure 1-1 I-294 Industrial Park

Figure 1-1 shows the location of the industrial park. Improvements were recommended to optimize flood protection benefits and costs.

Tables 1-1, 1-2, 1-3 and 1-4 summarize the recommended projects for the 50-year and 100-year frequencies flood protection, with and without a separate Tollway drainage system, and the engineer's estimate of probable cost to implement the proposed improvements.

Level of Protection	Recommended Project	Estimated Cost
50-Year (stand-alone project)	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe along Runge Street • 70 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 12 acre-feet expansion of Copenhagen Pond • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road	$13.7 million

Table 1-1 Alternative 1 Recommendation Summary

Level of Protection	Recommended Project	Estimated Cost
100-Year With Required Tollway Detention Volume	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe along Runge Street • 70 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 21 acre-feet within the EOWB ROW with a restrictor • 12 acre-feet expansion of Copenhagen Pond • Equalizer pipe between Copenhagen Pond and EOWB ROW • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road • New storm sewers along King Street • New storm sewer within the EOWB ROW	$19.2 million

Table 1-2 Alternative 2 Recommendation Summary

Level of Protection	Recommended Project	Estimated Cost
50-Year with required Tollway Detention Volume	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe along Runge Street • 50 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 21 acre-feet within the EOWB ROW with a restrictor • 12 acre-feet expansion of Copenhagen Pond • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road • New storm sewers along King Street • New storm sewer within the EOWB ROW	$17.1 million

Table 1-3 Alternative 3 Recommendation Summary

Level of Protection	Recommended Project	Estimated Cost
100-Year Separate Tollway Detention Volume	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe west of Acorn Avenue • Bypass pipe along Runge Street • 70 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 18.5 acre-feet within the EOWB ROW with a restrictor • 17 acre-feet expansion of Copenhagen Pond • Modify existing pump station at Copenhagen Pond • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road • New storm sewers along King Street • New drainage system within the West Bypass ROW to the Tollway detention basin	$20.7 million

Table 1-4 Alternative 4 Recommendation Summary

CHAPTER 1 PROJECT OVERVIEW

1.1 INTRODUCTION

The I-294 Industrial Park experienced severe flooding during the September 13-14, 2008, July 23-24, 2010 and July 23-24, 2011 storm events (Figure 1-1). This area also experiences flooding during less severe storm events. In July 2003, Clark Dietz, Inc. prepared a hydrologic and hydraulic study of the industrial area to address concerns related to flooded docks and machinery and access during rain events. The report summarized an assessment of appropriate ways to reduce the impact of stormwater on the surrounding businesses. The Elgin O'Hare-West Bypass (EOWB) expansion is proposed to traverse through the Village of Franklin Park (Village) parallel to the Union Pacific Railroad (UPRR). As part of this expansion, the Village requested that the Illinois Department of Transportation (IDOT) complete a stormwater analysis of the existing industrial area to determine what measures could be taken to reduce flooding. This study expands on the previous Clark Dietz study using additional survey data and the 2008 Cook County 1-foot topography to evaluate the existing drainage system, establish causes of flooding and provide concept level improvements to reduce the risk of future flooding. Additionally, this study was performed to complement the drainage study that is ongoing for the EOWB and to compute detention storage volume requirements and locate areas to provide this storage volume. The concept level improvements were developed based on detailed hydrologic and hydraulic analysis using the XP-SWMM computer modeling program.

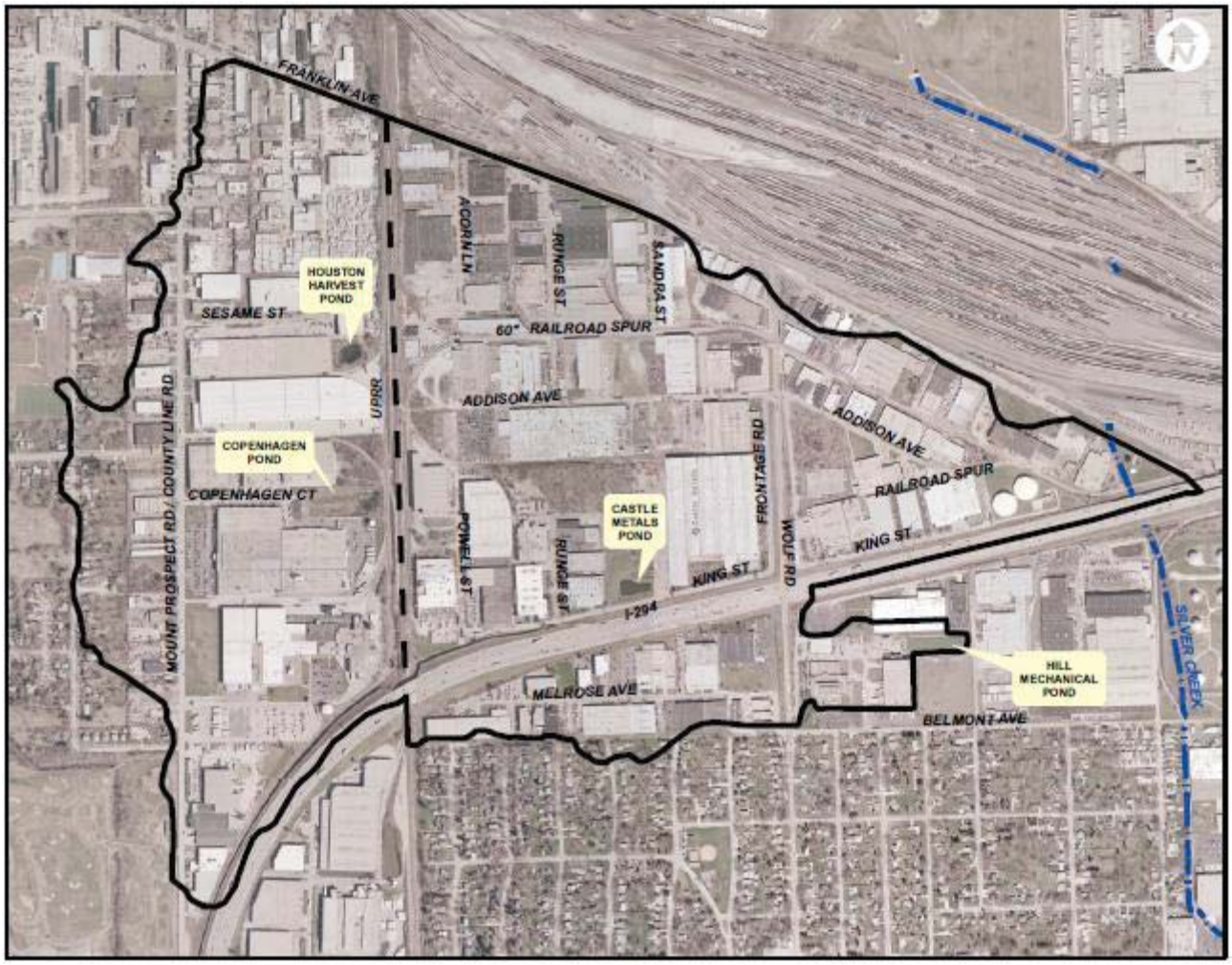


Figure 1-1 I-294 Industrial Park

Based on discussions with the Village and numerous property owners, several critical buildings have been identified. The flood areas are described in Chapter 2, EXISTING CONDITIONS ANALYSIS. Concept level flood risk reduction alternatives and an engineer's estimate of probable cost are provided in Chapter 3, PROPOSED CONDITIONS ANALYSIS.

CHAPTER 2 EXISTING CONDITIONS ANALYSIS

This chapter presents the nature, type, and severity of the problems that were identified by the Village and IDOT and by detailed modeling. A detailed description of the XP-SWMM hydrologic and hydraulic modeling used for this analysis is also provided.

2.1 I-294 INDUSTRIAL PARK WATERSHED

The areas surrounding the industrial area are tributary to the Silver Creek. Based on Cook County 1-foot topographic mapping, included as Exhibit 1, the watershed area is approximately 520 acres, which includes portions of I-294, Wolf Road, and the West Bypass. The watershed is bounded on the west by Mount Prospect Road/County Line Road, on the south by Belmont Avenue and on the north by Franklin Avenue, as shown on Exhibit 2. Based on review of the existing topography, only the southern half of Franklin Avenue is tributary to the Industrial Park and therefore only a small portion of Franklin Avenue, which will be redeveloped as part of the EOWB, contributes to the Industrial Park flooding. The northern portion of Franklin Avenue is directly tributary to Silver Creek via a roadside ditch. The drainage pattern is generally from west to east towards the Silver Creek.

The industrial park generally drains west to east through a series of storm sewers within roadway and railroad spur right-of-ways. Stormwater runoff is conveyed to the Silver Creek with the primary outfall through a 60-inch reinforced concrete pipe (RCP) located just upstream of a twin 12' (W) by 8' (H) box culvert under I-294. The invert of the 60-inch RCP (638.02 feet) at the outfall is approximately 1.7 feet below the normal water level (NWL) of the Silver Creek. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) dated August 19, 2008, the 10-year and 100-year flood elevations of the Silver Creek at the outfall are 645.2 feet and 645.9 feet, respectively. According to the field survey, the lowest grade within the industrial area is 648.01 feet located at Castle Metals. During the 10-year storm event, the outlet pipe is entirely submerged. The tailwater effect on the outlet storm sewer system for the industrial park significantly reduces the conveyance capacity for discharging stormwater runoff. The storm sewer system has less than a 10-year capacity before the storm sewers are surcharged in the lowest areas and floodwaters begin accessing the railroad spurs and streets.

The primary conveyance method for the industrial park consists of a storm sewer network with diameters up to a 60-inch RCP. This trunk sewer is on a slope of approximately 0.04 % for 2,700 feet. A majority of the reported flooding is located west of Wolf Road. Areas to the east of Wolf Road are generally higher than areas to the west. Therefore, the flooded areas west of Wolf Road lack an appropriate overland flow path to the Silver Creek. There is approximately 17 acres of tributary area on the south side of I-294 and east of Wolf Road that is also tributary to the north industrial area. This runoff flows from the south to the north under I-294 via a 45" by 29" CMP within the Wolf Road ditch. Historically this ditch flowed to the north through a series of roadway culverts and was ultimately tributary to the 60-inch RCP; however, sediment build-up in the CMP

and vegetation overgrowth in the ditch has obstructed this natural flow pattern. As a result, the southeast quadrant of I-294 and Wolf Road has experienced flooding.

Based on Cook County contour mapping data, there is approximately 450 acres tributary to the Industrial Park west of Wolf Road and an additional 70 acres east of Wolf Road. The watershed is divided into two distinct areas: west of the Union Pacific Railroad (UPRR) and east of the UPRR as shown on Figure 1-1. There are two existing storage facilities west of the UPRR (Copenhagen Pond and Houston Harvest Pond) and two existing storage facilities located east of the UPRR (Castle Metals Pond and Hill Mechanical Pond).

Copenhagen Pond

The Copenhagen Pond is located east of County Line Road and on Copenhagen Court. The basin has approximately 14.5 acre-feet of storage volume, is pump evacuated and outflows north along the western embankment of the Union Pacific Railroad (UPRR). Approximately 120 acres is tributary to this pond. According to discussions with the Village, stormwater backs up into this basin causing overflows onto Copenhagen Court and the surrounding areas. This storage facility is currently owned by the Village.

Figure 2-1
Copenhagen Pond

Houston Harvest Pond

Houston Harvest Pond was constructed as part of the Houston Harvest Processing Plant for detention purposes. Approximately 3.5 acre-feet of storage is provided in this facility. The basin also outflows along the western embankment of the UPRR before crossing east through the embankment 400' to the north via a 48-inch pipe. This pond is located on private property.

A.M. Castle Metal Pond

The Castle Metal Pond is located north of King Street and east of Runge Street. This basin serves as stormwater detention for the A.M. Castle Metal Company. It is understood that this basin also receives overflows from King Street when surrounding storm sewer systems surcharge. Approximately 3 acre-feet of storage volume is provided in this basin.

Figure 2-2
Castle Metal Pond

Hill Mechanical Pond

Hill Mechanical Pond was constructed as part of the Hill Mechanical development for detention purposes. Approximately 2 acre-feet of storage is provided in this facility. The basin is pump evacuated and discharges directly in the ditch along the eastern side of Wolf Road. This pond is located on private property.

2.2 EXISTING CONDITIONS XP-SWMM INPUT

Watershed boundaries were delineated using the 1-foot contour aerial topographic data provided by Cook County and review of previous studies. The watershed boundary map is included on Exhibits 1 and 2. Hydrologic parameters were calculated for each subbasin based on current land use in conjunction with Bulletin 70 rainfall data and Huff rainfall distributions. A Curve Number of 90 was used for all of the subareas within the watershed. This value was computed using GIS as part of the Lower Des Plaines River Detailed Watershed Plan (LDPRDWP) study for the Silver Creek. The tributary area to the industrial park consists of approximately 450 acres that are primarily impervious. Additionally, times of concentration were computed for several subareas and it was determined that the average time of concentration was approximately 15 minutes. Therefore, 15 minutes was used for all of the subareas within the study area. Subarea worksheets are included on the CD-ROM included in Appendix 4. While there is fluctuation within the tail end of a few nodes within the XP-SWMM results, the fluctuations in the hydrograph occur at the tail end of the hydrograph after the peak has already been captured. Therefore, the modeling results were found to be representative of existing conditions.

All storm sewers within the watershed that are 24-inches or greater were surveyed. The Wolf Road eastern ditch and the ditch parallel to I-294 from Wolf Road to the Silver Creek were also surveyed. Although historically this area is tributary to the 60-inch RCP along the railroad spur, there is no positive outlet in existing conditions. It is believed that the Wolf Road ditch and I-294 ditch equalize and eventually overtop north across King Street towards a railroad spur located between King Street and Addison Avenue. Using the County topographic data and the survey data (Appendix 1), an XP Software Stormwater and Wastewater Management Model (XP-SWMM) of the drainage system was developed. The 100-year, 2-hour elevation (644.3') of the Silver Creek, taken from the LDPRDWP model for the Silver Creek, was used as the tailwater condition for the analysis. This storm event corresponds with the critical duration of the industrial area. Although the 10-year elevation (643.8') is typically used, both tailwater conditions were analyzed and the difference in elevation (0.5 foot) has a negligible impact on the hydraulic grade line (HGL) of the 60-inch RCP due to its submerged condition. The electronic XP-SWMM files are included on the CD-ROM in Appendix 4.

The existing conditions XP-SWMM was used to determine the capacity of the existing storm sewer system. The following is a description of the existing drainage system and results of the existing conditions XP-SWMM modeling.

2.3 SUMMARY OF EXISTING CONDITIONS

2.3.1 WEST OF THE UNION PACIFIC RAILROAD

The western portion of the watershed is located west of the Union Pacific Railroad (UPRR) and north of I-294 as shown in Figure 2-3. The existing site conditions are also shown on Exhibit 2.

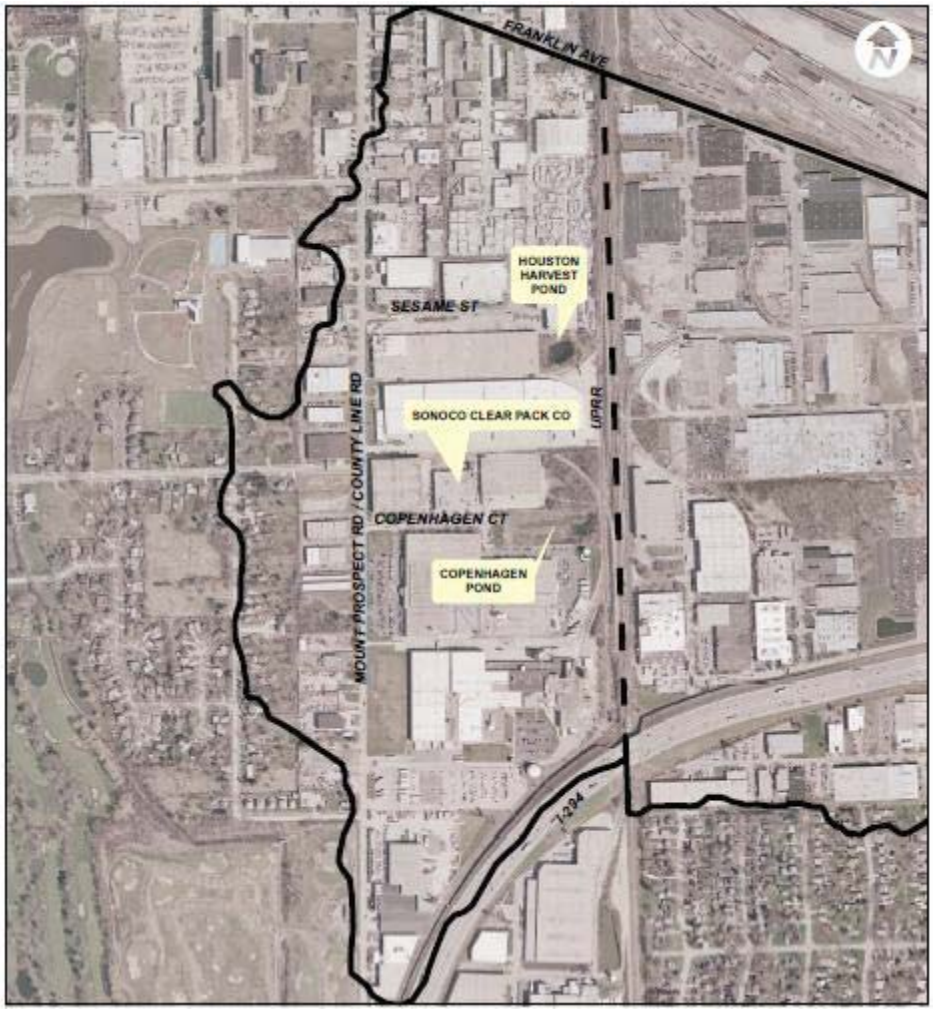


Figure 2-3 West of UPRR

This area, approximately 200 acres, is comprised of a two main storm sewers: one is located along County Line Road and one flows east along I-294 and then north along the UPRR. Both of these storm sewers are directly connected to the Copenhagen Pond with a total tributary area of 120 acres. The remaining 80 acres is tributary to Houston Harvest Pond and the storm sewer that traverses from west to east under the railroad. Copenhagen Pond is pump evacuated via a 1.7 cfs pump that discharges into a 48-inch storm sewer. The Houston Harvest Pond discharges into this same storm sewer. Based on discussions with the Village, flows from downstream of Copenhagen Pond backflow into the storage facility due to backpitched pipes. Therefore downstream areas are accessing Copenhagen Pond thus reducing the already limited volume of flood storage intended for upstream areas. This causes the capacity of Copenhagen Pond to be exceeded earlier causing water to flow west down Copenhagen Court towards County Line Road. There are several loading docks located at Sonoco Clear Pack Co, with a low entry elevation of 656.09, that are depressed and also fill with flood waters.

Observations from the existing conditions analysis are provided below:

- Storm sewers along the UPRR downstream of Copenhagen Pond are backpitched allowing flow from downstream areas to back up into the Copenhagen Pond.

- According to information received from the Village of Franklin Park, the Copenhagen Pond has a peak pumping rate of approximately 1.7 cfs.
- Insufficient storage volume exists within the upper portion of the watershed.
- The XP-SWMM model shows that the Copenhagen Pond reaches a peak 100-year elevation of 659.3 feet and a peak 50-year elevation of 657.4 feet. This equates to approximately 4.8 feet of flooding during the 100-year storm event and 2.9 feet of flooding during the 50-year storm event along Copenhagen Court.
- The critical duration of the watershed is the 2-hour storm duration, as shown in the table below. These locations are also shown on Exhibit 10.

Exhibit 10 ID	Location	1-hour	2-hour	3-hour	6-hour	12-hour
1	Intersection of King St and Runge Ave	652.37	652.31	652.23	652.15	651.98
2	County Line Rd	667.76	667.72	667.62	666.38	661.92
3	Melrose Ave	654.56	654.81	654.71	654.36	653.85
4	Railroad Spur	650.81	650.81	650.76	650.95	650.99
5	East Wolf Rd	649.37	649.46	649.42	649.32	649.23

Table 2-1 100-year Critical Duration Summary

2.3.2 EAST OF THE UNION PACIFIC RAILROAD

The eastern portion of the watershed is shown in Figure 2-4. The existing site conditions are also shown on Exhibit 2.

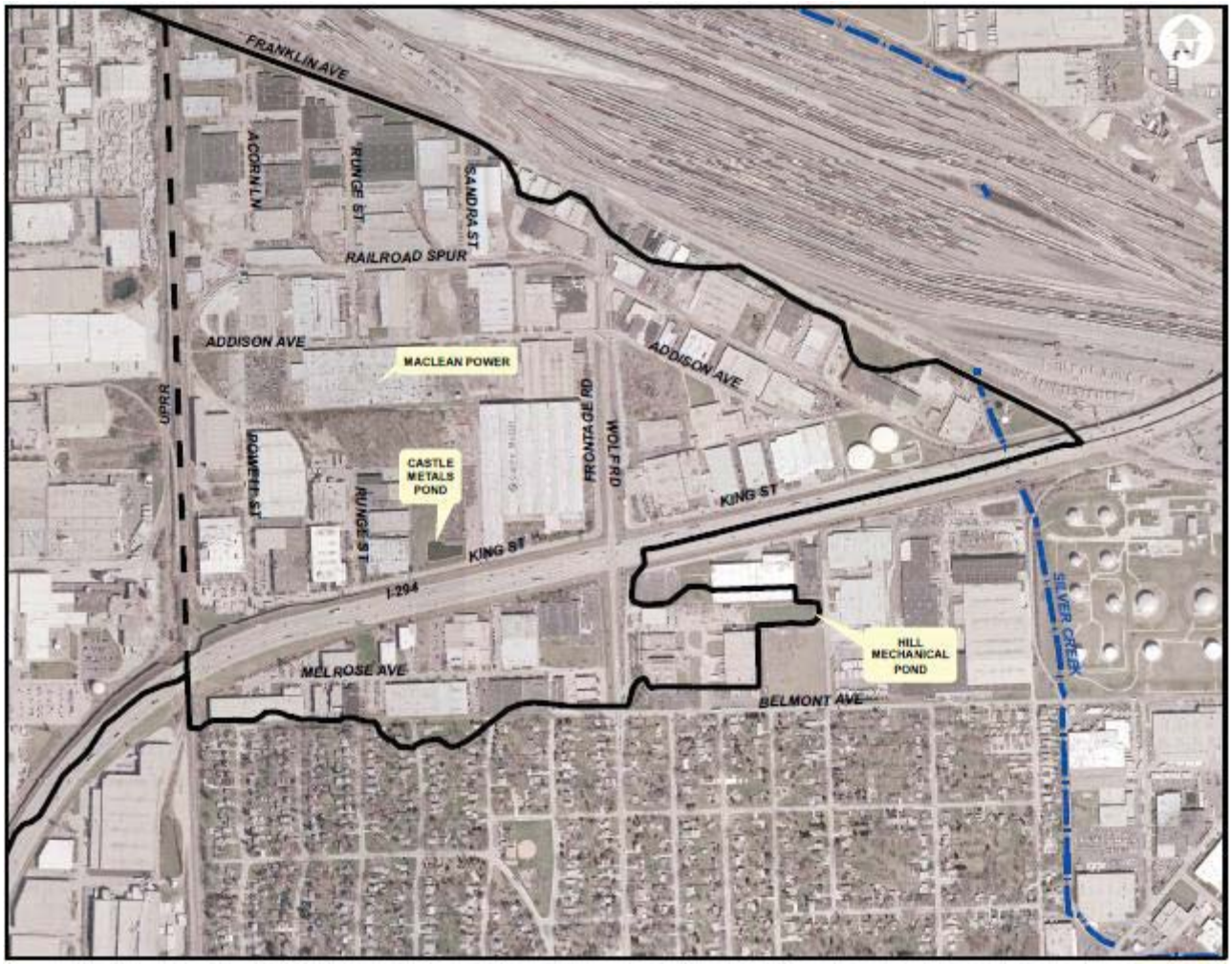


Figure 2-4 East of UPRR

This area, approximately 320 acres, receives flow from the western side of the UPRR and from the tributary area east of the UPRR. The general direction of flow south of Addison Avenue is towards the north to the railroad spur and the area north of the railroad spur generally flows south to the 60-inch RCP that flows along the railroad spur. The 60-inch RCP parallels the railroad spur until the ultimate outfall at the Silver Creek.

This subwatershed is also the lowest portion of the approximate 450 acres, west of Wolf Road, that is tributary to the 60-inch trunk sewer at Wolf Road and experiences the greatest amount of flooding, including flooding of depressed loading docks. Several buildings were surveyed to determine the critical elevation (designated as the elevation that the building first experiences flooding). These buildings are shown on Exhibit 2 and below is a table summarizing the building name and the critical elevation:

Exhibit 2 ID	Company Name	Critical Elevation (NAVD 1988)
A	Precision Steel Warehouse	648.65
B	Thule Inc.	648.92
C	Wismarq Corporation	649.05
D	MacLean Power Systems	648.52
E	Castle Metals	648.01
F	Mandel Metals	648.65
G	Clear Pack	656.09

Table 2-2 Critical Elevation Summary

There is one storage facility within this portion of the subwatershed: the Castle Metal Pond that is located just north of I-294 and east of Runge Street. Approximately one half of the roof drains are tributary to a storm sewer that flows from east to west through the Castle Metals Building and are tributary to the stormwater basin. The remaining roof drains are tributary to the Frontage Road storm sewer on the east. It is understood that this basin also receives overflows from King Street on the south when surrounding storm sewer systems surcharge. The lowest entry elevation of buildings within the watershed is located at Castle Metals with an elevation of 648.01 feet. Table 2-3 comparing the critical elevation of the buildings in Table 2-2 to the existing 10-, 50- and 100-year elevations is provided below.

Exhibit 2 ID	Building Name	Critical Building Elevation	10-year	50-year	100-year
A	Precision Steel Warehouse	648.65	649.60	650.14	650.45
B	Thule Inc.	648.92	650.11	650.58	650.76
C	Wismarq Corporation	649.05	649.01	649.71	650.45
D	MacLean Power Systems	648.52	647.68	649.70	650.43
E	Castle Metals	648.01	649.68	650.16	650.47
F	Mandel Metals	648.65	649.08	649.70	650.44
G	Clear Pack	656.09	654.85	657.34	659.14

Table 2-3 Critical Elevation versus 10-, 50- and 100-year Storm Events

Observations from the existing conditions analysis are provided below:

- The tailwater of the Silver Creek back up into the conveyance system for any storm greater than and including the 10-year event.
- The storm sewer along the Frontage Road does not have sufficient capacity.
- The storm sewer along Addison Avenue does not have sufficient capacity.

2.3.3 INDUSTRIAL AREA SOUTH OF I-294

The industrial area south of I-294, which is located in the eastern portion of the watershed, is shown in Figure 2-5. The existing site conditions are also shown on Exhibit 2.

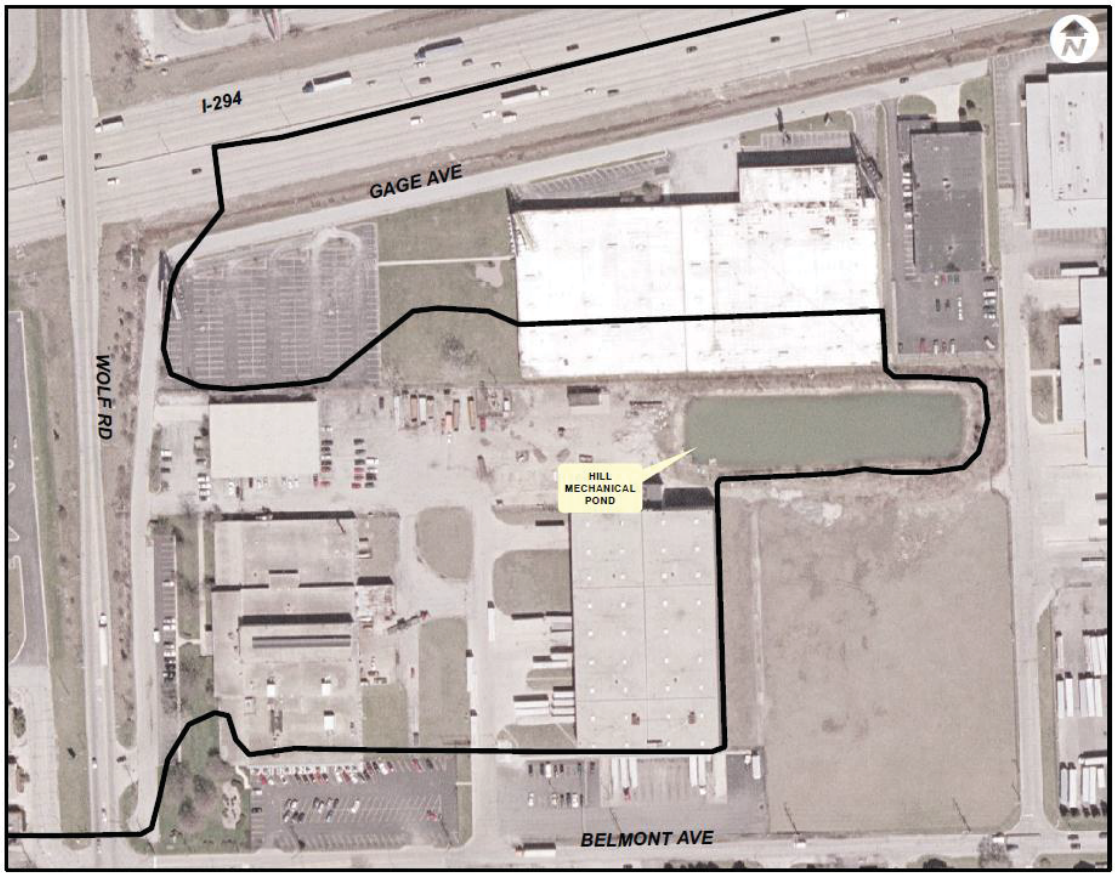


Figure 2-5 Industrial Area South of I-294

There is approximately 17 acres of area on the south side of I-294 and east of Wolf Road that is tributary to the Wolf Road ditch and approximately 5 acres is detained in the Hill Mechanical Pond. This basin discharges to the Wolf Road ditch via a local pump station. The historical drainage of the ditch drains northwardly under I-294 through a 45-inch (W) by 29-inch (H) elliptical corrugated metal pipe (CMP). According to field inspection and the Village of Franklin Park, the ditch lacks conveyance to the north. The elliptical pipe is approximately 25% clogged and the northern ditch is overgrown with brush. Based on field survey, there is no clear overland flow path towards the north. Additionally, based on discussions with the Village, the ditch

continued north under Addison Avenue and was eventually tributary to the 60-inch RCP at the railroad spur. It is believed that the Wolf Road ditch and I-294 ditch equalize and eventually overtop north across King Street towards a railroad spur located between King Street and Addison Avenue. The dysfunctional drainage system is the source of flooding that has been occurring at the southeast quadrant of I-294 and Wolf Road.

Observations from the existing conditions analysis are provided below:

- The historical drainage pattern along the east Wolf Road ditch has been disturbed and dysfunctional.
- An elliptical 45-inch by 29-inch CMP under I-294 on the east side of Wolf Road is approximately 25% clogged.

CHAPTER 3 PROPOSED CONDITIONS ANALYSIS

Based on the results of the existing conditions analysis, proposed improvement alternatives were evaluated with the goal of reducing the risk of future flooding at each identified flooding area. The following drainage improvement alternatives were evaluated for three scenarios: 1) 50-year level of protection 2) 100-year level of protection, including 100-year detention storage for the EOWB within the EOWB corridor 3) 100-year detention storage within the EOWB corridor and 50-year protection elsewhere 4) 100-year level of protection with a separate Tollway drainage system. The tailwater condition used in proposed conditions is the same as existing conditions. Alternatives 2 and 3 provide detention storage required as part of the Elgin O'Hare-West Bypass Project based 0.15 cfs/acre for the 100-year storm event or local ordinances if more restrictive and are included as part of the flood control project. Alternative 4 provides a 100-year level of protection while maintaining a separate Tollway drainage system. The design of all alternatives is based on the total tributary are to the Industrial Park, including the existing tributary area from I-294. Because this area is not located within a floodplain, compensatory storage is not required.

3.1 SUMMARY OF PROPOSED CONDITIONS

3.1.1 GRAVITY OUTLET VERSUS PUMP STATION

The recommended alternatives have been designed to minimize land use. To strictly rely on gravity flow would require a series of stormwater basins to temporarily store runoff and this required surface area within the industrial park is not available. Because the elevation of the bottom of the basin is below the invert of the existing 60-inch trunk sewer, a pump station is required to dewater these basins. The intent is to convey flood waters to the storage facilities and dewater the basins via a pump once the storm event is over and the 60-inch pipe has capacity.

The EOWB project needs a suitable outlet from the Village to complement its drainage system. The August 13, 2012 Technical Memorandum included in Appendix 5 provides a detailed description of why a separate outlet for the Tollway drainage system is not feasible and the use of the Village's conveyance system is required.

3.1.2 EOWB DETENTION STORAGE REQUIREMENTS

According to the EOWB alignment through this corridor, there are 45.49 acres of impervious area within the EOWB corridor within the Silver Creek Watershed. The required detention for this area is approximately 21.1 acre-feet, of which 18.5 acre-feet is being provided within the Industrial Park. Detention storage calculations are included in Appendix 6.

3.1.3 ALTERNATIVE 1: 50-YEAR LEVEL OF PROTECTION – 82 AC-FT OF STORAGE

Five open parcels located were within the watershed that would be conducive to providing storage; however further investigation of these parcels determined that only two of these parcels and one additional parcel are at the optimum location to provide the flood storage needed in the watershed.

Parcel #1 is located at the northwest corner of the Wolf Road and Addison Avenue intersection. This parcel consists of two properties owned by the same private land trust that has recently been demolished and is vacant. The parcel is located adjacent to the industrial park's major trunk sewer and a low lying area along the railroad spur.

Figure 3-1
NW Corner of Addison & Wolf

Parcel #2 is located at the southeast corner of the Wolf Road and Addison Avenue intersection. The single parcel, which is privately owned, consists of heavily forested areas. This site is located across the Wolf Road/Addison Avenue intersection from Parcel #1.

Figure 3-2
SE Corner of Addison & Wolf

In addition to flood storage, conveyance improvements are required to be able to utilize the additional storage. A backflow preventer at the downstream end of the 60-inch RCP is also proposed to prevent floodwaters from backing up into the storm sewer system. The proposed analysis assumes that all existing storm sewers have full capacity. Local conveyance improvements were not considered as part of this analysis and it is assumed that any local improvements to convey the 50-year storm event will be done by others. Proposed improvements are shown on Exhibit 3.

<u>West of UPRR</u>

Improvements include additional flood storage volume. A description of the improvements is provided below:

- Create approximately 12 acre-feet of additional flood storage by expanding the Copenhagen Pond. This improvement includes expanding the existing pond to the north onto a parcel that is privately owned and follows the railroad spur. This additional storage volume will not prevent overflow into Copenhagen Court, but will provide flood protection by lowering the 50-year high water elevation below the existing Clear Pack critical elevation.

- Clean and televise the existing 24-inch RCP on the west side of Wolf Road.

East of UPRR

Improvements include new storm sewers, additional flood storage volume, pump station, and backflow preventer. A description of the improvements is provided below:

- Create 70 acre-feet of flood storage at the open parcels located at the northwest corner of the intersection of Wolf Road and Addison Avenue and the southeast corner of the intersection of Wolf Road and Addison Avenue. These basins are approximately 23 feet in depth and are hydraulically connected with an equalizer pipe. Because the elevation of the bottom of the basin is below the invert of the existing 60-inch trunk sewer, a pump station is required to dewater these basins.
- Regrade the existing eastern Wolf Road ditch to reestablish the historical drainage pattern and install a 36-inch storm sewer from 400 feet south of I-294 to the storage basins previously described. Additionally, the culvert under I-294 will be removed and replaced with a 36-inch RCP. Several options were investigated, including regrading the I-294 ditch to discharge to the Silver Creek via overland flow path or installing a storm sewer along this same route. However, based on discussions with the Village, it is believed that this ditch was once tributary to the existing 60-inch trunk sewer and therefore to reduce standing water in the ditch, this historical route towards the north will be reestablished and stored prior to discharging to the 60-inch RCP.
- Provide a backflow preventer at the ultimate trunk sewer outlet at the Silver Creek. By providing a backflow preventer, the existing 60-inch pipe will be able to convey flow to the Silver Creek and will prevent floodwaters from backing up the conveyance system into the industrial park.
- Install a rerouting pipe from the existing 48-inch RCP that flows under the UPRR south to Addison Avenue. This improvement also includes enlarging the existing storm sewer along Addison Avenue to a 48-inch RCP to convey the additional flow from west of the UPRR along Addison Avenue to the storage facility at the northwest corner of Addison Avenue and Wolf Road.
- Enlarge the existing storm sewer along Frontage Road from King Street on the south to the storage facility. Increasing the size of this storm sewer system will allow for runoff from the west and from south of I-294 to be conveyed to the storage facility while providing protection for the surrounding structures, including Castle Metals.
- Install a catch basin within the depressional area on the south side of the Maclean Power (shown on Figure 2-4 and Exhibit 1) building and convey this flow to the Addison Street storm sewer via a 36-inch RCP.

The proposed improvements for a 50-year level of protection are shown on Exhibit 3. By providing 82 acre-ft of additional storage volume (Appendix 2) within the watershed along with several storm sewer improvements, XP-SWMM modeling shows that the hydraulic grade

line would be lowered to a level that provides protection for the 50-year storm event. The 50-year HGL for the 60-inch RCP along the railroad spur is above the rim less than 0.1' along a small portion of the storm sewer line. Although the pipe is surcharged, according to survey, critical elevations of the existing buildings are above the HGL.

Industrial Area South of I-294

Improvements include conveyance improvements. A description of the improvements is provided below:

- Reestablish the east Wolf Road ditch so that flow is towards the north to allow for positive flow from the south side of I-294 to the north side of I-294, then the 60-inch trunk sewer. Install a 36-inch storm sewer from approximately 250 feet south of I-294 north to the proposed basin located at the southeast corner of the intersection of Wolf Road and Addison Avenue. This storm sewer will replace the existing elliptical 45-inch by 29-inch CMP under I-294.

The engineer's estimate of probable cost Alternative 1 is approximately $13.7 million, not including right-of-way costs or property acquisition, and is included in Appendix 3.

3.1.4 ALTERNATIVE 2: 100-YEAR LEVEL OF PROTECTION – 103 AC-FT OF STORAGE

Alternative 2 will provide a 100-year level of protection for the I-294 Industrial Park and required Tollway detention volumes. This is achieved by providing storage within EOWB corridor on the east side of the UPRR in addition to the improvements described in Alternative 1, with additional conveyance improvements described below.

East of UPRR

Improvements include new storm sewers, additional flood storage volume. A description of the improvements is provided below:

- Create approximately 21 acre-feet of flood storage within the proposed EOWB right-of-way. The northern basin is 4 feet deep and provides approximately 1.1 acre-feet of storage. Because additional storage is required on the west side of the UPRR, the normal and high water levels of this basin are set at higher elevations, and a 36-inch equalizer pipe will need to be installed and connect to the proposed Copenhagen Pond Expansion. This additional storage volume will not prevent overflow into Copenhagen Court, but will provide flood protection by lowering the 100-year elevation below the existing Clear Pack critical elevation.
- Replace the existing 36-inch RCP that conveys flow under the UPRR by jacking a 60-inch RCP.
- Connect a 60-inch RCP to the downstream end of the UPRR cross culvert and traverse south to the southern basin. The southern basin is 8 feet deep and provides

approximately 18.5 acre-feet at the detention design high water level. This basin will outlet to the King Street storm sewer system.

- Increase the existing King Street storm sewer from a 24-inch to a 48-inch RCP from the southern basin to the intersection of King Street and the Frontage Road.
- Install a 42-inch pipe along Runge Street from the railroad spur to Addison Avenue. This bypass pipe will intercept a portion of the flow within the existing 48-inch sewer along the railroad spur. This improvement also includes enlarging the existing storm sewer along Addison Avenue to a 54-inch RCP to convey the flow to the storage facility at the northwest corner of Addison Avenue and Wolf Road.
- Enlarge the existing storm sewer along Frontage Road from King Street on the south to the storage facility to a 60-inch RCP. Increasing the size of this storm sewer system will allow for runoff from the west and from south of I-294 to be conveyed to the storage facility while providing protection for the surrounding structures, including Castle Metals.

The proposed improvements for a 100-year level of protection are shown on Exhibit 7. By providing 103 acre-feet of additional storage volume within the watershed along with several storm sewer improvements, XP-SWMM modeling shows that the hydraulic grade line may be lowered to a level that provides protection for the 100-year storm event.

The engineer's estimate of probable cost for Alternative 2 is approximately $19.2 million, not including right-of-way costs or property acquisition, and is included in Appendix 3.

3.1.5 ALTERNATIVE 3: 50-YEAR LEVEL OF PROTECTION – 83 AC-FT OF STORAGE

Alternative 3 will provide a 50-year level of protection for I-294 Industrial Park and required Tollway detention volume. Alternative 3 includes the same storage improvements within the EOWB ROW as described in Alternative 2; however, the conveyance improvements and storage at the southeast corner of Wolf Road and Addison Avenue are different. The improvements are listed below.

<u>East of UPRR</u>

Improvements include new storm sewers, additional flood storage volume. A description of the improvements is provided below:

- Create 50 acre-feet of flood storage at the open parcels located at the northwest corner of the intersection of Wolf Road and Addison Avenue and the southeast corner of the intersection of Wolf Road and Addison Avenue. These basins are approximately 23 feet in depth and are hydraulically connected with an equalizer pipe. Because the elevation of the bottom of the basin is below the invert of the existing 60-inch trunk sewer, a pump station is required to dewater these basins. The intent is to convey

flood waters to the storage facilities and dewater the basins via a pump once the storm event is over and the 60-inch pipe has capacity.

The proposed improvements for a 50-year level of protection are shown on Exhibit 8. By providing 83 acre-feet of additional storage volume within the watershed along with several storm sewer improvements, XP-SWMM modeling shows that the hydraulic grade line may be lowered to a level that provides protection for the 50-year storm event.

The engineer's estimate of probable cost Alternative 3 is approximately $17.1 million, not including right-of-way costs or property acquisition, and is included in Appendix 3.

3.1.6 ALTERNATIVE 4: 100-YEAR LEVEL OF PROTECTION – 106 AC-FT OF STORAGE

Alternative 4 will provide a 100-year level of protection for the I-294 Industrial Park and required Tollway detention volume. Under Alternative 4, local stormwater runoff will not drain to the Tollway detention basin. This alternative is discussed in detail in the September 26, 2012 Technical Memorandum included in Appendix 5. This alternative includes the same storage improvements as described in Alternative 2, with the modifications described below. This is achieved by providing additional storage on the west and east sides of the UPRR in addition to conveyance improvements on the east side of the UPRR.

West of UPRR

Improvements include new storm sewers, additional flood storage volume. A description of the improvements is provided below:

- Create approximately 17 acre-feet of additional flood storage by expanding the Copenhagen Pond. This improvement includes expanding the existing pond to the north onto a parcel that is privately owned and follows the railroad spur and lowering the existing pond by 1 foot. Existing pump station modifications are anticipated. This additional storage volume provides flood protection for the 100-year storm event.

East of UPRR

Improvements include new storm sewers, additional flood storage volume. A description of the improvements is provided below:

- Connect a 60-inch RCP to the downstream end of the UPRR cross culvert and traverse east to the existing railroad spur.
- Increase the existing King Street storm sewer from a 24-inch to a 48-inch RCP from the southern basin to the intersection of King Street and the Frontage Road.
- Install a 60-inch pipe west of Acorn Avenue from the railroad spur to Addison Avenue.
- Install a 48-inch pipe along Runge Street from the railroad spur to Addison Avenue. This bypass pipe will intercept a portion of the flow to the existing 48-inch sewer along

the railroad spur. This improvement also includes enlarging the existing storm sewer along Addison Avenue to a 66-inch RCP to convey the flow to the storage facility at the northwest corner of Addison Avenue and Wolf Road.

- Enlarge the existing storm sewer along Frontage Road from King Street on the south to the storage facility to a 60-inch RCP. Increasing the size of this storm sewer system will allow for runoff from the west and from south of I-294 to be conveyed to the storage facility while providing protection for the surrounding structures, including Castle Metals.

The proposed improvements for a 100-year level of protection are shown on Exhibit 7A. By providing 106 acre-feet of additional storage volume within the watershed along with several storm sewer improvements, XP-SWMM modeling shows that the hydraulic grade line may be lowered to a level that provides protection for the 100-year storm event.

The engineer's estimate of probable cost for Alternative 4 is approximately $20.7 million, not including right-of-way costs or property acquisition, and is included in Appendix 3.

3.1.7 INTERIM CONDITIONS – WOLF ROAD DRAINAGE

In the interim, a temporary solution to the east Wolf Road drainage is required. The ISTHA has agreed to clean the culvert that drains northwardly under I-294 and to line the existing pipe. Additionally, the Wolf Road ditch on the north side of I-294 will need to be cleaned to reestablish drainage north towards the 60-inch along the railroad spur, if IDOT Wolf Road right-of-way permits. This task will require the coordination of the ISTHA, IDOT and the Village of Franklin Park, as each entity performs the maintenance on three separate components: the culvert under I-294, the Wolf Road Ditch, and the local storm sewer north of Addison Avenue along Wolf Road, respectively. The local storm sewer was mostly buried and therefore a complete ground survey between I-294 and the railroad spur is not available. If preparation of plan and profile of this task and cost estimate is desirable for the maintenance type of work, ground survey including drainage features must be performed.

CHAPTER 4 CONCLUSIONS AND RECOMMENDATIONS

Based on the detailed evaluation of improvements presented in the previous chapters, conclusions and recommendations to address existing flood conditions are provided below.

4.1 CONCLUSIONS

The improvement alternatives presented in the previous chapter will benefit areas that experience flooding problems as identified by the Village of Franklin Park and through the existing conditions XP-SWMM analysis, including the Wolf Road ditch. Four alternatives were evaluated: two to provide a 50-year level of protection and two to provide a 100-year level of

protection. This was demonstrated in the XP-SWMM computer modeling described in Chapter 2, EXISTING CONDITIONS ANALYSIS and Chapter 3, PROPOSED CONDITIONS ANALYSIS.

The EOWB project needs a suitable outlet from the Village to complement its drainage system. Without a drainage connection permission from the Village to use the undersized 60-inch storm sewer, the proposed EOWB project at this location will have no feasible drainage system. Since the Village needs significant drainage improvements and the Tollway needs a viable outlet in the Village, a joint project is proposed. This is discussed in the August 13, 2012 Technical Memorandum included in Appendix 5.

4.2 RECOMMENDATIONS

Recommended alternatives for the identified flood areas are discussed below and summarized in Tables 4-1 to 4-4. The final decision between Alternative 2 (4.2.2) and Alternative 4 (4.2.4) will be made during the design phase with input from ISTHA.

4.2.1 50-YEAR LEVEL OF PROTECTION (stand-alone project)

To achieve a 50-year level of protection for the I-294 Industrial Park, construction of the improvements discussed in Section 3.1.2 of this report is recommended. The engineer's estimate of probable cost is approximately $13.7 million, not including right-of-way or land acquisition costs. The construction cost of the pump station is estimated based on the type of pump station used in the Jack Williams Reservoir, which was recommended by the Village of Franklin Park.

4.2.2 100-YEAR LEVEL OF PROTECTION WITH REQUIRED TOLLWAY DETENTION VOLUME

To achieve a 100-year level of protection for the I-294 Industrial Park and provide detention volume required by Tollway, construction of the improvements discussed in Section 3.1.3 of this report is recommended. The engineer's estimate of probable cost is approximately $19.2 million, not including right-of-way or land acquisition costs.

4.2.3 50-YEAR LEVEL OF PROTECTION WITH REQUIRED TOLLWAY DETENTION VOLUME

To achieve a 50-year level of protection for the I-294 Industrial Park and provide detention volume required by the Tollway, construction of the improvements discussed in Section 3.1.4 of this report is recommended. This increases street flooding and reduces the level of protection for areas that have greater than a 50-year and less than a 100-year level of flood protection. The engineer's estimate of probable cost is approximately $17.1 million, not including right-of-way or land acquisition costs.

4.2.4 100-YEAR LEVEL OF PROTECTION WITH SEPARATE TOLLWAY DETENTION VOLUME

To achieve a 100-year level of protection for the I-294 Industrial Park and provide detention volume required by the Tollway, construction of the improvements discussed in Section 3.1.5

of this report is recommended. The engineer's estimate of probable cost is approximately $20.7 million, not including right-of-way or land acquisition costs.

4.2.5 SUMMARY OF RECOMMENDATIONS

Level of Protection	Recommended Project	Estimated Cost
50-Year (stand-alone project)	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe along Runge Street • 70 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 12 acre-feet expansion of Copenhagen Pond • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road	$13.7 million

Table 4-1 Alternative 1 Recommendation Summary

Level of Protection	Recommended Project	Estimated Cost
100-Year With Required Tollway Detention Volume	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe along Runge Street • 70 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 21 acre-feet within the EOWB ROW with a restrictor • 12 acre-feet expansion of Copenhagen Pond • Equalizer pipe between Copenhagen Pond and EOWB ROW • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road • New storm sewers along King Street • New storm sewer within the EOWB ROW	$19.2 million

Table 4-2 Alternative 2 Recommendation Summary

Level of Protection	Recommended Project	Estimated Cost
50-Year with required Tollway Detention Volume	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe along Runge Street • 50 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 21 acre-feet within the EOWB ROW with a restrictor • 12 acre-feet expansion of Copenhagen Pond • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road • New storm sewers along King Street • New storm sewer within the EOWB ROW	$17.1 million

Table 4-3 Alternative 3 Recommendation Summary

Level of Protection	Recommended Project	Estimated Cost
100-Year Separate Tollway Detention Volume	• New storm sewers along Addison Avenue to Wolf Road • Bypass pipe west of Acorn Avenue • Bypass pipe along Runge Street • 70 acre-feet at the intersection of Wolf Road and Addison Avenue • Pump station at Wolf Road and Addison Avenue • 18.5 acre-feet within the EOWB ROW with a restrictor • 17 acre-feet expansion of Copenhagen Pond • Modify existing pump station at Copenhagen Pond • Backflow preventer at Silver Creek • Install storm sewer in the east Wolf Road ROW • Replace existing culvert east of Wolf Road under I-294 • New storm sewers along Frontage Road • New storm sewers along King Street • New drainage system within the West Bypass ROW to the Tollway detention basin	$20.7 million

Table 4-4 Alternative 4 Recommendation Summary

CHAPTER 5 DATA COLLECTION

Data that was used in this study was collected from a variety of sources. Each data source is listed in Table 5-1 below, along with the data provided by each source:

Source	Data Provided
Village of Franklin Park	• Flood Inundation Map July 2010
Cook County	• 1' contour aerial topographic mapping
A.M. Castle Metals	• ALTA\ACSM Title Survey
Precision Steel Warehouse, Inc.	• Master Site Plan
Village of Franklin Park	• Sewer and Storm Drain Atlas
United States Geological Survey (USGS)	• Hydrologic Investigations Atlas (HA)
CBBEL	• Topographic survey • Numerous site visits

Table 5-1 Data Sources

5.1 ITEMS REVIEWED

5.1.1 DESIGN REPORTS

- "I-294 Industrial Park Stormwater Management Plan" prepared by Clark Dietz, Inc., dated July 2003.

5.1.2 PLAN SETS

- Village of Franklin Park Sewer and Storm Drain Atlas, dated November 1997.
- ALTA/ACSM Land Title Survey for Castle Metals prepared by Webster, McGrath & Ahlberg Ltd., dated January 21, 2003.
- Precision Steel Warehouse, Inc. Master Site Plan, undated.

5.1.3 MISCELLANEOUS

- Field investigation
- Photos
- CBBEL pick-up survey

LIST OF EXHIBITS (under separate cover)

1) Watershed Map
2) Existing Drainage Conditions
3) Proposed Drainage Conditions – Alternative 1
4) Proposed Frontage Road Storm Sewer – Alternative 1
5) Railroad Spur 60" Trunk Sewer – Alternative 1
6) Proposed Addison Avenue Storm Sewer – Alternative 1
7) Proposed Drainage Conditions – Alternative 2

7A) Proposed Drainage Conditions – Alternative 4

8) Proposed Drainage Conditions – Alternative 3
9) Existing Overflow Routes
10) Critical Duration Summary Locations

LIST OF APPENDICES

1) Survey Data
2) Proposed Conditions Stage-Storage Relationships
3) Cost Estimates
4) CD-ROM Containing XP-SWMM Files & Hydrologic Input Parameters
5) Correspondence
6) EOWB Detention Storage Calculations

Appendix 1
Survey Data

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

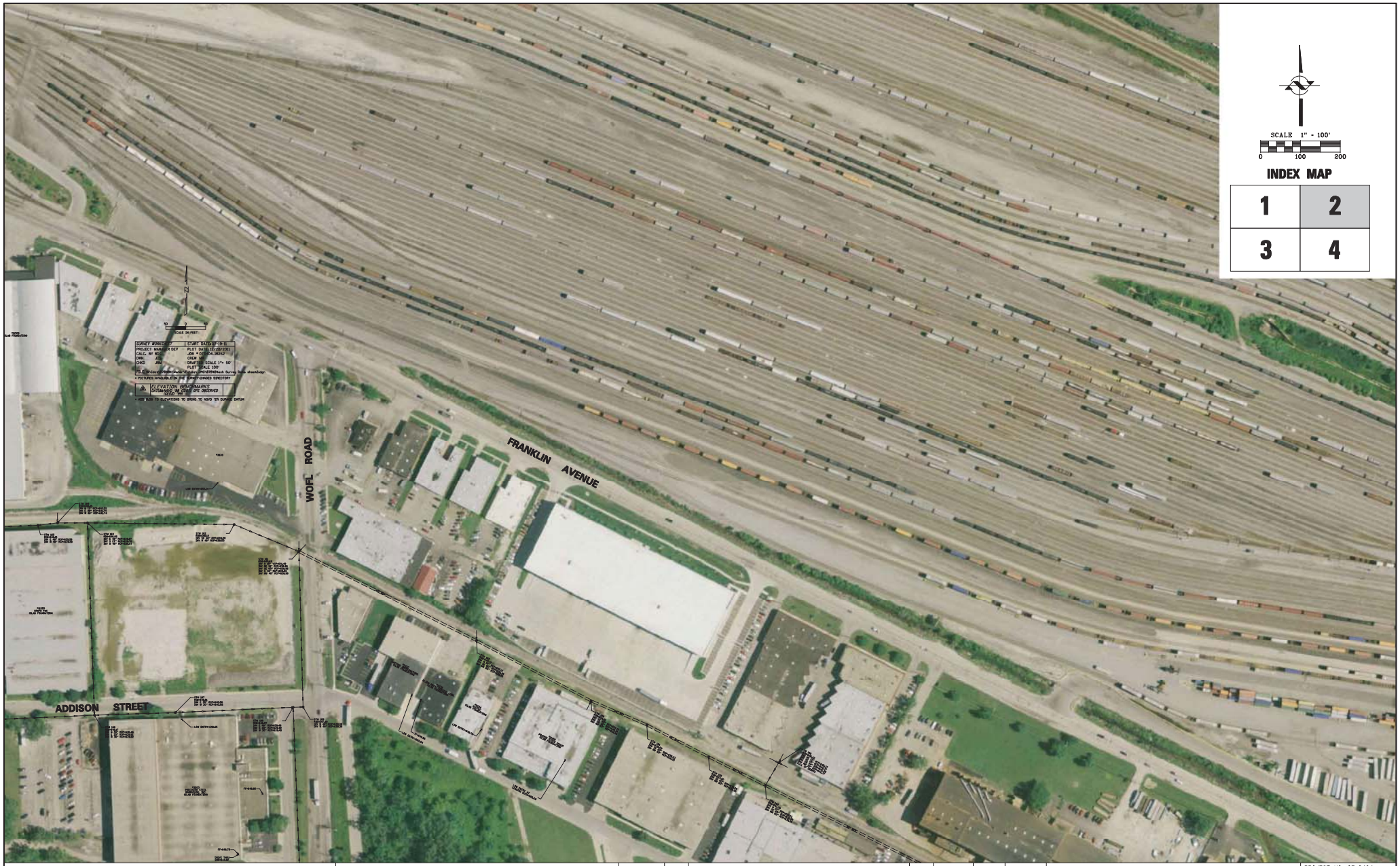
NO.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit JMG\070404exh Survey Data sheet1.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=100'	

TITLE:
ELGIN O'HARE – WEST BYPASS
SURVEY DATA

PROJECT NO. 07-0404
DATE: 12/22/2011
SHEET 1 OF 4
EXHIBIT



CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit JMG\070404exh Survey Data sheet2.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=100'	

TITLE:
ELGIN O'HARE – WEST BYPASS
SURVEY DATA

PROJECT NO. 07-0404
DATE: 12/22/2011
SHEET 2 OF 4
EXHIBIT

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
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CLIENT:
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

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DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=100'	

TITLE:
ELGIN O'HARE – WEST BYPASS
SURVEY DATA

PROJECT NO. 07-0404
DATE: 12/22/2011
SHEET 3 OF 4
EXHIBIT

SCALE 1" = 100'

0 100 200

INDEX MAP

1	2
3	4

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

N:\ldot\070404\Water\Exhibit JMG\070404exh Survey Data sheet4.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=100'	

TITLE:

ELGIN O'HARE – WEST BYPASS
SURVEY DATA

PROJECT NO. 07-0404
DATE: 12/22/2011
SHEET 4 OF 4

EXHIBIT

Appendix 2
Proposed Conditions Stage-Storage Relationships

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: Basin #1 - I-294 Industrial Park
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
624.00	NWL	42,325	0.972				0.00
				1.072	3.00	3.215	
627.00		51,035	1.172				3.21
				1.546	10.00	15.457	
637.00		83,624	1.920				18.67
				2.251	9.00	20.257	
646.00	HWL	112,466	2.582				38.93
				2.644	0.50	1.322	
646.50		117,874	2.706				40.25

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: Basin #2 (Alt. 1 & 2) - I-294 Industrial Park
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
624.00	NWL	24,358	0.559				0.00
				0.656	3.00	1.968	
627.00		32,778	0.752				1.97
				1.040	10.00	10.396	
637.00		57,792	1.327				12.36
				1.666	9.00	14.997	
646.00	HWL	87,374	2.006				27.36
				2.070	0.50	1.035	
646.50		92,921	2.133				28.39

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: Basin #2 (Alt. 3) - I-294 Industrial Park
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
624.00	NWL	4,524	0.104				0.00
				0.136	3.00	0.407	
627.00		7,296	0.167				0.41
				0.327	10.00	3.273	
637.00		21,216	0.487				3.68
				0.702	9.00	6.314	
646.00	HWL	39,900	0.916				9.99
				0.930	0.50	0.465	
646.50		41,109	0.944				10.46

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: Copenhagen Pond Expansion (Alts. 1-3)
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
647.00	NWL	69,696	1.600				0.00
				1.700	7.00	11.900	
654.00		78,408	1.800				11.90
				1.840	1.00	1.840	
655.00	HWL	81,893	1.880				13.74

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: Copenhagen Pond Expansion - Alt 4
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
646.00	NWL	67,954	1.560				0.00
				1.680	8.00	13.440	
654.00		78,408	1.800				13.44
				1.840	1.00	1.840	
655.00	HWL	81,893	1.880				15.28

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: Existing Copenhagen Pond Excavation - Alt 4
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
646.00	NWL	49,049	1.126				0.00
				1.207	1.00	1.207	
647.00		56,105	1.288				1.21
				1.369	1.00	1.369	
648.00		63,162	1.450				2.58
				1.510	1.00	1.510	
649.00		68,389	1.570				4.09
				1.618	1.00	1.618	
650.00		72,527	1.665				5.70
				1.714	1.00	1.714	
651.00		76,796	1.763				7.42
				1.818	1.00	1.818	
652.00		81,544	1.872				9.24
				1.944	1.00	1.944	
653.00		87,817	2.016				11.18
				2.103	1.00	2.103	
654.00		95,353	2.189				13.28
				2.305	1.00	2.305	
655.00	HWL	105,459	2.421				15.59

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: EOWB_N
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
651.00	NWL	2,570	0.059				0.00
				0.220	3.00	0.659	
654.00	HWL	16,553	0.380				0.66
				0.432	1.00	0.432	
655.00	HWL	21,039	0.483				1.09

Proposed Conditions
ELEVATION-STORAGE RELATIONSHIP

POND: EOWB_S
JOB NO. 07-0404
PROJECT: Elgin O'Hare - West Bypass
FILE: N:\Idot\070404\Water\Franklin Park DI\Spreadsheets\[Storage Vol - Proposed Basins_1-26.xlsx]Exist Copenhagen Expansion
DATE: 26-Oct-11

SIDE SLOPES: 3:1 (H:V)

ELEVATION (ft)		AREA (s.f.)	AREA (ac)	AVERAGE AREA (ac)	Δ ELEVATION (ft)	INCREMENTAL STORAGE (ac-ft)	CUMULATIVE STORAGE (ac-ft)
641.00	NWL	132,640	3.045				0.00
				3.365	5.50	18.505	
646.50	HWL	160,475	3.684				18.50
				3.836	2.50	9.589	
649.00	HWL	173,674	3.987				28.09

Appendix 3
Cost Estimates

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 1
ESTIMATED COSTS FOR 2013 CONSTRUCTION

Summary		Subtotal	
Copenhagen Pond Expansion		$1,116,720	
EOWB-S		$0	
NW Corner Addison Ave & Wolf Rd Pond		$5,065,400	
SE Corner Addison Ave & Wolf Rd Pond		$2,216,870	
East Wolf Rd		$337,500	
EOWB-N		$0	
Runge St Bypass		$104,625	
South MacLean Power		$315,000	
	Sub Total		$9,156,115
General Contingency[4]:	30%		$2,746,800
	Construction Cost Estimated Total		**$11,902,900**
Engineering:	15%		$1,785,400
		Project Total	**$13,688,300**

[1] Storm sewer cost includes average for manholes, laterals, inlets, backfill and removing ex stm sew.

[2] See Per Ft Roadway Repair Estimate for detailed costs

[3] Earth Excavation assumes no rock excavaion and includes excavation for Topsoil but not for a clay liner. Landscape Restoration: EC Blanket, Native Seeding, 6" Topsoil

[4] 30% General Contingency: 2% TC&P, 1% Layout, 1% Erosion Control, 6% Mobilization, 20% Other Pay Items. Some items not included in estimate: utility relocation, unsuitable/contaminated soil remediation, traffic signal work, clean out existing East Wolf Ditchline culvert under I-294, geotechnical work, site demolition, land acquisition costs, permits.

Roadway Repair Per Improved Foot

	Quantity	Unit Cost	Item Cost	Total Cost
Remove half (15') of Conc Rdwy	20 SQ FT	$3	$60	
15' wide 9" PC Conc Road	20 SQ FT	$6	$120	
16.5' wide Agg Base; 6"	23 SQ FT	$2	$46	
Remove CC&G	1.33 FT	$3	$4	
Pr CC&G	1.33 FT	$14	$19	
	Roadway Sub-Total Cost Per Improved Ft			**$249**

Assumptions

Pr Stm in same trench, exStm Sew, on one side of roadway.

Replace 33% of far side roadway due to CB remove/replace, laterals and service connections.

No work behind existing back of curb. 30' Wide exist roadway.

No Conflict With Water Mains, Street Lights, or Private Utilities.

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 1
ESTIMATED COSTS FOR 2013 CONSTRUCTION

Copenhagen Pond Expansion		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
				$0	
			Storm Sub-Total		$0
Pond Expansion					
	Earth Excavation[3]	35,690 CU YD	$30	$1,070,700	
	Landscape Restoration[3]	7,670 SQ YD	$6	$46,020	
					$1,116,720
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$1,116,720**

EOWB-S		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
				$0	
			Storm Sub-Total		$0
Pond Expansion					
				$0	
					$0
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$0**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 1

ESTIMATED COSTS FOR 2013 CONSTRUCTION

NW Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Addison Ave: Enlarge Ex 30" to a 60" Stm Sew Sys	1,800 FT	$300	$540,000	
Railroad Spur 60" Stm Sew Connection	150 FT	$300	$45,000	
Frontage Rd: Enlarge Ex 30" to a 48" Stm Sew Sys	300 FT	$250	$75,000	
Frontage Rd: Enlarge Ex 30" to a 60" Stm Sew Sys	1,200 FT	$300	$360,000	
60" Dia Backflow Preventer w/ Structure at Outfall to Silver Creek	1 EA	$55,000	$55,000	
		Storm Sub-Total		$1,075,000
Pond Expansion				
Earth Excavation[3]	83,360 CU YD	$30	$2,500,800	
Landscape Restoration[3]	20,700 SQ YD	$6	$124,200	
				$2,625,000
Pump Station	1 EA	$220,000		$220,000
Roadway Repairs[2]	4,600 FT	$249		$1,145,400
		Subtotal		**$5,065,400**

SE Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
36" Dia Equalizer Pipe	460 FT	$200	$92,000	
		Storm Sub-Total		$92,000
Pond Expansion				
Earth Excavation[3]	65,840 CU YD	$30	$1,975,200	
Landscape Restoration[3]	14,570 SQ YD	$6	$87,420	
				$2,062,620
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	250 FT	$249		$62,250
		Subtotal		**$2,216,870**

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 1
ESTIMATED COSTS FOR 2013 CONSTRUCTION

East Wolf Rd		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	36" Storm Sewer System	1,500 FT	$225	$337,500	
			Storm Sub-Total		$337,500
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$337,500**

EOWB-N		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
				$0	
			Storm Sub-Total		$0
Pond Expansion					
				$0	
					$0
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$0**

Runge St Bypass		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	24" Storm Sewer System	465 FT	$225	$104,625	
			Storm Sub-Total		$104,625
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$104,625**

South MacLean Power		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	36" Storm Sewer System	1,400 FT	$225	$315,000	
			Storm Sub-Total		$315,000
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$315,000**

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 2
ESTIMATED COSTS FOR 2013 CONSTRUCTION

Summary		Subtotal	
Copenhagen Pond Expansion		$1,181,970	
EOWB-S		$2,961,990	
NW Corner Addison Ave & Wolf Rd Pond		$5,595,800	
SE Corner Addison Ave & Wolf Rd Pond		$2,297,370	
East Wolf Rd		$337,500	
EOWB-N		$21,660	
Runge St Bypass		$111,600	
South MacLean Power		$315,000	
	Sub Total		$12,822,890
General Contingency[4]:	30%		$3,846,900
	Construction Cost Estimated Total		**$16,669,800**
Engineering:	15%		$2,500,500
		Project Total	**$19,170,300**

[1] Storm sewer cost includes average for manholes, laterals, inlets, backfill and removing ex stm sew.

[2] See Per Ft Roadway Repair Estimate for detailed costs

[3] Earth Excavation assumes no rock excavaion and includes excavation for Topsoil but not for a clay liner. Landscape Restoration: EC Blanket, Native Seeding, 6" Topsoil

[4] 30% General Contingency: 2% TC&P, 1% Layout, 1% Erosion Control, 6% Mobilization, 20% Other Pay Items. Some items not included in estimate: utility relocation, unsuitable/contaminated soil remediation, traffic signal work, clean out existing East Wolf Ditchline culvert under I-294, geotechnical work, site demolition, land acquisition costs, permits.

Roadway Repair Per Improved Foot

	Quantity	Unit Cost	Item Cost	Total Cost
Remove half (15') of Conc Rdwy	20 SQ FT	$3	$60	
15' wide 9" PC Conc Road	20 SQ FT	$6	$120	
16.5' wide Agg Base; 6"	23 SQ FT	$2	$46	
Remove CC&G	1.33 FT	$3	$4	
Pr CC&G	1.33 FT	$14	$19	
	Roadway Sub-Total Cost Per Improved Ft			**$249**

Assumptions

Pr Stm in same trench, exStm Sew, on one side of roadway.

Replace 33% of far side roadway due to CB remove/replace, laterals and service connections.

No work behind existing back of curb. 30' Wide exist roadway.

No Conflict With Water Mains, Street Lights, or Private Utilities.

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 2

ESTIMATED COSTS FOR 2013 CONSTRUCTION

Copenhagen Pond Expansion	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
36" Equalizer Pipe under Railroad	290 FT	$225	$65,250	
		Storm Sub-Total		$65,250
Pond Expansion				
Earth Excavation[3]	35,690 CU YD	$30	$1,070,700	
Landscape Restoration[3]	7,670 SQ YD	$6	$46,020	
				$1,116,720
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$1,181,970**

EOWB-S	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
60" Proposed Storm Sewer under Railroad	214 FT	$300	$64,200	
60" Conveyance Storm Sewer to Basin EOWB-S	1,830 FT	$300	$549,000	
12" Outlet Pipe on Basin EOWB-S	15 FT	$150	$2,250	
		Storm Sub-Total		$615,450
Pond Expansion				
Earth Excavation[3]	73,830 CU YD	$30	$2,214,900	
Landscape Restoration[3]	21,940 SQ YD	$6	$131,640	
				$2,346,540
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$2,961,990**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 2

ESTIMATED COSTS FOR 2013 CONSTRUCTION

NW Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Addison Ave: 48" Storm Sewer System	1,800 FT	$260	$468,000	
King Street: 48" Storm Sewer System	2,340 FT	$260	$608,400	
Railroad Spur 60" Stm Sewer Connection	100 FT	$300	$30,000	
Frontage Rd: 60" Storm Sewer System	1,480 FT	$300	$444,000	
60" Dia Backflow Preventer w/ Structure at Outfall to Silver Creek	1 EA	$55,000	$55,000	
		Storm Sub-Total		$1,605,400
Pond Expansion				
Earth Excavation[3]	83,360 CU YD	$30	$2,500,800	
Landscape Restoration[3]	20,700 SQ YD	$6	$124,200	
				$2,625,000
Pump Station	1 EA	$220,000		$220,000
Roadway Repairs[2]	4,600 FT	$249		$1,145,400
		Subtotal		**$5,595,800**

SE Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Basin 1 and 2 - 72" Dia Equalizer Pipe	460 FT	$375	$172,500	
		Storm Sub-Total		$172,500
Pond Expansion				
Earth Excavation[3]	65,840 CU YD	$30	$1,975,200	
Landscape Restoration[3]	14,570 SQ YD	$6	$87,420	
				$2,062,620
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	250 FT	$249		$62,250
		Subtotal		**$2,297,370**

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 2
ESTIMATED COSTS FOR 2013 CONSTRUCTION

East Wolf Rd		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	East Wolf Rd: 36" Storm Sewer System	1,500 FT	$225	$337,500	
			Storm Sub-Total		$337,500
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$337,500**

EOWB-N		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
				$0	
			Storm Sub-Total		$0
Pond Expansion					
	Earth Excavation[3]	470 CU YD	$30	$14,100	
	Landscape Restoration[3]	1,260 SQ YD	$6	$7,560	
					$21,660
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$21,660**

Runge St Bypass		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	42" Storm Sewer System	465 FT	$240	$111,600	
			Storm Sub-Total		$111,600
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$111,600**

South MacLean Power		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	36" Storm Sewer System	1,400 FT	$225	$315,000	
			Storm Sub-Total		$315,000
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$315,000**

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 3
ESTIMATED COSTS FOR 2013 CONSTRUCTION

Summary		Subtotal	
Copenhagen Pond Expansion		$1,116,720	
EOWB-S		$2,897,790	
NW Corner Addison Ave & Wolf Rd Pond		$5,556,975	
SE Corner Addison Ave & Wolf Rd Pond		$981,990	
East Wolf Rd		$337,500	
EOWB-N		$126,660	
Runge St Bypass		$104,625	
South MacLean Power		$315,000	
	Sub Total		$11,437,260
General Contingency[4]:	30%		$3,431,200
	Construction Cost Estimated Total		**$14,868,500**
Engineering:	15%		$2,230,300
		Project Total	**$17,098,800**

[1] Storm sewer cost includes average for manholes, laterals, inlets, backfill and removing ex stm sew.

[2] See Per Ft Roadway Repair Estimate for detailed costs

[3] Earth Excavation assumes no rock excavaion and includes excavation for Topsoil but not for a clay liner. Landscape Restoration: EC Blanket, Native Seeding, 6" Topsoil

[4] 30% General Contingency: 2% TC&P, 1% Layout, 1% Erosion Control, 6% Mobilization, 20% Other Pay Items. Some items not included in estimate: utility relocation, unsuitable/contaminated soil remediation, traffic signal work, clean out existing East Wolf Ditchline culvert under I-294, geotechnical work, site demolition, land acquisition costs, permits.

Roadway Repair Per Improved Foot

	Quantity	Unit Cost	Item Cost	Total Cost
Remove half (15') of Conc Rdwy	20 SQ FT	$3	$60	
15' wide 9" PC Conc Road	20 SQ FT	$6	$120	
16.5' wide Agg Base; 6"	23 SQ FT	$2	$46	
Remove CC&G	1.33 FT	$3	$4	
Pr CC&G	1.33 FT	$14	$19	
	Roadway Sub-Total Cost Per Improved Ft			**$249**

Assumptions

Pr Stm in same trench, exStm Sew, on one side of roadway.

Replace 33% of far side roadway due to CB remove/replace, laterals and service connections.

No work behind existing back of curb. 30' Wide exist roadway.

No Conflict With Water Mains, Street Lights, or Private Utilities.

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 3

ESTIMATED COSTS FOR 2013 CONSTRUCTION

Copenhagen Pond Expansion	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
			$0	
		Storm Sub-Total		$0
Pond Expansion				
Earth Excavation[3]	35,690 CU YD	$30	$1,070,700	
Landscape Restoration[3]	7,670 SQ YD	$6	$46,020	
				$1,116,720
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$1,116,720**

EOWB-S	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
60" Conveyance Storm Sewer to Basin EOWB-S	1,830 FT	$300	$549,000	
12" Outlet Pipe on Basin EOWB-S	15 FT	$150	$2,250	
		Storm Sub-Total		$551,250
Pond Expansion				
Earth Excavation[3]	73,830 CU YD	$30	$2,214,900	
Landscape Restoration[3]	21,940 SQ YD	$6	$131,640	
				$2,346,540
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$2,897,790**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 3

ESTIMATED COSTS FOR 2013 CONSTRUCTION

NW Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Addison Ave: 48" Storm Sewer System	1,800 FT	$260	$468,000	
King Street: 48" Storm Sewer System	2,340 FT	$260	$608,400	
Railroad Spur 60" Stm Sewer Connection	100 FT	$300	$30,000	
Frontage Rd: 48" Storm Sewer System	288 FT	$250	$72,000	
Frontage Rd: 54" Storm Sewer System	977 FT	$275	$268,675	
Frontage Rd: 60" Storm Sewer System	215 FT	$300	$64,500	
60" Dia Backflow Preventer w/ Structure at Outfall to Silver Creek	1 EA	$55,000	$55,000	
		Storm Sub-Total		$1,566,575
Pond Expansion				
Earth Excavation[3]	83,360 CU YD	$30	$2,500,800	
Landscape Restoration[3]	20,700 SQ YD	$6	$124,200	
				$2,625,000
Pump Station	1 EA	$220,000		$220,000
Roadway Repairs[2]	4,600 FT	$249		$1,145,400
		Subtotal		**$5,556,975**

SE Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Basin 1 and 2 - 72" Dia Equalizer Pipe	460 FT	$375	$172,500	
		Storm Sub-Total		$172,500
Pond Expansion				
Earth Excavation[3]	23,970 CU YD	$30	$719,100	
Landscape Restoration[3]	4,690 SQ YD	$6	$28,140	
				$747,240
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	250 FT	$249		$62,250
		Subtotal		**$981,990**

East Wolf Rd	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
East Wolf Rd: 36" Storm Sewer System	1,500 FT	$225	$337,500	
		Storm Sub-Total		$337,500
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$337,500**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 3

ESTIMATED COSTS FOR 2013 CONSTRUCTION

EOWB-N		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	12" Storm Sewer System	700 FT	$150	$105,000	
			Storm Sub-Total		$105,000
Pond Expansion					
	Earth Excavation[3]	470 CU YD	$30	$14,100	
	Landscape Restoration[3]	1,260 SQ YD	$6	$7,560	
					$21,660
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$126,660**

Runge St Bypass		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	24" Storm Sewer System	465 FT	$225	$104,625	
			Storm Sub-Total		$104,625
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$104,625**

South MacLean Power		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	36" Storm Sewer System	1,400 FT	$225	$315,000	
			Storm Sub-Total		$315,000
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$315,000**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

Summary		Subtotal	
Copenhagen Pond Expansion		$1,444,620	
East of UPRR		$2,897,790	
NW Corner Addison Ave & Wolf Rd Pond		$6,526,400	
SE Corner Addison Ave & Wolf Rd Pond		$2,297,370	
East Wolf Rd		$337,500	
South MacLean Power		$315,000	
	Sub Total		$13,818,680
General Contingency[4]:	30%		$4,145,600
	Construction Cost Estimated Total		**$17,964,300**
Engineering:	15%		$2,694,600
		Project Total	**$20,658,900**

[1] Storm sewer cost includes average for manholes, laterals, inlets, backfill and removing ex stm sew.

[2] See Per Ft Roadway Repair Estimate for detailed costs

[3] Earth Excavation assumes no rock excavaion and includes excavation for Topsoil but not for a clay liner. Landscape Restoration: EC Blanket, Native Seeding, 6" Topsoil

[4] 30% General Contingency: 2% TC&P, 1% Layout, 1% Erosion Control, 6% Mobilization, 20% Other Pay Items. Some items not included in estimate: utility relocation, unsuitable/contaminated soil remediation, traffic signal work, clean out existing East Wolf Ditchline culvert under I-294, geotechnical work, site demolition, land acquisition costs, permits.

[5] Pump Control Modification Only; Assumes that the existing wet well and existing pumps can be reused.

Roadway Repair Per Improved Foot

	Quantity	Unit Cost	Item Cost	Total Cost
Remove half (15') of Conc Rdwy	20 SQ FT	$3	$60	
15' wide 9" PC Conc Road	20 SQ FT	$6	$120	
16.5' wide Agg Base; 6"	23 SQ FT	$2	$46	
Remove CC&G	1.33 FT	$3	$4	
Pr CC&G	1.33 FT	$14	$19	
	Roadway Sub-Total Cost Per Improved Ft			**$249**

Assumptions

Pr Stm in same trench, exStm Sew, on one side of roadway.

Replace 33% of far side roadway due to CB remove/replace, laterals and service connections.

No work behind existing back of curb. 30' Wide exist roadway.

No Conflict With Water Mains, Street Lights, or Private Utilities.

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

Copenhagen Pond Expansion		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
			Storm Sub-Total		$0
Pond Expansion					
	Earth Excavation[3]	44,120 CU YD	$30	$1,323,600	
	Landscape Restoration[3]	7,670 SQ YD	$6	$46,020	
					$1,369,620
Pump Control Modification[5]		1 EA	$75,000		$75,000
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$1,444,620**

East of UPRR		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	60" Conveyance Storm Sewer to Basin EOWB-S	1,830 FT	$300	$549,000	
	12" Outlet Pipe on Basin EOWB-S	15 FT	$150	$2,250	
			Storm Sub-Total		$551,250
Pond Expansion					
	Earth Excavation[3]	73,830 CU YD	$30	$2,214,900	
	Landscape Restoration[3]	21,940 SQ YD	$6	$131,640	
					$2,346,540
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$2,897,790**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

NW Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
60" Conveyance Storm Sewer to Railroad Spur	378 FT	$300	$113,400	
West of Acorn Lane: 60" Storm Sewer	465 FT	$300	$139,500	
Runge Street: 48" Storm Sewer	465 FT	$260	$120,900	
Addison Ave: 66" Storm Sewer System	1,800 FT	$350	$630,000	
King Street: 48" Storm Sewer System	2,340 FT	$260	$608,400	
Railroad Spur 60" Stm Sewer Connection	100 FT	$300	$30,000	
Frontage Rd: 60" Storm Sewer System	1,480 FT	$300	$444,000	
60" Proposed Storm Sewer under Railroad	214 FT	$300	$64,200	
Frontage Rd: 60" Storm Sewer System	1,480 FT	$300	$444,000	
60" Dia Backflow Preventer w/ Structure at Outfall to Silver Creek	1 EA	$55,000	$55,000	
		Storm Sub-Total		$2,536,000
Pond Expansion				
Earth Excavation[3]	83,360 CU YD	$30	$2,500,800	
Landscape Restoration[3]	20,700 SQ YD	$6	$124,200	
				$2,625,000
Pump Station	1 EA	$220,000		$220,000
Roadway Repairs[2]	4,600 FT	$249		$1,145,400
		Subtotal		**$6,526,400**

SE Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Basin 1 and 2 - 72" Dia Equalizer Pipe	460 FT	$375	$172,500	
		Storm Sub-Total		$172,500
Pond Expansion				
Earth Excavation[3]	65,840 CU YD	$30	$1,975,200	
Landscape Restoration[3]	14,570 SQ YD	$6	$87,420	
				$2,062,620
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	250 FT	$249		$62,250
		Subtotal		**$2,297,370**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

East Wolf Rd	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
East Wolf Rd: 36" Storm Sewer System	1,500 FT	$225	$337,500	
		Storm Sub-Total		$337,500
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$337,500**

South MacLean Power	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
36" Storm Sewer System	1,400 FT	$225	$315,000	
		Storm Sub-Total		$315,000
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$315,000**

Appendix 4
CD-ROM Containing XP-SWMM Files & Hydrologic Input Parameters

Appendix 5
Correspondence

- Technical Memorandum dated September 26, 2012
- Technical Memorandum dated August 13, 2012
- Minutes from February 15, 2012 Elgin O'Hare – West Bypass coordination meeting
- Minutes from September 22, 2011 Elgin O'Hare – West Bypass coordination meeting
- Minutes from September 12, 2011 Elgin O'Hare – West Bypass coordination meeting
- Minutes from December 2, 2010 Elgin-O'Hare – West Bypass coordination meeting
- Technical Memorandum "I-294 Industrial Park Drainage Investigation" prepared by CBBEL, dated November 16, 2010.
- Illinois Department of Transportation Memorandum, dated September 8, 2010.

TECHNICAL MEMORANDUM

Prepared by: Chinaling Wang, PE - CBBEL
Jeana Gowin, PE, CFM – CBBEL

Subject: Elgin O'Hare-West Bypass
I-294 Industrial Park in Franklin Park

Date: September 26, 2012

A stormwater analysis of the existing industrial area was performed to establish causes of flooding and to recommend remedial measures, since the south West Bypass area will outlet to the drainage system passing through the industrial area which currently experiences frequent flooding. The outlet of the entire industrial park is an existing 60-inch RCP along the railroad spur, which outflows directly into the Silver Creek.

As part of the proposed roadway improvements, two basins are proposed to provide approximately 20 acre-feet of detention storage to meet the Illinois Tollway drainage design criteria. To reduce flooding within the industrial area, an additional 82 acre-feet of storage volume are recommended to provide a 100-year flood protection and allow a proper drainage connection for the EOWB project. Exhibit 7 is a schematic showing the storm sewers, detention ponds and a pump station required to continue using the 60-inch RCP for meeting the Tollway drainage design criteria and improving the industrial park drainage that was presented in the August 2012 Drainage Investigation.

Based on discussions with the ISTHA, it is the Tollway's practice to not utilize proposed detention facilities as flood control facilities and to not drain the local stormwater runoff into the Tollway drainage facility. Therefore, an analysis was performed to determine what modifications to the proposed alternative are required to maintain a 100-year level of protection within the industrial park.

The watershed and thus the study area is divided into two areas: west of the UPRR and east of the UPRR.

August 2012 Drainage Investigation – Alternative 2 (Exhibit 7)

West of the UPRR

As part of the Drainage Investigation, the approximate 1 acre-foot detention basin within the proposed West Bypass right-of-way on the east side of the UPRR was intended to be directly connected to the west side of the UPRR via an equalizer pipe to the expanded Copenhagen Pond. By utilizing this additional storage, in addition to the Copenhagen Pond expansion, the west side of the UPRR was provided with a 100-year level of protection. Disconnecting this additional storage only provides a 50-year level of protection.

East of the UPRR

There is also a 19 acre-feet basin proposed on the east side of the UPRR proposed for Tollway detention. The storm sewer from the east side of the UPRR was intended to be re-routed south to the detention basin and then outlet to the King Street storm sewer. Utilizing this additional storage, in addition to the other flood control facilities and conveyance improvements east of the UPRR provides a 100-year level of protection. Not utilizing the Tollway's detention storage only provides a 50-year level of protection east of the UPRR.

The estimated cost for construction of Alternative 2 is $19.2 million.

September 2012 Revision – Alternative 4 (Exhibit 7A)

West of the UPRR

To provide a 100-year level of protection, additional storage can be provided within the footprint of the existing Copenhagen Pond and the proposed Copenhagen Pond expansion. Lowering the normal water level of these basins will also require modifications to the existing pump station that serves as the existing outlet. Modifications to the August 2012 Drainage Investigation include:

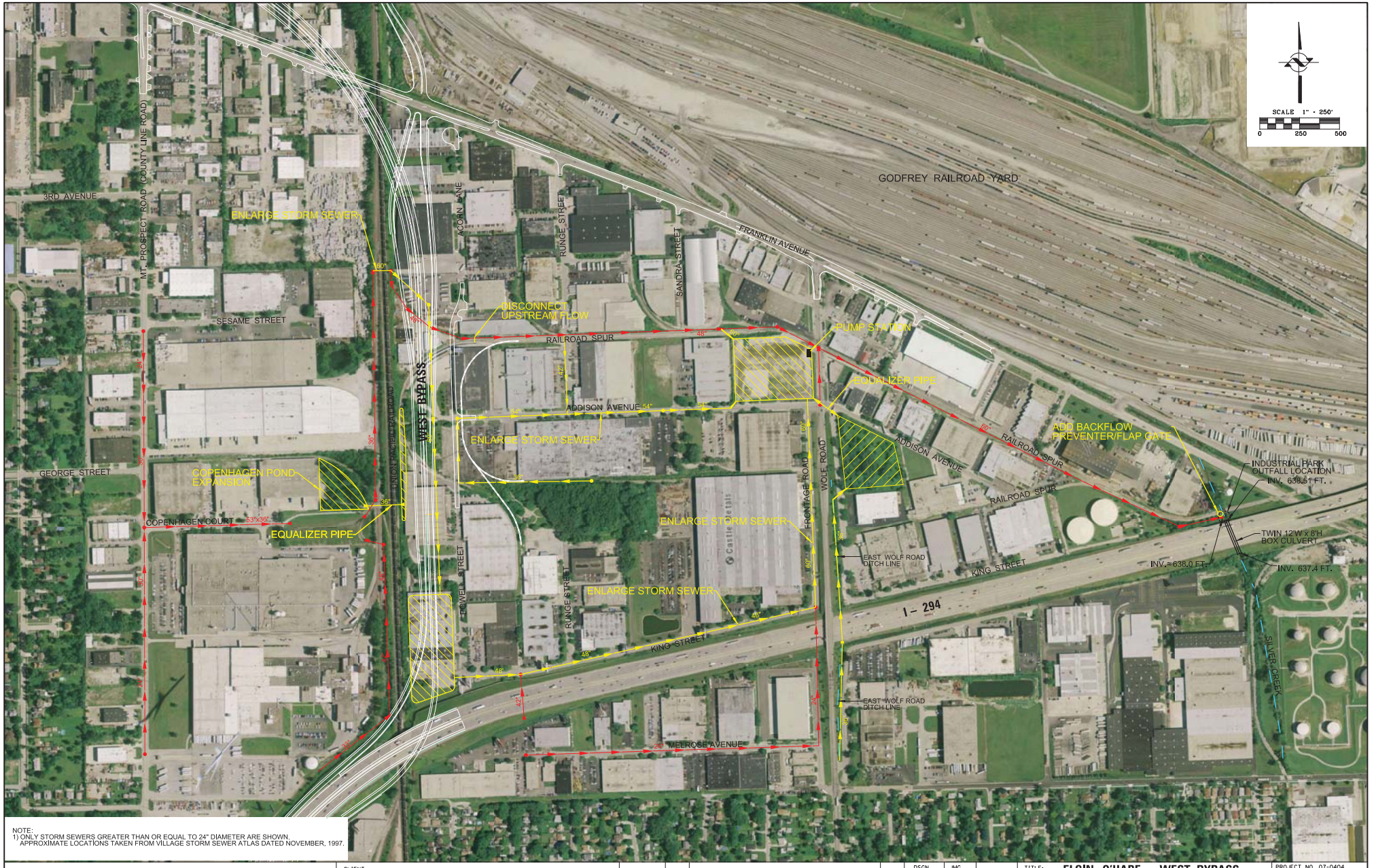
- Lower the normal water level of existing Copenhagen Pond by 1 foot;
- Modify the existing pump station configuration to reflect lower normal water level.

East of the UPRR

To provide a 100-year level of protection, additional conveyance improvements are required. Modifications to the August 2012 Drainage Investigation include:

- Remove the 48-inch storm sewer between UPRR and Acorn Lane;
- Eliminate the 1 acre-foot basin within the Tollway right-of-way;
- Eliminate the 36-inch equalizer pipe;
- Eliminate the proposed north-south 60-inch storm sewer;
- Add a 60-inch RCP bypass pipe west of Acorn Lane from the existing railroad spur to Addison Avenue;
- Increase the proposed bypass pipe along Runge Street to a 48-inch RCP from the existing railroad spur to Addison Avenue;
- Increase the proposed Addison Avenue storm sewer from a 54-inch to a 66-inch RCP;
- Maintain all other Alternative 2 recommendations.

The estimated cost for construction of Alternative 4 is $20.7 million.



NOTE:
1) ONLY STORM SEWERS GREATER THAN OR EQUAL TO 24" DIAMETER ARE SHOWN. APPROXIMATE LOCATIONS TAKEN FROM VILLAGE STORM SEWER ATLAS DATED NOVEMBER, 1997.

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
ILLINOIS DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit JMG\070404exh7 Franklin Park Proposed Conditions Alt 2.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=250'	

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
PROPOSED DRAINAGE CONDITIONS
ALTERNATIVE 2

PROJECT NO.	07-0404
DATE:	9/28/2012
SHEET	OF

EXHIBIT 7

NOTE:
1) ONLY STORM SEWERS GREATER THAN OR EQUAL TO 24" DIAMETER ARE SHOWN. APPROXIMATE LOCATIONS TAKEN FROM VILLAGE STORM SEWER ATLAS DATED NOVEMBER, 1997.

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
ILLINOIS DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit JMG\070404exh7 Franklin Park Proposed Conditions Alt 2_2.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=250'	

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
PROPOSED DRAINAGE CONDITIONS
ALTERNATIVE 4

PROJECT NO.	07-0404
DATE:	9/28/2012
SHEET	OF

EXHIBIT 7A

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 2
ESTIMATED COSTS FOR 2013 CONSTRUCTION

Summary		Subtotal	
Copenhagen Pond Expansion		$1,181,970	
EOWB-S		$2,961,990	
NW Corner Addison Ave & Wolf Rd Pond		$5,595,800	
SE Corner Addison Ave & Wolf Rd Pond		$2,297,370	
East Wolf Rd		$337,500	
EOWB-N		$21,660	
Runge St Bypass		$111,600	
South MacLean Power		$315,000	
	Sub Total		$12,822,890
General Contingency[4]:	30%		$3,846,900
	Construction Cost Estimated Total		**$16,669,800**
Engineering:	15%		$2,500,500
		Project Total	**$19,170,300**

[1] Storm sewer cost includes average for manholes, laterals, inlets, backfill and removing ex stm sew.

[2] See Per Ft Roadway Repair Estimate for detailed costs

[3] Earth Excavation assumes no rock excavaion and includes excavation for Topsoil but not for a clay liner. Landscape Restoration: EC Blanket, Native Seeding, 6" Topsoil

[4] 30% General Contingency: 2% TC&P, 1% Layout, 1% Erosion Control, 6% Mobilization, 20% Other Pay Items. Some items not included in estimate: utility relocation, unsuitable/contaminated soil remediation, traffic signal work, clean out existing East Wolf Ditchline culvert under I-294, geotechnical work, site demolition, land acquisition costs, permits.

Roadway Repair Per Improved Foot

	Quantity	Unit Cost	Item Cost	Total Cost
Remove half (15') of Conc Rdwy	20 SQ FT	$3	$60	
15' wide 9" PC Conc Road	20 SQ FT	$6	$120	
16.5' wide Agg Base; 6"	23 SQ FT	$2	$46	
Remove CC&G	1.33 FT	$3	$4	
Pr CC&G	1.33 FT	$14	$19	
	Roadway Sub-Total Cost Per Improved Ft			**$249**

Assumptions

Pr Stm in same trench, exStm Sew, on one side of roadway.

Replace 33% of far side roadway due to CB remove/replace, laterals and service connections.

No work behind existing back of curb. 30' Wide exist roadway.

No Conflict With Water Mains, Street Lights, or Private Utilities.

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 2

ESTIMATED COSTS FOR 2013 CONSTRUCTION

Copenhagen Pond Expansion	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
36" Equalizer Pipe under Railroad	290 FT	$225	$65,250	
		Storm Sub-Total		$65,250
Pond Expansion				
Earth Excavation[3]	35,690 CU YD	$30	$1,070,700	
Landscape Restoration[3]	7,670 SQ YD	$6	$46,020	
				$1,116,720
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$1,181,970**

EOWB-S	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
60" Proposed Storm Sewer under Railroad	214 FT	$300	$64,200	
60" Conveyance Storm Sewer to Basin EOWB-S	1,830 FT	$300	$549,000	
12" Outlet Pipe on Basin EOWB-S	15 FT	$150	$2,250	
		Storm Sub-Total		$615,450
Pond Expansion				
Earth Excavation[3]	73,830 CU YD	$30	$2,214,900	
Landscape Restoration[3]	21,940 SQ YD	$6	$131,640	
				$2,346,540
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$2,961,990**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 2

ESTIMATED COSTS FOR 2013 CONSTRUCTION

NW Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Addison Ave: 48" Storm Sewer System	1,800 FT	$260	$468,000	
King Street: 48" Storm Sewer System	2,340 FT	$260	$608,400	
Railroad Spur 60" Stm Sewer Connection	100 FT	$300	$30,000	
Frontage Rd: 60" Storm Sewer System	1,480 FT	$300	$444,000	
60" Dia Backflow Preventer w/ Structure at Outfall to Silver Creek	1 EA	$55,000	$55,000	
		Storm Sub-Total		$1,605,400
Pond Expansion				
Earth Excavation[3]	83,360 CU YD	$30	$2,500,800	
Landscape Restoration[3]	20,700 SQ YD	$6	$124,200	
				$2,625,000
Pump Station	1 EA	$220,000		$220,000
Roadway Repairs[2]	4,600 FT	$249		$1,145,400
		Subtotal		**$5,595,800**

SE Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Basin 1 and 2 - 72" Dia Equalizer Pipe	460 FT	$375	$172,500	
		Storm Sub-Total		$172,500
Pond Expansion				
Earth Excavation[3]	65,840 CU YD	$30	$1,975,200	
Landscape Restoration[3]	14,570 SQ YD	$6	$87,420	
				$2,062,620
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	250 FT	$249		$62,250
		Subtotal		**$2,297,370**

Elgin-O'Hare - West Bypass
I-294 Industrial Park Detention Basin Systems - Alternative 2
ESTIMATED COSTS FOR 2013 CONSTRUCTION

East Wolf Rd		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	East Wolf Rd: 36" Storm Sewer System	1,500 FT	$225	$337,500	
			Storm Sub-Total		$337,500
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$337,500**

EOWB-N		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
				$0	
			Storm Sub-Total		$0
Pond Expansion					
	Earth Excavation[3]	470 CU YD	$30	$14,100	
	Landscape Restoration[3]	1,260 SQ YD	$6	$7,560	
					$21,660
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$21,660**

Runge St Bypass		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	42" Storm Sewer System	465 FT	$240	$111,600	
			Storm Sub-Total		$111,600
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$111,600**

South MacLean Power		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	36" Storm Sewer System	1,400 FT	$225	$315,000	
			Storm Sub-Total		$315,000
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$315,000**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

Summary		Subtotal	
Copenhagen Pond Expansion		$1,444,620	
East of UPRR		$2,897,790	
NW Corner Addison Ave & Wolf Rd Pond		$6,526,400	
SE Corner Addison Ave & Wolf Rd Pond		$2,297,370	
East Wolf Rd		$337,500	
South MacLean Power		$315,000	
	Sub Total		$13,818,680
General Contingency[4]:	30%		$4,145,600
	Construction Cost Estimated Total		**$17,964,300**
Engineering:	15%		$2,694,600
		Project Total	**$20,658,900**

[1] Storm sewer cost includes average for manholes, laterals, inlets, backfill and removing ex stm sew.

[2] See Per Ft Roadway Repair Estimate for detailed costs

[3] Earth Excavation assumes no rock excavaion and includes excavation for Topsoil but not for a clay liner. Landscape Restoration: EC Blanket, Native Seeding, 6" Topsoil

[4] 30% General Contingency: 2% TC&P, 1% Layout, 1% Erosion Control, 6% Mobilization, 20% Other Pay Items. Some items not included in estimate: utility relocation, unsuitable/contaminated soil remediation, traffic signal work, clean out existing East Wolf Ditchline culvert under I-294, geotechnical work, site demolition, land acquisition costs, permits.

[5] Pump Control Modification Only; Assumes that the existing wet well and existing pumps can be reused.

Roadway Repair Per Improved Foot

	Quantity	Unit Cost	Item Cost	Total Cost
Remove half (15') of Conc Rdwy	20 SQ FT	$3	$60	
15' wide 9" PC Conc Road	20 SQ FT	$6	$120	
16.5' wide Agg Base; 6"	23 SQ FT	$2	$46	
Remove CC&G	1.33 FT	$3	$4	
Pr CC&G	1.33 FT	$14	$19	
	Roadway Sub-Total Cost Per Improved Ft			**$249**

Assumptions

- Pr Stm in same trench, exStm Sew, on one side of roadway.
- Replace 33% of far side roadway due to CB remove/replace, laterals and service connections.
- No work behind existing back of curb. 30' Wide exist roadway.
- No Conflict With Water Mains, Street Lights, or Private Utilities.

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

Copenhagen Pond Expansion		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
			Storm Sub-Total		$0
Pond Expansion					
	Earth Excavation[3]	44,120 CU YD	$30	$1,323,600	
	Landscape Restoration[3]	7,670 SQ YD	$6	$46,020	
					$1,369,620
Pump Control Modification[5]		1 EA	$75,000		$75,000
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$1,444,620**

East of UPRR		Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]					
	60" Conveyance Storm Sewer to Basin EOWB-S	1,830 FT	$300	$549,000	
	12" Outlet Pipe on Basin EOWB-S	15 FT	$150	$2,250	
			Storm Sub-Total		$551,250
Pond Expansion					
	Earth Excavation[3]	73,830 CU YD	$30	$2,214,900	
	Landscape Restoration[3]	21,940 SQ YD	$6	$131,640	
					$2,346,540
Pump Station		0 EA	$0		$0
Roadway Repairs[2]		0 FT	$249		$0
			Subtotal		**$2,897,790**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

NW Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
60" Conveyance Storm Sewer to Railroad Spur	378 FT	$300	$113,400	
West of Acorn Lane: 60" Storm Sewer	465 FT	$300	$139,500	
Runge Street: 48" Storm Sewer	465 FT	$260	$120,900	
Addison Ave: 66" Storm Sewer System	1,800 FT	$350	$630,000	
King Street: 48" Storm Sewer System	2,340 FT	$260	$608,400	
Railroad Spur 60" Stm Sewer Connection	100 FT	$300	$30,000	
Frontage Rd: 60" Storm Sewer System	1,480 FT	$300	$444,000	
60" Proposed Storm Sewer under Railroad	214 FT	$300	$64,200	
Frontage Rd: 60" Storm Sewer System	1,480 FT	$300	$444,000	
60" Dia Backflow Preventer w/ Structure at Outfall to Silver Creek	1 EA	$55,000	$55,000	
		Storm Sub-Total		$2,536,000
Pond Expansion				
Earth Excavation[3]	83,360 CU YD	$30	$2,500,800	
Landscape Restoration[3]	20,700 SQ YD	$6	$124,200	
				$2,625,000
Pump Station	1 EA	$220,000		$220,000
Roadway Repairs[2]	4,600 FT	$249		$1,145,400
		Subtotal		**$6,526,400**

SE Corner Addison Ave & Wolf Rd Pond	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
Basin 1 and 2 - 72" Dia Equalizer Pipe	460 FT	$375	$172,500	
		Storm Sub-Total		$172,500
Pond Expansion				
Earth Excavation[3]	65,840 CU YD	$30	$1,975,200	
Landscape Restoration[3]	14,570 SQ YD	$6	$87,420	
				$2,062,620
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	250 FT	$249		$62,250
		Subtotal		**$2,297,370**

Elgin-O'Hare - West Bypass

I-294 Industrial Park Detention Basin Systems - Alternative 4

ESTIMATED COSTS FOR 2013 CONSTRUCTION

East Wolf Rd	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
East Wolf Rd: 36" Storm Sewer System	1,500 FT	$225	$337,500	
		Storm Sub-Total		$337,500
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$337,500**

South MacLean Power	Quantity	Unit Cost	Item Cost	Total Cost
Sewer System Improvements[1]				
36" Storm Sewer System	1,400 FT	$225	$315,000	
		Storm Sub-Total		$315,000
Pump Station	0 EA	$0		$0
Roadway Repairs[2]	0 FT	$249		$0
		Subtotal		**$315,000**

TECHNICAL MEMORANDUM
FOR
ELGIN O'HARE - WEST BYPASS
DRAINAGE INVESTIGATION: I-294 INDUSTRIAL PARK IN FRANKLIN PARK

PREPARED FOR:

ILLINOIS DEPARTMENT OF TRANSPORTATION
201 WEST CENTER COURT
SCHAUMBURG, IL 60196

ILLINOIS STATE TOLL HIGHWAY AUTHORITY
2700 OGDEN AVENUE
ONE AUTHORITY DRIVE
DOWNERS GROVE, IL 60515

PREPARED BY:

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. HIGGINS ROAD
ROSEMONT, IL 60018

AUGUST 13, 2012

CH2MHILL®

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9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018-4920 Tel (847) 823-0500 Fax (847) 823-0520

TECHNICAL MEMORANDUM

Prepared by: Chinaling Wang, PE - CBBEL
Jeana Gowin, PE, CFM – CBBEL

Subject: Elgin O'Hare-West Bypass
I-294 Industrial Park in Franklin Park

Date: August 6, 2012

A. Purpose:

The Elgin O'Hare-West Bypass (EOWB) project is proposed to traverse through the Village of Franklin Park (Village) parallel to the Union Pacific Railroad (UPRR). The purpose of this memorandum is to provide background and recommendations with respect to drainage in the Village's industrial park area.

During Tier One, the major objectives were to identify the roadway location and facility type. At the south end of the West Bypass, there were many options being considered, each with impacts, including residential and business displacement and impacts to the Bensenville Railroad Yard. The Village of Franklin Park proactively endorsed Corridor "D", despite the impacts to their existing industrial park. Corridor "D" reduced the Village's tax base via displacements, and the Village stands to lose more tax base due to chronic flooding within the remainder of the industrial park due to poor drainage conditions.

As a condition of this endorsement, which strengthened IDOT's decision to select Corridor "D", the Village requested several things:

- Drainage improvements of the Village's industrial park area.
- Reconstruction of Franklin Avenue/Green Street. This will be done from County Line Road to Wolf Road as part of the Initial Construction Phase (ICP) to accommodate channelization.
- Interchange access at Franklin Avenue/Green Street. This is being provided as part of the ICP.
- State jurisdiction of Franklin Avenue/Green Street. It will remain a local roadway.

IDOT provided a general response to these requests during Tier One because the geometrics and drainage were still at a very conceptual level of detail. The level of engineering detail necessary to assess the feasibility and costs was developed in early 2012.

As part of Tier Two, a stormwater analysis of the existing industrial area was performed to establish causes of flooding and to recommend remedial measure, since the south West Bypass area will outlet to the drainage system passing through the industrial area. The outlet of the entire industrial park is an existing 60-inch RCP along the railroad spur, which outflows directly into the Silver Creek.

The tributary area to the outlet pipe of the 60-inch RCP is 450 acres, which is partially submerged under normal conditions due to high flood stages of the Silver Creek. Existing conveyance system includes backpitched pipes on the west side of the UP railroad. The 60-inch RCP including the entire drainage system is flat and has less than a 10-year capacity. Therefore, 82 acre-feet of detention volume are recommended to provide a 100-year flood protection for the industrial park area and allow a proper drainage connection for the EOWB project.

For the proposed roadway improvements, two basins are proposed to provide approximately 21 acre-feet of detention storage to meet the Illinois Tollway drainage design criteria. Two potential outlets were reviewed for the proposed detention basins and the Tollway drainage conveyance system:

1. Use an existing 60-inch RCP owned by the Village of Franklin Park.
2. Construct a new outlet sewer along the north side of I-294 within the right-of-way (ROW).

The total storage of 103 acre-feet is required to accommodate both the roadway improvements according to the Tollway practice and 100-year flood protection for the industrial park area per the Village's request.

B. Evaluation:

Exhibit 1 is a schematic showing storm sewers, detention ponds and a pump station required to continue using the 60-inch RCP for meeting the Tollway drainage design criteria and improving the industrial park drainage.

Exhibit 2 indicates construction of a new storm sewer along I-294 right-of-way for outletting the proposed West Bypass and existing I-294 directly to the Silver Creek.

The second option to outlet (Exhibit 2) along the northern side of I-294 within the right-of-way was not pursued for the following reasons:

1. Numerous existing utilities including AT&T fiber optical cables, a NICOR gas line and a telephone line are within the I-294 ROW. A new outlet storm sewer will cause conflicts with the utilities.
2. Limited horizontal space between the existing retaining wall and King Street. The narrowest point is approximately 18 feet, leaving little room for construction and co-existence with all existing utilities.

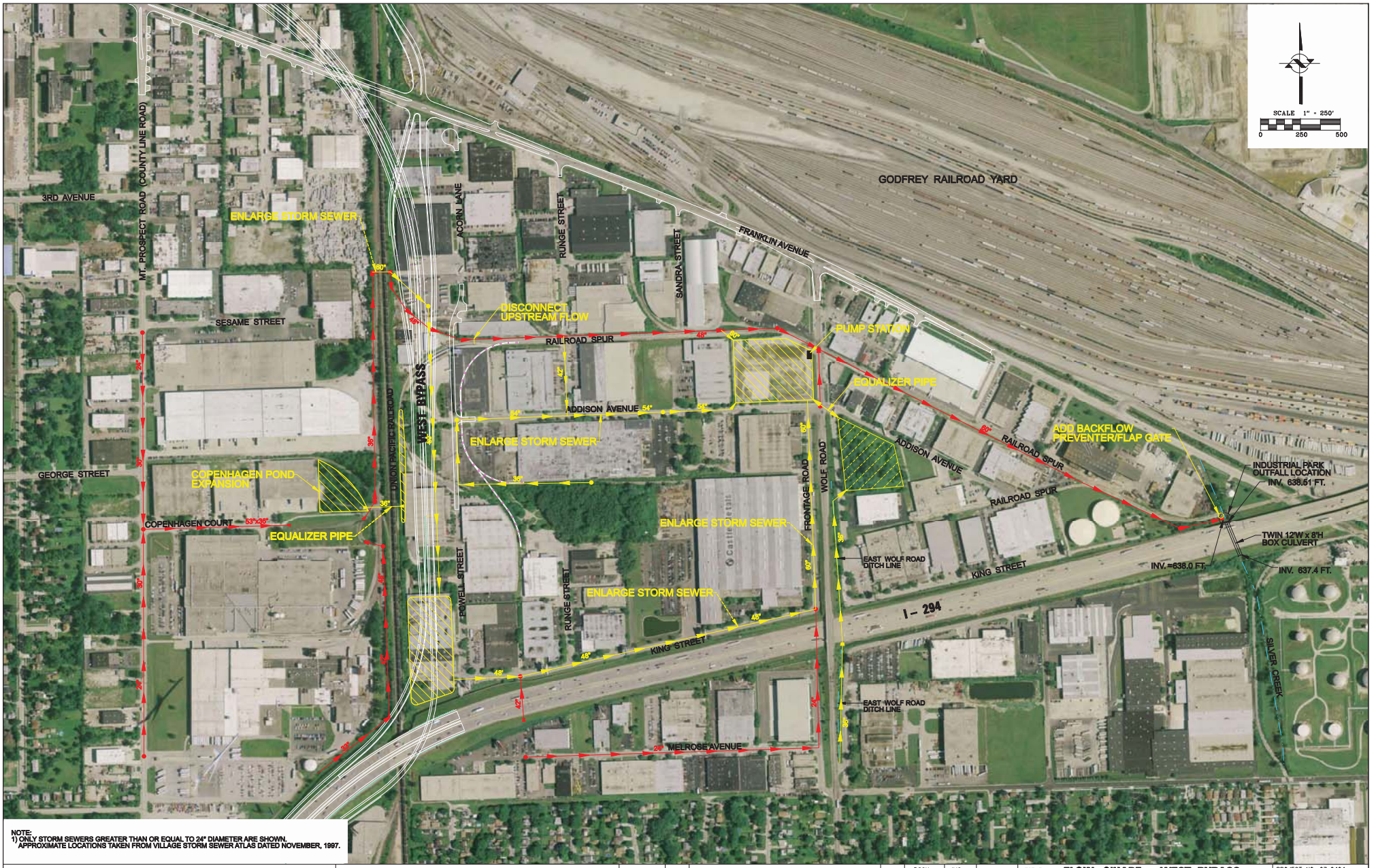
3. An outlet along the northern portion of the Tollway would require that the drainage from the south, on both the east and west sides of Wolf Road, be intercepted, thus requiring a larger diameter storm sewer. It would not be feasible to install an outlet storm sewer much greater than the existing 42-inch diameter due to limited horizontal space and restrictive vertical clearance.
4. The vertical distance between the bottom of the southern detention basin and the existing water line of the Silver Creek is less than 2 feet. Therefore, it is too flat for an outlet pipe of approximately 4,900 feet to be efficient.
5. The downstream system is too sensitive to allow for any increase in flow above existing conditions. A new outlet to the Silver Creek could create the perception that any future drainage issues were the direct result of the proposed improvements made for the Tollway.

Therefore, the preferred outlet is to outlet through the Village's 60-inch storm sewer. Since the 60-inch outlet storm sewer is undersized and lacks conveyance capacity, approximately 103 acre-foot of detention volume is required to store runoff and reduce the release rate. As a result, the industrial park is anticipated to have a 100-year flood protection and the Tollway will meet their stormwater detention requirements.

C. Conclusion:

The EOWB project needs a suitable outlet from the Village of Franklin Park to complement its drainage system. Without a drainage connection permission from the Village of Franklin Park to use the undersized 60" storm sewer, the proposed EOWB project at this location will have no feasible drainage system.

Since the Village of Franklin Park needs significant drainage improvements and the Tollway needs a viable outlet in the Village, a joint project is proposed. Because the existing 60" storm sewer is not capable of draining a tributary area of 450 acres, the total storage of 103 acre-feet is required to accommodate the EOWB improvements, improve Wolf Road drainage and provide adequate flood protection for the Village's industrial area. Additionally, the Village of Franklin Park has expressed willingness to have jurisdiction and maintenance of all storm sewers, detention ponds and a pump station installed outside the Tollway right-of way.



NOTE:
1) ONLY STORM SEWERS GREATER THAN OR EQUAL TO 24" DIAMETER ARE SHOWN. APPROXIMATE LOCATIONS TAKEN FROM VILLAGE STORM SEWER ATLAS DATED NOVEMBER, 1997.

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
ILLINOIS DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

N:\dot1\070404\Water\Exhibit JMG\070404exh7 Franklin Park Proposed Conditions Alt 2.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=250'	

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
PROPOSED DRAINAGE CONDITIONS
ALTERNATIVE 2

PROJECT NO.	07-0404
DATE:	7/13/2012
SHEET	OF

EXHIBIT 1

NOTE:
ONLY STORM SEWERS GREATER THAN OR EQUAL TO 24" DIAMETER ARE SHOWN APPROXIMATE LOCATIONS TAKEN FROM VILLAGE STORM SEWER ATLAS DATED NOVEMBER, 1997.

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
ILLINOIS DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCO\070404exh2 Franklin Park Proposed Alt Outlet.dgn

DSGN.	DCO	
DWN.	EAT	
CHKD.		
SCALE:	1"=300'	

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
PROPOSED DRAINAGE CONDITIONS
ALTERNATIVE OUTLET

PROJECT NO.	07-0404
DATE:	6/25/2012
SHEET	OF

EXHIBIT 2

MEETING SUBJECT:	Elgin O'Hare - West Bypass Project	**RECORDER:**	Miroslaw Antas, PE
MEETING DATE & TIME:	February 15, 2012 – 1:00 p.m. to 3:00 p.m.	**PREPARATION DATE:**	February 15, 2012
MEETING LOCATION:	Franklin Park Village Hall		
ISSUE STATUS:	☐ Draft for Review ☒ Final		

2.b) Draft Proposed Drainage Plans

Chinliang Wang of CBBEL gave a brief overview of the proposed drainage plan applicable to the Village of Franklin Park.

- The proposed detention pond and compensatory storage sites were identified on the color Overall Proposed Drainage Exhibit. The existing and proposed outlets were also pointed out.
- A drainage investigation was completed for the chronic flooding in the Franklin Park industrial area. The proposed drainage plan was presented, two new ponds of 70 ac-ft and the expansion of an existing pond to 12 ac-ft. The new ponds would be pump evacuated.
- The detention for the new tollway pavement would be provided with a separate 20 ac-ft pond under a new tollway bridge, which will outlet to the aforementioned Village new ponds via a new storm sewer system along King Street and Frontage Road.
- It was noted that the Silver Creek is very sensitive to stormwater runoff volume and rate. The Village was informed that detention will be provided for sensitive outlets and for the watershed based on 0.15 cfs per acre for a 100-year flood.
- It was noted that the 30" culvert under I-294 at Wolf Road was partially full and not working properly currently. A proposed storm sewer system will be installed to replace the 30" culvert and dysfunctional ditch along Wolf Road.
- The Village of Franklin Park indicated that if the project impacts a piece of property (partial take) for proposed storm water detention, then the Village would prefer taking the whole piece to achieve the 100 year with tollway alternative to the 50 year with tollway alternative. The parcel in question was one of the two proposed deep SWD basins to be pumped out.

Action Items:

1. CBBEL left a full size set of plans for Franklin Park to review and respond to with comments returned to IDOT by March 30, 2012.

MEETING SUMMARY

ELGIN O'HARE WEST BYPASS
communities. opportunities. solutions.

MEETING SUBJECT:	Elgin O'Hare - West Bypass: Drainage Investigation Within the Village of Franklin Park	**RECORDER:**	Edward Yousif
MEETING DATE & TIME:	September 22, 2011; 2:00 PM	**PREPARATION DATE:**	September 22, 2011
MEETING LOCATION:	Village of Franklin Park		
ISSUE STATUS:	☐ Draft for Review ☒ Final		

ATTENDEE NAME	ORGANIZATION	E-MAIL
Participated in-person		
Jeff Eder	Village of Franklin Park	jeder@vofp.com
David Talbott	Village of Franklin Park	dtalbott@vofp.com
Joe Lauro	Village of Franklin Park	jlauro@vofp.com
Rick Wojcik	IDOT – Programming/Hydraulics	rick.wojcik@illinois.gov
Perry Masouridis	IDOT – Programming/Hydraulics	eleftherios.masouridis@illinois.gov
Steve Bicking	HR Green	sbicking@hrgreen.com
Kevin Nichols	CH2M Hill	knichols@ch2m.com
Edward Yousif	AECOM	edward.yousif@aecom.com
Chinliang Wang	CBBEL	cwang@cbbel.com
Jeana Gowin	CBBEL	jgowin@cbbel.com

The purpose of this meeting was to present XP-XWMM modeling results of flooding areas surrounded by I-294, County Line Road and Franklin Avenue within the Village of Franklin Park and to provide solutions to reduce the existing flooding problems. The meeting at the Franklin Park Village Hall began at 2:00pm and ended at 4:00 pm on September 22, 2011.

The following is a summary of topics and issues discussed at the meeting and action items determined/assigned.

1. XP-SWMM Modeling

Jeana Gowin of CBBEL gave a brief overview of the existing flooding concerns within the Village of Franklin Park. The existing drainage system has less than a 10-year flood protection, while the Village wants to provide 50-year protection for the 460 acre watershed. The existing storage volume is approximately 20 ac-ft, while the proposed detention facilities will add approximately 82 ac-ft of storage for the 50-year storm event.

Five different parcels were initially investigated as potential detention storage facilities. Sites 1 and 2 were considered feasible and are located near Addison Street and the Railroad Spur. It is recommended that these 2 basins (comprised of approximately 70 ac-ft of storage volume) be excavated to approximately 20 feet below existing ground and pumped into the existing 60" sewer draining into Silver Creek. Sites 3 thru 5 were not considered due to inadequate capacity for storage purposes and they are not loctated along the main trunk line. An enlarged storm sewer system will also be provided along Addison Street to convey runoff into the 2 proposed detention facilities. The existing Copenhagen pond (currently owned by the Village) will also be expanded north to provide an

additional 12 acre-ft for detention purposes. It should be noted that these proposed storage facilities do not take into account the storage volume required for the proposed Elgin O'Hare - West Bypass project. This volume will be provided elsewhere.

A backflow preventer will be required at the 60" pipe outlet into Silver Creek.

To obtain 10 to 25-year protection and to avoid using a pump station system near Addison Street, approximately 65 ac-ft storage would need to be provided (vs. 82 ac-ft for 50-year protection). Under this scenario both basins near Addison Street will only be approximately 10 feet deep and would drain into the existing 60" sewer via gravity flow. However, it was agreed upon by all parties that since this area is highly prone to flooding, a minimum of 50-year protection would need to be provided. Therefore, a pump station will be required and be maintained by the Village. David Talbott of the Village of Franklin Park suggested adopting the type of pump station used in the Jack Williams Reservoir.

Per recommendation from IDOT and the Village, the entire design will be checked for the 100-year storm event. Ed Yousif stated that even if storage was provided for the 50-year event, if the existing local storm sewers were designed for a lesser storm event, then flooding would still occur. The Village noted that they were aware of this issue and would conduct their own drainage study to eventually upgrade their system in conjunction with the Elgin O'Hare - West Bypass project improvements

The Village mentioned that a couple of the business owners have already relocated due to lost revenue from the flooding, and are worried about more businesses leaving in the near future. CBBEL asked the Village to provide them with low buildings prone to flooding so they could survey their critical low elevations and compare to the 50-year water surface elevation. Rick Wojcik mentioned that any future improvement with respect to the Elgin O'Hare – West Bypass expansion project will probably not occur until 2018. However, some improvements of local drainage concerns such as Wolf Road can be implemented sooner.

Action Item:

1. *CBBEL will survey critical low entry locations to be identified personally by David Talbott on a pick-up survey day.*

2. *CBBEL will coordinate with the Village of Franklin Park to select a pick-up survey day.*

2. Wolf Road

CBBEL mentioned that both the existing 29" x 45" elliptical CMP pipe located under the Tollway, and downstream ditch located east of the Wolf Road were both partially blocked. David Talbott mentioned that he believes there's an existing 24" end section located just north of Addison Street that used to drain the Wolf Road ditch into the 60" pipe draining to Silver Creek. Under proposed conditions it is recommended that the downstream ditch along the east side of Wolf Road be regraded into this existing flared section once it's been uncovered by the Village. Eventually this ditch would drain into the proposed basin near Addison Street. Ed Yousif mentioned that if regrading the Wolf Road ditch is not an option due to inefficient longitudinal grades, then perhaps a storm sewer can be provided instead.

CBBEL asked the Village whether or not the existing 60" storm sewer along the Railroad Spur was recently televised. David Talbott stated that is hasn't been televised recently, but did mention that a third of the existing Addison Street sewer was filled with silt per recent televising.

Action Item:

1. *CBBEL will submit the Drainage Investigation Report to IDOT for review by end of October 2011.*

2. *The Village of Franklin Park will clean and televise the existing 24" end section and ISTHA will clean the existing 29" x 45" elliptical CMP under I-294. Then, IDOT will regrade the ditch so that flooding along Wolf Road could be minimized.*

MEETING SUBJECT:	Elgin O'Hare - West Bypass Drainage Coordination with IDOT	**RECORDER:**	AECOM / Ed Yousif
MEETING DATE & TIME:	September 12, 2011 – 2:30 pm.	**PREPARATION DATE:**	September 12, 2011
MEETING LOCATION:	IDOT District One – Land Acquisition Conference Room		
ISSUE STATUS:	☐ Draft for Review ☒ Final		

ATTENDEE NAME	ORGANIZATION	E-MAIL
Chinliang Wang	CBBEL	cwang@cbbel.com
Don Oliphant	CBBEL	doliphant@cbbel.com
David Vogel	CBBEL	dvogel@cbbel.com
Jeana Gowin	CBBEL	jgowin@cbbel.com
Rick Wojcik	IDOT-District 1	rick.wojcik@illinois.gov
Steve Bicking	HR Green	sbicking@hrgreen.com
Edward Yousif	AECOM	edward.yousif@aecom.com

The purpose of this meeting was to present hydraulic analysis of the drainage concerns within the Village of Franklin Park and at North Avenue between I-290 and I-294, and to provide solutions to reduce the existing flooding problems. The meeting at the IDOT Land Acquisition conference room began at 2:30 pm and ended at 4:00 pm on September 12, 2011.

The following is a summary of topics and issues discussed at the meeting and action items determined / assigned.

1. Overview of Franklin Park Drainage Concern

Don Oliphant of CBBEL gave an overview of the existing drainage conditions and concerns in the areas surrounded by Franklin Avenue, County Line road and I-294 within the Village of Franklin Park. Don mentioned that in August 2011 rim and invert elevations were surveyed for 24" pipe diameters and larger. The concerned area of 460 acres was determined to have limited existing storage capacity and conveyance capacity.

Action Items:

1. None

2. Franklin Park Hydraulic Analysis

Don stated that in order to provide 50-year protection for the Franklin Park drainage problem area, approximately 75 ac-ft of stormwater detention storage would be required (similar to the previous hydraulic study performed for Franklin Park). The proposal consists of the expansion of Copenhagen Pond and installation of two Addison Street storage basins. The expansion would be located near Copenhagen Court (near an existing pump station with a 1.7 cfs outflow), while the other 2 basins would be located near Addison Street at a couple of vacant and demolished sites. These 2 sites are also adjacent to the 60" storm sewer system that outlets into Silver Creek. CBBEL proposes 20' deep basins at these 2 locations with a pump station outletting into the existing 60" storm sewer. These 3 basins will have a capacity of approximately 80 ac-ft. An enlarged storm sewer system will also be provided along Addison Street to convey runoff into the proposed storage facilities. The proposed storage facilities do not take into account the amount of storage volume required for the proposed Elgin O'Hare West Bypass (EOWB) project. However, they are adjacent to the EOWB corridor and could be considered for these purposes.

A backflow preventer will be required at the 60" storm sewer outlet into Silver Creek because flood stages of the Creek are relatively high comparing with surrounding low spots. The tributary runoff to the 60" storm sewer can be drained via gravity flow into Silver Creek without pumping.

Don mentioned that the 29" x 45" elliptical CMP pipe located under the Tollway (just east of Wolf Road) is partially buried and currently has no positive outlet. It is recommended that the downstream ditch along the east side of Wolf Road be regraded towards the north into the proposed Addison Street storage basin so that the upstream Wolf Road ditch will not experience water standing frequently. Rerouting the runoff eastwardly along the Tollway ditch and into Silver Creek is not an option at this point due to existing conflicts and right-of-way restrictions. Also, the Tollway does not want to be responsible for maintaining a storm sewer system within their property that primarily drains offsite areas. Ed Yousif of AECOM mentioned that in conjunction with the regrading of the downstream Wolf Road ditch, the Tollway would clean the existing cross culvert and line it with HDPE pipe since it is a CMP now.

Action Items:

1. CBBEL will set up a meeting for the DWG to discuss with the Village of Franklin Park about the scope of work for implementation, including both interim solution and ultimate solution for the Wolf Road problem.

3. IDOT and Tollway Questions and Concerns about Franklin Park Hydraulic Analysis

Both IDOT and the Tollway were concerned that even with the additional storage provided, the undersized local storm sewers could still cause Franklin Park to flood. CBBEL is aware of this issue and will discuss these concerns when meeting with the Village. Based on the drainage pick-up survey, the local storm sewers were determined to be fairly flat.

CBBEL was asked by IDOT to look at the option of either reducing the depth of the proposed storage facilities from 20 ft to something shallower, to eliminate the need for a pump station facility. They were also asked to check the 50-year water surface elevation if only 1 of the 2 proposed detention facilities was constructed near Addison Street. For instance, if the difference in water surface elevation is only a few inches between the 2 options, then a second basin may not be justified. For instance, is it cost effective to provide 75 ac-ft vs. 15 ac-ft of storage to gain a few additional inches of freeboard? IDOT also requested that the proposed storage basins be designed with emergency overflow weir structures.

Ed asked if it was possible to increase the flow through the Silver Creek culvert and provide storage downstream. CBBEL mentioned that the downstream properties were considered sensitive and increasing runoff may not be a good solution unless these properties were bought out.

Action Items:

1. CBBEL will rerun their hydraulic model to include the aforementioned assumptions. They will also check the water surface elevation for the 100-year flood frequency.

4. North Avenue Drainage Concern

Dave Vogel of CBBEL gave an overview of the existing flooding concern at North Avenue between I-290 and I-294. The flooding is primarily caused by undersized storm sewers, an existing siphon within the 60" North Avenue storm sewer system, and lack of detention storage upstream of the Doyle Reservoir. The proposed improvements will provide 2 detention facilities within the I-290 SE infield area (approximately 11 ac-ft total storage) and one detention facility immediately east of I-294 (approximately 2 acre-feet storage), reroute the 42" diameter Elmhurst storm sewer around these I-290 basins, upsize some of the existing North Avenue storm sewers to gain adequate capacity, provide additional inlets at low spots and eliminate the siphon by raising the invert elevation of siphon and flattening the slope of the storm sewer system. Dave explained that the initial design meets IDOT underpass design requirements at 50-year protection with a 1± ft freeboard. Calibration for existing model was based on the July 24, 2010 flooding data. IDOT requested 100-year protection since this is considered a severe flooding location. IDOT also requested that a complete drainage investigation report be submitted for review without another meeting. Rick Wojcik of IDOT suggested that concept of shared detention facilities between IDOT and ISTHA be considered to improve the IL Route 64 flooding.

Action Items:

1. CBBEL will run their XPSWMM model for the 100-year storm event and provide additional storage within infield area if possible. Underground storage will also be evaluated.
2. CBBEL will review the ESI report and incorporate applicable information into the Drainage Investigating Report.
3. CBBEL will submit a drainage investigation report to IDOT by September 30, 2011.
4. CBBEL will determine if deepening the Doyle Reserve to provide needed detention volume is feasible and cost-effective.

MEETING SUBJECT:	Elgin O'Hare - West Bypass Project Drainage Working Group Coordination Meeting	**RECORDER:**	CBBEL/Peter Procaccio
MEETING DATE & TIME:	December 2, 2010 – 9:00 a.m.	**PREPARATION DATE:**	December 10, 2010
MEETING LOCATION:	Franklin Park Village Hall		
ISSUE STATUS:	☒ Draft for Review ☐ Final		

ATTENDEE NAME	ORGANIZATION	E-MAIL
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Perry Masouridis	IDOT-District 1	eleftherios.masouridis@illinois.gov
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Jeff Eder	Franklin Park	jeder@vofp.com
Steve Bicking	SEC/HRG	sbicking@hrgreen.com
Edward Yousif	AECOM	edwardyousif@aecom.com
Don Oliphant	CBBEL	doliphant@cbbel.com
Chinliang Wang	CBBEL	cwang@cbbel.com
Peter Procaccio	CBBEL	pprocaccio@cbbel.com

An Elgin O'Hare - West Bypass Project Drainage Working Group (DWG) coordination meeting was held on December 2, 2010 at the Village of Franklin Park Village Hall, beginning at 9:00 a.m. through approximately 11:00 a.m. A copy of the meeting agenda is included as the last page of these minutes.

The following is a summary of topics and issues discussed at the meeting and any action items determined/assigned.

Dave Talbott, Village Engineer for Franklin Park, began discussion by talking about an existing culvert located along the east side of Wolf Road at the overpass over I-294. Highway plans provided by Illinois State Toll Highway Authority (ISHTA) show that this 50" x 31" elliptical culvert conveys runoff under I-294 in a south to north drainage pattern towards the ultimate outlet at the Silver Creek. The condition of the drainage ditch along Wolf Road is poor and overgrown foliage and debris, and as such, the condition of the culvert was unknown and could not be found for inspection. Coordination will ensue between Dave Talbott and both the IDOT and ISTHA Maintenance Departments to clear the ditch and inspect the culvert. CBBEL will also acquire Wolf Road contract plans to verify ditch grades from IDOT Maintenance. Ed Yousif will contact ISTHA Maintenace Department for help. Dave Talbott also expressed a concern that when the Wolf Road ditch is cleared, conveyance of the runoff from the south side of I-294 will be improved to the I-294 Industrial Area where chronic flooding has already occurred.

1. Functional Plan

Chinliang Wang from CBBEL Drainage Department outlined the Elgin O'Hare - West Bypass project limits; specifically highlighting project extents within the Village of Franklin Park.

Action Items:

1. No Action Items identified.

2. Location Drainage Study

Don Oliphant from CBBEL outlined his current status with the drainage investigation of the I-294 Industrial Area. So far, his work has focused on review of existing reports, existing topography, and establishing possible sites for storage facilities. He stressed that storage volume alone will not reduce Franklin Park's flooding frequency. Conveyance improvements, a flap gate at the Silver Creek outfall, and pump stations must also be considered. CBBEL recommended that a XP-SWMM model be completed to determine a feasible level of protection based on cost and potentional improvements within the industrial park.

Action Items:

1. CBBEL will work with IDOT to determine magnitude of the drainage investigation to select tools for achieving the end. CBBEL recommended that the existing storm sewer be televised and a survey be completed for major trunk sewers.

3. Waterway Hydrology and Hydraulics

Action Items:

1. A Hydraulic Report for the I-294 over Silver Creek structure will be prepared.

Elgin O'Hare West Bypass Tier 2
Drainage Working Group Coordination Meeting
December 2, 2010 (9:00 AM)
Franklin Park Village Hall

1. Functional Plan
    a. Project Limits
2. Location Drainage Study
    a. Existing Drainage Plan
    b. Drainage Investigations
        i. Franklin Park I-294 Industrial Area
    c. Proposed Drainage Plan
        i. Detention Facilities
3. Waterway Hydrology & Hydraulics
    a. Silver Creek

DRAINAGE INVESTIGATION
FOR
I-294 INDUSTRIAL PARK DRAINAGE INVESTIGATION

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

Prepared for:

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

Prepared By:

Christopher B. Burke Engineering, Ltd.
9575 W. Higgins Road
Rosemont, IL 60018

November 16, 2010

CH2MHILL

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DRAINAGE INVESTIGATION
FOR
I-294 INDUSTRIAL PARK DRAINAGE INVESTIGATION

ELGIN O'HARE–WEST BYPASS

TABLE OF CONTENTS

SECTION 1 TECHNICAL MEMORANDUM
Existing Drainage Conditions and Recommendations

SECTION 2 EXHIBITS

Location Map	Exhibit 1
One-Foot Topographic Contours	Exhibit 2A
One-Foot Topographic Contours	Exhibit 2B

TECHNICAL MEMORANDUM

Prepared by:	Donald C. Oliphant, PE, CFM Thomas Burke, PhD, PE
Subject:	Elgin O'Hare West Bypass I-294 Industrial Park Drainage Investigation Village of Franklin Park
Project Number:	P-91-443-06 (CBBEL Project No. 07-404)
Date:	November 10, 2010

The purpose of this memorandum is to summarize a Christopher B. Burke Engineering, Ltd. (CBBEL) drainage investigation of the I-294 Industrial Park located east of Mount Prospect Road/County Line Road, north of Interstate 294, and south of Franklin Avenue in the Village of Franklin Park (Village). It is understood that the industrial park experiences significant flooding during medium to large storm events greater. The latest flooding in this area occurred during the July 23-24, 2010 storm event. The investigation is based on information from a report entitled "I-294 Industrial Area Stormwater Management Plan" dated July 2003 provided by the Village, a Village storm sewer atlas, previous CBBEL studies, site visits, and best available information. This memorandum details existing drainage problems and provides conceptual alternatives to help reduce flooding risks within the industrial park.

A. Existing Conditions

The industrial park drains west to east through a series of storm sewers within roadway and railroad spur right-of-ways. Stormwater runoff is tributary to the Silver Creek with the primary outfall through a 60-inch reinforced concrete pipe (RCP) located just upstream of the I-294 twin 12' W x 8' H box culvert. The 60-inch RCP invert elevation (638.5') at the outfall is approximately 1.25 feet below the normal water level (NWL) of Silver Creek. The 10-year and 100-year floodplain elevations of the Silver Creek at the storm sewer outfall are 645.2' and 645.9', respectively, according to the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) for Cook County, dated August 19, 2008. The FEMA Flood Insurance Rate Map (FIRM) for the area shows Zone X floodplain on Panels 358 and 359 of 832 for Cook County, Illinois and Incorporated Areas, dated August 19, 2008. According to a Village storm sewer atlas, floodwaters begin to surcharge storm sewers in the industrial park just above elevation 647.0'. One-foot topographic contours are shown on Exhibit 2A and Exhibit 2B. The lowest elevation of approximately 646' in the industrial park is along a railroad spur north of Addison Street and west of Wolf Road.

The tributary area for the industrial park consists of approximately 430 acres (according to a Village report) that are primarily impervious with little stormwater detention provided. There are three detention basins within the watershed that provide minor attenuation of tributary runoff. Each basin is summarized below.

Copenhagen Pond

The Copenhagen Pond is located east of County Line Road and Copenhagen Court and appears to act as a regional stormwater basin. The basin has approximately 12.2 ac-ft of storage and outflows north along the western embankment of the Union Pacific Railroad (UPRR). Approximately 102 acres is tributary to this pond. Reportedly, stormwater backs up into this basin causing overflows onto Copenhagen Court and surrounding areas. Current Cook County tax assessor information indicates that this parcel is owned by the Village.

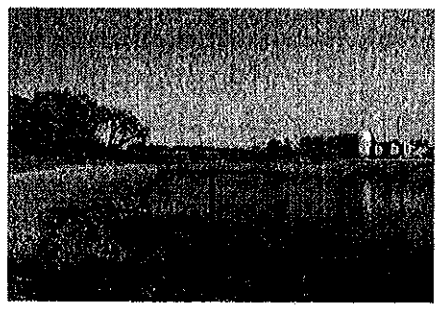

Figure 1 - Copenhagen Pond looking east

Houston Harvest Pond

It appears this basin was constructed as part of the Houston Harvest processing plant for detention purposes only. Approximately 2.4 ac-ft of storage is provided on this property. This basin also outflows along the western embankment of the UPRR before crossing east through the embankment 400' north. Approximately 29 acres of area is tributary to this pond. This pond is located on private property; therefore, no outlet control structure was identified.

A.M. Castle Metal Pond

This basin is located northeast of Runge Street just north of King Street and I-294. The basin serves as stormwater detention basin for the A.M. Castle Metal Company. It is understood that the basin receives overflows from King Street only when surrounding storm sewer systems surcharge. Approximately 2.5 ac-ft of storage is provided in this basin.

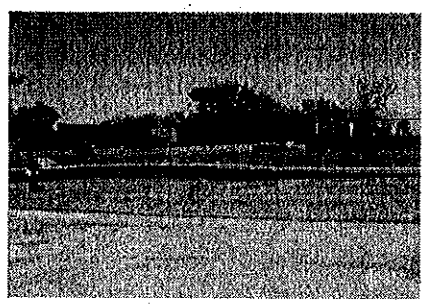

Figure 2 - A.M. Castle Metal Pond

B. Existing Drainage System Limitations

The primary conveyance method for the I-294 industrial park consists of a storm sewer network with diameters up to 60-inch. This trunk sewer is on a 0.2% slope for approximately 2,700'. A majority of the reported flooding areas are west of Wolf Road. Areas east of Wolf Road are generally higher than areas to the west. Therefore, flooded areas west of Wolf Road lack an appropriate overland flow path east to the Silver Creek.

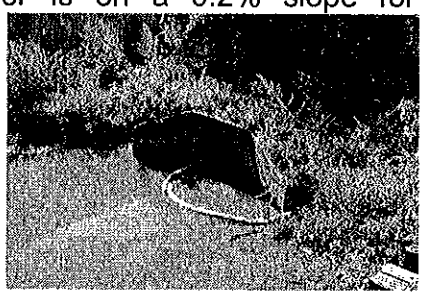

Figure 3 - Silver Creek Outfall (60" RCP)

As previously noted, the outlet pipe for the storm sewer system is partially submerged during normal water conditions and totally submerged during a 10-year storm

event by the Silver Creek according to the effective FEMA FIS. This tailwater effect on the outlet storm sewer system for the industrial park significantly reduces the conveyance capacity for discharging stormwater runoff. The system can only produce approximately 2 feet of positive head for a 100-year storm event before the lowest storm sewers are surcharged in the lowest areas and floodwaters begin accessing railroad spurs and streets. This condition is located west of Wolf Road in the lowest portion of the watershed. The lack of conveyance caused by this tailwater effect combined with little available storage in the watershed causes significant flooding throughout the industrial park that interrupts business operations and limits emergency access routes.

C. Detention Storage Alternatives

There are several open parcels that would be conducive to providing storage for the watershed. The identified areas were chosen based on 2010 aerial photography and verified through a site visit. Only parcels greater than one acre were identified as potential storage locations. Each parcel and their corresponding acreage are shown on Exhibit 1. The parcel's location, disadvantages, advantages, and ownership are summarized below.

Parcel #1

This parcel has been recently demolished and is vacant. The parcel is located at the northwest corner of the Wolf Road and Addison Street intersection. This parcel is made up of two properties owned by the same private land trust. The parcel is located adjacent to the industrial park's major trunk sewer and a low lying area along a railroad spur. This parcel could be utilized for storage with minimal conveyance improvements necessary to direct floodwaters to the basin.

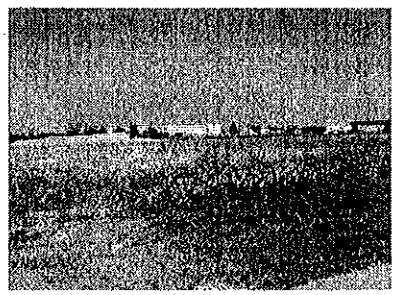

Figure 4 - Parcel #1 off of Addison St.

Parcel #2

This parcel is located at the southeast corner of the Wolf Road and Addison Street intersection. The single parcel is owned by a private company. The site primarily consists of heavily forested areas. According to the Village, this site flooded as a result of the July 23-24, 2010 storm event. Conveyance improvements would likely be required since little storm sewer infrastructure is adjacent to the parcel and overland flow routes would require crossing Wolf Road.

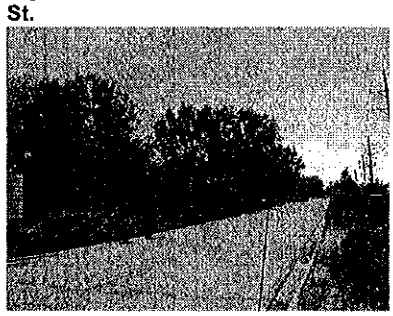

Figure 5 - Parcel #2 looking south along Frontage Rd.

Parcel #3

This parcel is an open section of land owned by a private company. It is located in between the aforementioned railroad spur and Addison Street. It has similar advantages as Parcel #1 since it is adjacent to low lying areas to the north. Unfortunately, this parcel is the smallest tract of open land included and the purchase price may outweigh provided benefits.

Figure 6 - Parcel #3 off of Addison St.

Parcel #4
This parcel is located at the north end of Runge Street off King Street. This parcel consists of three properties with three different private owners. The site is heavily forested. While it is the largest open parcel in the watershed, it is isolated behind large warehouses/office buildings making conveyance and accessibility by floodwaters difficult.

Parcel #5
This parcel is located on the A.M. Castle Metal Company property. Storage provided on this parcel would include the expansion of the existing pond located north of King Street. It is understood that this pond was constructed to satisfy stormwater detention requirements associated with a prior expansion of the warehouse facility. Any expansion of the pond to change the use from a local basin to a regional basin would need significant cooperation from the current owners. The A.M. Castle Metal Company site flooded during the September 2008 and July 23-24, 2010 storm events.

Based on the individual parcel area, conceptual volumes were determined based on 3:1 side slopes, vertical walls, and the nearest gravity invert elevation to adjacent storm sewer based on a Village storm sewer atlas. All high water levels (HWL) in the conceptual basins were assumed to be 644' to provide a minimum of 2 feet of freeboard to roadways and low elevations in the watershed. A pump station and flap gate would be required at the outfall to the Silver Creek to keep HWLs at this level. A pump evacuated scenario was also considered based on a maximum low elevation of 630' for all parcels. Table 1 summarizes conceptual volumes for each scenario and parcel.

TABLE 1
Conceptual Parcel Storage Summary

Parcel Number	Approx. Parcel Area (ac)	Gravity Outlet Elevation (ft.)	3:1 SS, Gravity Drained (ac-ft)	Vertical Walled, Gravity Drained (ac-ft)	3:1 SS, Pump Evacuated (ac-ft)[2]
1	4.9	638.5	24.3	26.1	55.2
2	3.4	639.0	15.0	16.2	36.7
3	1.4	640.0	4.5	5.0	12.4
4	6.6	640.0	23.9	25.0	74.5
5	2.1	644.0	--[1]	--[1]	--[1]

[1]Volume would be dependent on an existing pond expansion
[2]Pump scenarios are for individual pumps located at each reservoir

D. WOLF ROAD DITCHLINE
A September 8, 2010 memorandum prepared by the Illinois Department of Transportation (IDOT) includes a request by the Village to clear a ditch of debris along the eastside of Wolf Road between Belmont Avenue and I-294. A site visit of this area was completed, noting that the ditch is overgrown with weeds and small trees. Although the memorandum states this area is tributary to a cross-culvert under I-294, it should be noted that a Village stormwater report dated July 2003 does not show runoff from this area being tributary to the

storm sewer infrastructure north of I-294. The Village storm sewer atlas also does not show a cross-culvert under I-294. However, I-294 roadway plans (dated February 1983) show a 50" x 31" elliptical pipe crossing the tollway. These discrepancies should be resolved before any ditch improvements are completed. The approximate ditch location is shown on Exhibit 1.

E. Recommendations and Conclusions

The I-294 industrial park area floods during medium to large storm events due to the lack of conveyance caused by the tailwater effects from the Silver Creek and the lack of adequate storage and storm sewer capacity. The watershed is primarily impervious with only approximately 17 ac-ft of storage throughout the industrial park. The lack of storage combined with undersized storm sewer systems and inadequate overland flow routes are primary reasons for continual flooding. The following list summarizes recommendations for conceptual improvements and future modeling requirements.

- Storage Locations
  - Parcels 1 & 2 are the recommended properties to construct flood control basins due to their proximity to existing storm sewer infrastructure and overland flow routes. While Parcels 3-5 are feasible to provide storage basins, they are either smaller, require additional conveyance improvements, and/or would require significant modifications/demolition to existing buildings/warehouses.

- Outfall Condition
  - A backflow preventer (Tideflex or approved equal) at the outlet to the Silver Creek would be required. A pump station would have to be considered at the outfall to control interior drainage during large storm events when the release from the industrial park is limited. Since the tailwater of the Silver Creek accesses a significant portion of the industrial park storm sewer, the addition of the backflow preventer would also allow the upstream watershed to access this pipe storage instead of the floodplain.

- Copenhagen Pond
  - Additional evaluation of Copenhagen Pond should be completed to determine if the inflow/outflow can be modified to increase the efficiency of the basin in controlling runoff from the upper portion of the watershed. Since approximately a quarter of the watershed is tributary to this basin, the operation and control of stormwater runoff in this area is important to downstream flooding. Expansion of the basin may be feasible to the north if existing railroad spurs in this area have been abandoned. Potential expansion volume will be evaluated during future hydraulic modeling. This potential expansion area is shown on Exhibit 1.

- Hydrologic and Hydraulic modeling
  - Hydrologic and hydraulic modeling of the watershed is required to determine the most efficient storage locations, the amount of storage, and potential conveyance improvements or new conveyance systems throughout the watershed. Modeling would also be required to size a pump station at the outfall

and/or at a flood storage reservoir. Pump sizes would be dependent of how much volume can be provided, cost considerations, and the desired level of protection in the watershed.

- Survey Requirements
  - At minimum, a survey of building low entry elevations, storm sewer infrastructure (rims, inverts, size, type, etc.), and other critical infrastructure should be completed for preparation of an XP-SWMM model. Limits of existing topographic information available to this project are shown on Exhibit 2A and 2B. Additionally, the storm sewer network should be televised to verify the existing integrity of the infrastructure.

F. REFERENCES

- "I-294 Industrial Area Stormwater Management Plan" prepared by Clark Dietz, Inc., dated July 2003.
- Village Storm Sewer Atlas, prepared by Kudrna and Associates, Ltd., November 1997.
- Flood Inundation Map for July 2010 storm event, prepared by Clark Dietz, Inc., dated August 11, 2010.
- 1 foot Cook County Aerial Topography (Permission granted by IDOT)
- IDOT Memorandum regarding Wolf Road ditchline (with attachments), prepared by Jim Stumpner, dated September 8, 2010.
- Illinois State Tollway Authority plan sheets for I-294, prepared by McDonough Associates, Inc., dated February 14, 1983.

Ron Krall

Illinois Department of Transportation

Memorandum

To:	Jim Stumpner	Attention: Anthony Dilacova/ Tony Matassa
From:	Peter Harmet	
Subject:	Drainage Investigation*	
Date:	September 8, 2010	

*Route:	Wolf Road
Limits:	N. of Belmont, S of I-294
Municipality/County:	Franklin Park/Cook

The purpose of this memo is to request your consideration to clean the Wolf Road east ditch as described below.

On April 13, 2010 Anthony Matassa (IDOT Maintenance), Roger Lockwood (Program Management Consultant), and David Talbot (Village Engineer – Franklin Park) met at the east Wolf Road ditch south of I-294. This drainage investigation is in response to the Village and the adjacent industrial property owner at 3205 N. Wolf Road. It was apparent that the Wolf Road east ditch line needs to be regraded and reestablished.

The ditch had been cleared of brush by the Village. The ditch drains flow from a grated headwall structure that receives water from the industrial property's detention basin via a force main. Your office indicated you could regrade the section of the ditch from south of the headwall, north to where standing water exists. Your staff would be available to do this work sometime after October 1, 2010.

This area is within the Elgin/O'Hare West Bypass Tier 1 and Tier 2 improvements and the flow to the north from this area is somewhat obstructed. There is a +/- 36" culvert under I-294 which was observed to be nearly full of water on both ends. The flow from this culvert is believed to continue north in the east Wolf Road ditch after the culvert surcharges. We have requested CH2M Hill to incorporate this information into the Tier 2 study of Elgin O'Hare West Bypass.

The property owner at 3205 Wolf Road called on August 30, 2010 and indicated they have traced another storm sewer to the ditch, further to the south of the headwall. They ran into a blockage and have been referred to Bill Weitzel (IDOT Permits) for permission to excavate this sewer.

If you have any questions or need additional information, please contact me or Roger Lockwood at extension 4098.

By:
Rick Wojcik
Hydraulics Section Chief

cc: Lydia Pilecky
Bill Weitzel
Ron Krall

Attachments

S:\Mgr1\Gen\WP\HYD\Project_Manage_FC\Drainage Investigations\DI_1000_Wolf_Rd_N of Belmont\20100908 Memo.docx

cc RDK

Illinois Department of Transportation

Memorandum

To:	Peter Harmet	Attention: John Baczek
From:	Rick Wojcik RFW	
Subject:	Drainage Investigation*	
Date:	September 8, 2010	

*Route:	Wolf Road
Limits:	N. of Belmont, S of I-294
Municipality/County:	Franklin Park/Cook

The purpose of this memo is to provide information for incorporation into the Elgin O'Hare West Bypass project.

On April 13, 2010 Anthony Matassa (IDOT Maintenance), Roger Lockwood (Program Management Consultant), and David Talbot (Village Engineer – Franklin Park) met at the east Wolf Road ditch south of I-294. This drainage investigation is in response to the Village and the adjacent industrial property owner at 3205 N. Wolf Road. It was apparent that the Wolf Road east ditch line needs to be regraded and reestablished.

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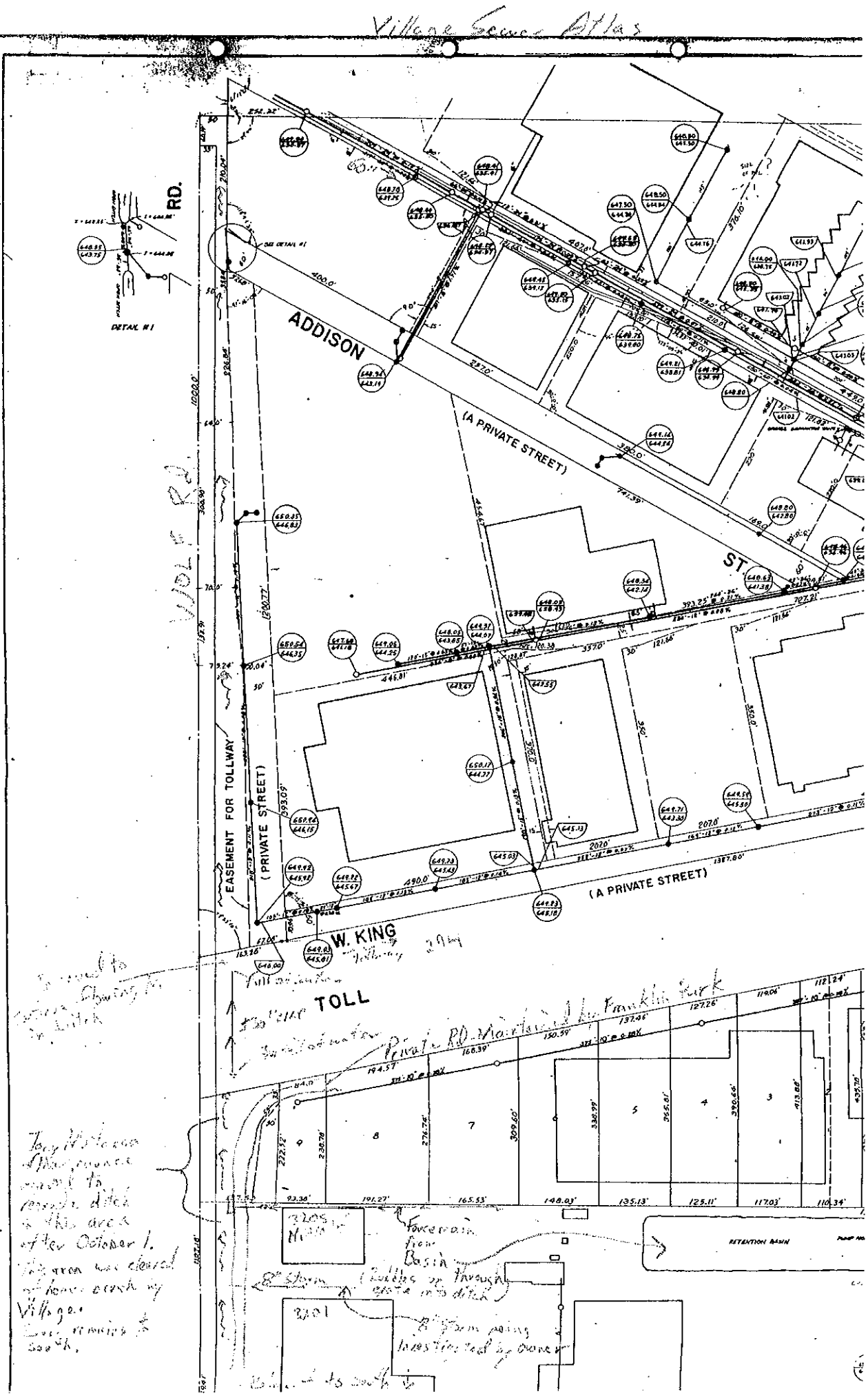
If you have any questions or need additional information, please contact Roger Lockwood at extension 4098.

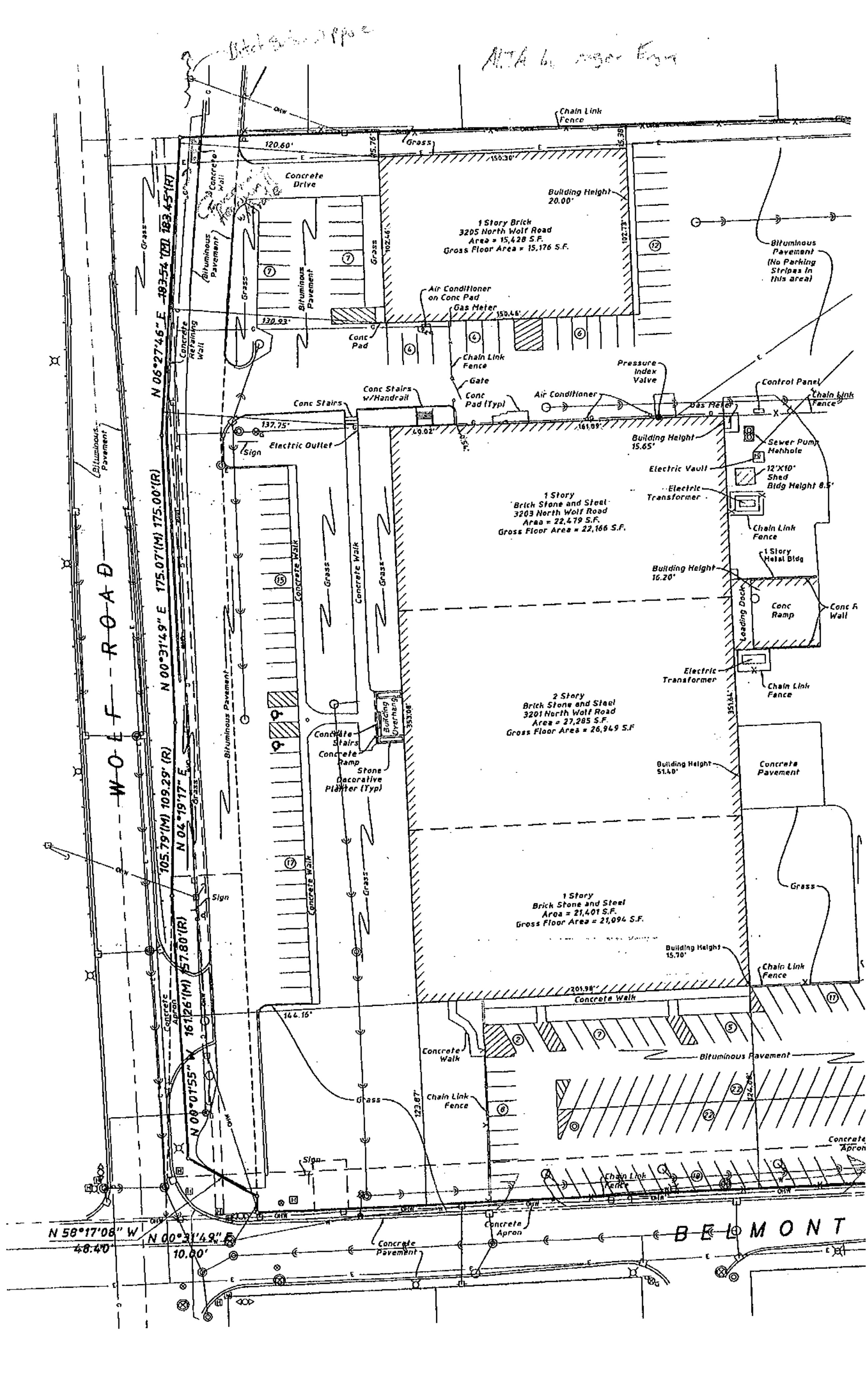
cc: Lydia Pilecky
Bill Weitzel
Ron Krall
Tony Matassa

Attachments

S:\Mgr1\Gen\WP\HYD\Project_Manage_FC\Drainage Investigations\DI_1000_Wolf_Rd_N of Belmont\20100902 Memo.docx

Village Sewer Atlas





Chain Link Fence
Grass
120.60'
150.30'
15.38'
25.76'
Concrete Drive
Concrete Wall
Building Height 20.00'
1 Story Brick
3205 North Wolf Road
Area = 15,428 S.F.
Gross Floor Area = 15,176 S.F.
102.46'
102.73'
Bituminous Pavement
(No Parking Stripes in this area)
Air Conditioner on Conc Pad
Gas Meter
130.93'
150.46'
Conc Pad
Concrete Retaining Wall
Chain Link Fence
Gate
Conc Pad (Typ)
Pressure Index Valve
Control Panel
Conc Stairs
Conc Stairs w/Handrail
Air Conditioner
Gas Meter
137.75'
49.02'
161.09'
Electric Outlet
Sign
Building Height 15.65'
Sewer Pump Manhole
Electric Vault
12'X10' Shed Bldg Height 8.5'
Electric Transformer
1 Story
Brick Stone and Steel
3203 North Wolf Road
Area = 22,479 S.F.
Gross Floor Area = 22,166 S.F.
Chain Link Fence
1 Story Metal Bldg
Building Height 16.20'
Loading Dock
Conc Ramp
Conc R Wall
N 06°27'46" E 183.54'(M) 183.45'(R)
N 00°31'49" E 175.07'(M) 175.00'(R)
W O L F   R O A D
Bituminous Pavement
Concrete Walk
Grass
Electric Transformer
Chain Link Fence
2 Story
Brick Stone and Steel
3201 North Wolf Road
Area = 27,285 S.F.
Gross Floor Area = 26,949 S.F.
353.08'
351.64'
Concrete Stairs
Concrete Ramp
Building Overhang
Stone Decorative Planter (Typ)
Building Height 51.40'
Concrete Pavement
105.79'(M) 109.29'(R)
N 04°19'17" E
Sign
Grass
1 Story
Brick Stone and Steel
Area = 21,401 S.F.
Gross Floor Area = 21,094 S.F.
Building Height 15.70'
Chain Link Fence
157.80'(R)
161.26'(M)
201.98'
Concrete Walk
Concrete Apron
144.16'
Concrete Walk
Bituminous Pavement
N 00°01'55" W
Grass
123.87'
Chain Link Fence
124.06'
Concrete Apron
Sign
Chain Link Fence
N 58°17'08" W 48.40'
N 00°31'49" E 10.00'
Concrete Apron
Concrete Pavement
B E L M O N T

Appendix 6
EOWB Detention Storage Calculations

EOWB
CBBEL Proj. # 07-0404
Available Storage Volume
11/1/2012

ElginO'Hare West Bypass

Full-Build Proposed Detention Storage

WATERSHED	BMP Detention Site	NWL (feet)	HWL (feet)	Available Detention (acre-feet)	Required Detention (acre-feet)	Excess Detention (acre-feet)	Depth of Riprap (feet)	Gravel Layer (feet)	Depth 48 hours after 24-hour storm event (feet)	Drawdown Time to Riprap (hours)	Notes
Silver Creek	D10-N	657	660	7.75			1.0	658.0	0.0	-	provide riprap in bottom to draw down within 48 hours
	D10-S	641	646.5	18.5			0.0	641.0	5.8	-	no riprap, drainage investigation
	Total			26.25	21.08	5.17					
	FP-1 NE			70			These basins will be pumped evacuated after the storm has passed and the 60 inch RCP along the railroad spur and Silver Creek have capacity				no riprap, drainage investigation
	FP-2 SW										no riprap, drainage investigation
	FP-3 Expansion			12			0.0	0.0	8.6	-	no riprap, drainage investigation
	Total			82	82	0					

Silver Creek Required Detention

Roadway	County	Existing Impervious Area (AC)	Proposed Impervious Area (AC)	Increase in Impervious Area (AC)	Proposed Hydrological Disturbed Area (AC)	Prop Imp. Area within Disturbed Area (AC)	Percent Impervious	Acre-ft/per Acre	Required Detention (AC-FT)
I-294	Cook	5.65	7.81	2.16	-	-	100	0.52	1.12
Franklin Ave.	Cook	7.30	12.39	5.09	-	-	100	0.52	2.65
	DuPage	0.83	1.19	0.36	-	-	100	0.57	0.21
Taft Ave.	Cook	-	-	-	8.80	4.78	54	0.33	2.90
West Bypass	Cook	-	-	-	54.75	16.41	30	0.22	11.77
	DuPage	-	-	-	6.74	2.91	43	0.36	2.43
								SILVER CREEK TOTAL:	**21.08**

I-294 Industrial Area - Franklin Park

Required Detention (AC-FT): 82.0

21.209 37.39

Franklin Park

Roadway	County	Existing Impervious Area (AC)	Proposed Impervious Area (AC)	Increase in Impervious Area (AC)	Proposed Hydrological Disturbed Area (AC)	Prop Imp. Area within Disturbed Area (AC)	Percent Impervious	Acre-ft/per Acre	Required Detention (AC-FT)
Franklin Ave.	Cook	2.25	3.39	1.14	-	-	100	0.52	0.59
Taft Ave.	Cook	-	-	-	2.31	0.86	37	0.33	0.76
West Bypass	Cook	-	-	-	37.39	21.21	57	0.22	8.04

DRAINAGE INVESTIGATION
EXHIBITS

ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
P-91-443-06

COOK COUNTY, ILLINOIS

Prepared for

Illinois Department of Transportation
201 W. Center Court
Schaumburg, IL 60196

Prepared by

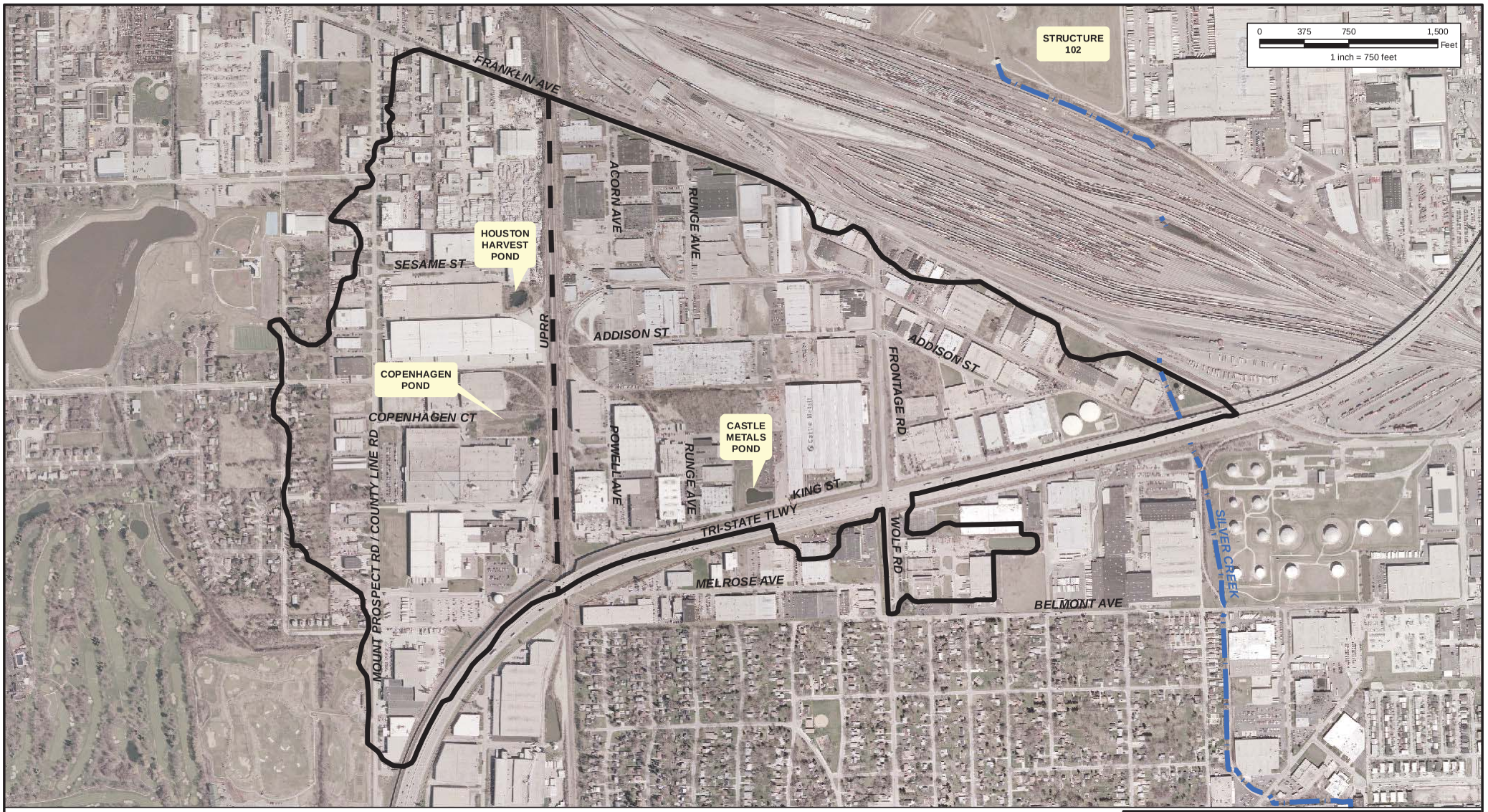
Christopher B. Burke Engineering, Ltd.
9575 W. Higgins Road, Suite 600
Rosemont, IL 60018

CBBEL Project No. 07-0404

December 2012

CH2MHILL

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018-4920 Tel (847) 823-0500 Fax (847) 823-0520



DSGN.	MJB	CHKD.	

Christopher B. Burke Engineering, Ltd.
9575 West Higgins Road, Suite 600
Rosemont, IL 60018
(847) 823-0500 / FAX (847) 823-0520

CLIENT: Illinois Department of Transportation	PROJECT NO.: 07-0404	
TITLE: I-294 Industrial Park Village of Franklin Park Elgin-O'Hare West Bypass		DATE: 10/12/11 EXHIBIT 1

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018 (847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCO\070404exhIA Franklin Park Watershed Map.dgn

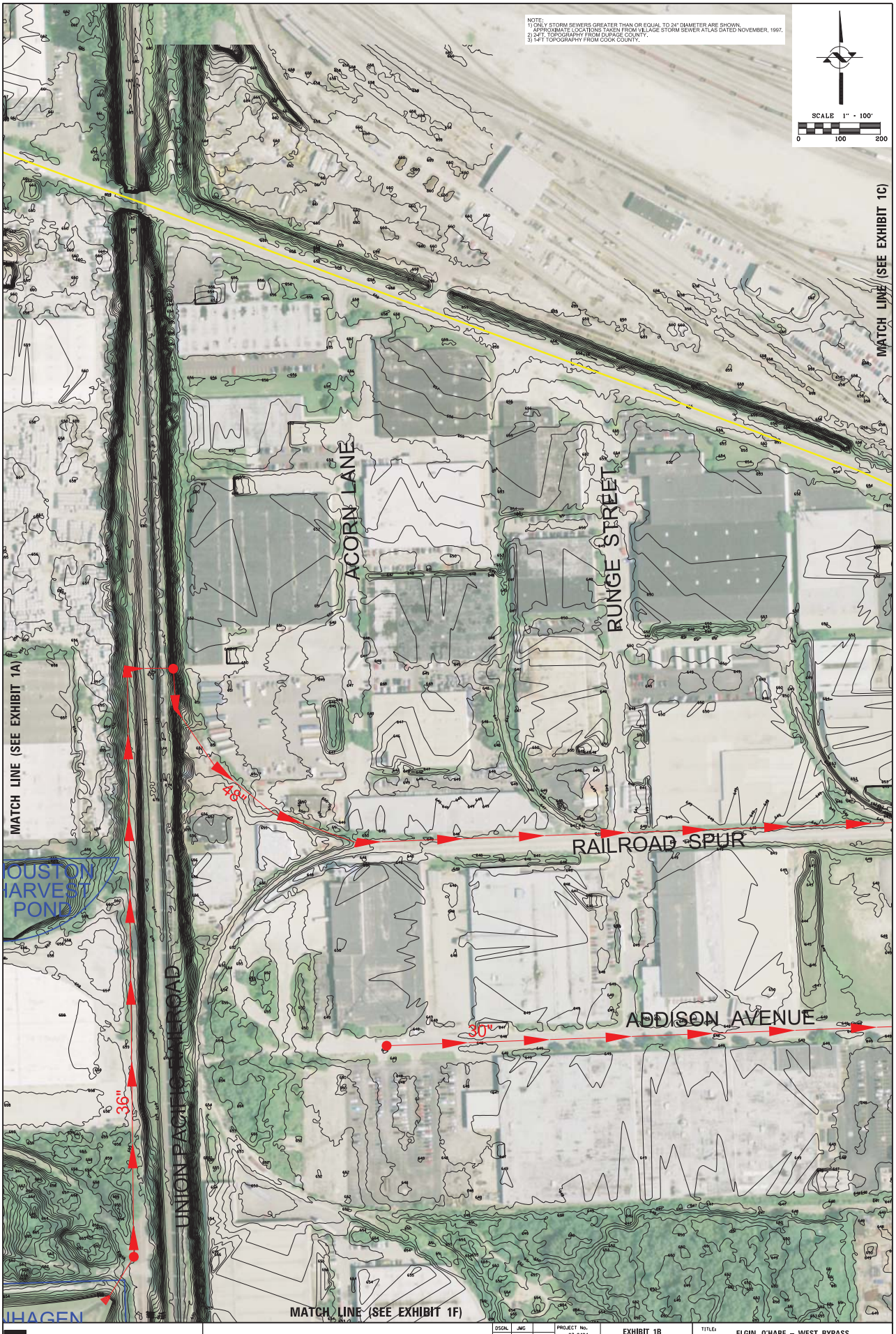
DSGN.	JMG	
DWN.		
CHKD.		
SCALE	1"=150'	
DATE	11/1/2011	

PROJECT No. 07-0404

EXHIBIT 1A

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP



CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018 (847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCO\070404exhIB Franklin Park Watershed Map.dgn

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DWN.		
CHKD.		
SCALE	1"=150'	
DATE	11/1/2011	

PROJECT No. 07-0404

EXHIBIT 1B

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCG\070404exhIC Franklin Park Watershed Map.dgn

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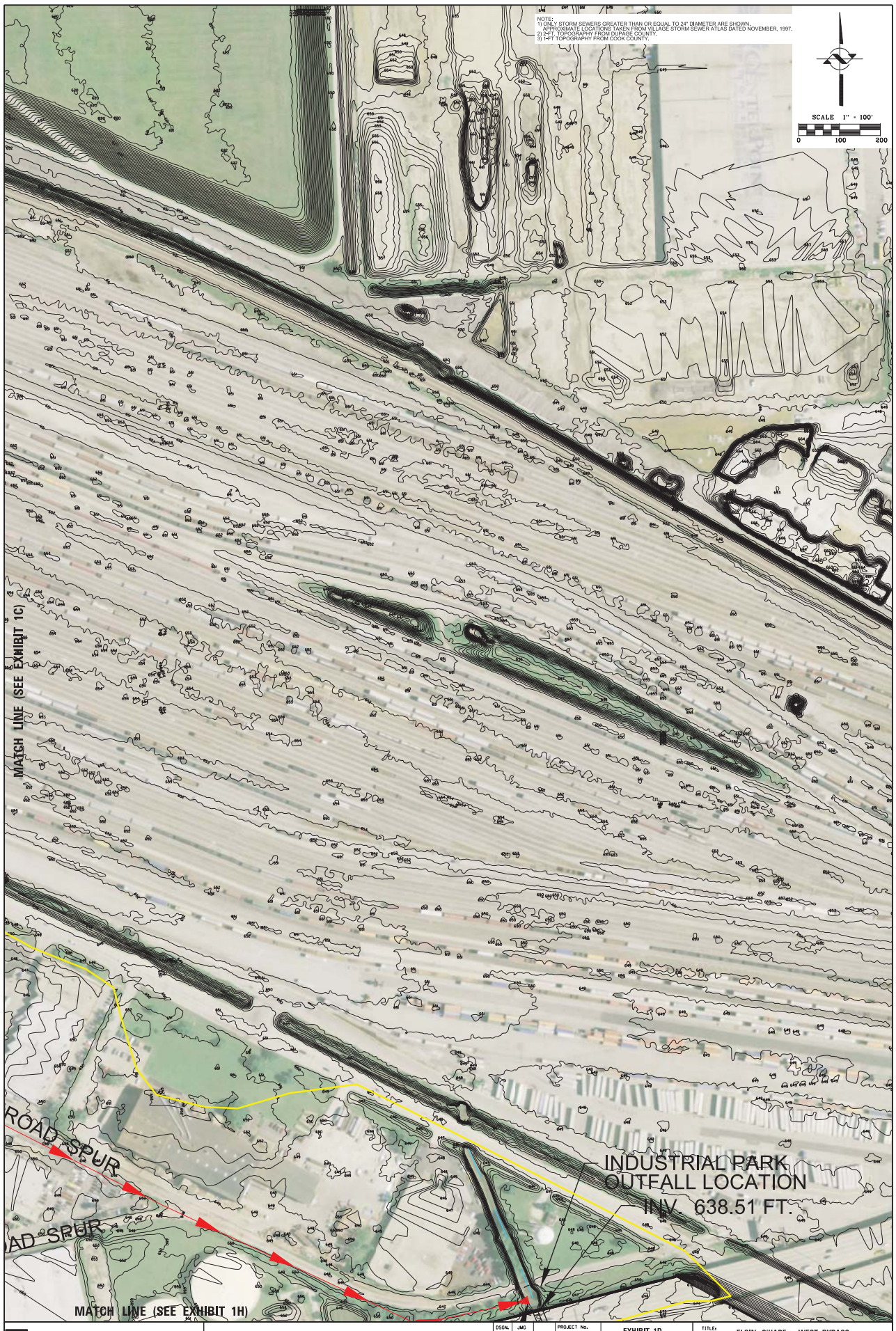
DWN.	
CHKD.	
SCALE	1"=150'
DATE	11/1/2011

PROJECT No. 07-0404

EXHIBIT 1C

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP



CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018 (847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCD\070404exhib Franklin Park Watershed Map.dgn

DSGN.	JMG	
DWN.		
CHKD.		
SCALE	1"=150'	
DATE	11/1/2011	

PROJECT No. 07-0404

EXHIBIT 1D

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP

NOTE:
1) ONLY STORM SEWERS GREATER THAN OR EQUAL TO 24" DIAMETER ARE SHOWN.
APPROXIMATE LOCATIONS TAKEN FROM VILLAGE STORM SEWER ATLAS DATED NOVEMBER, 1997.
2) 2-FT. TOPOGRAPHY FROM DUPAGE COUNTY.
3) 1-FT TOPOGRAPHY FROM COOK COUNTY.

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018 (847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCD\070404exhIE Franklin Park Watershed Map.dgn

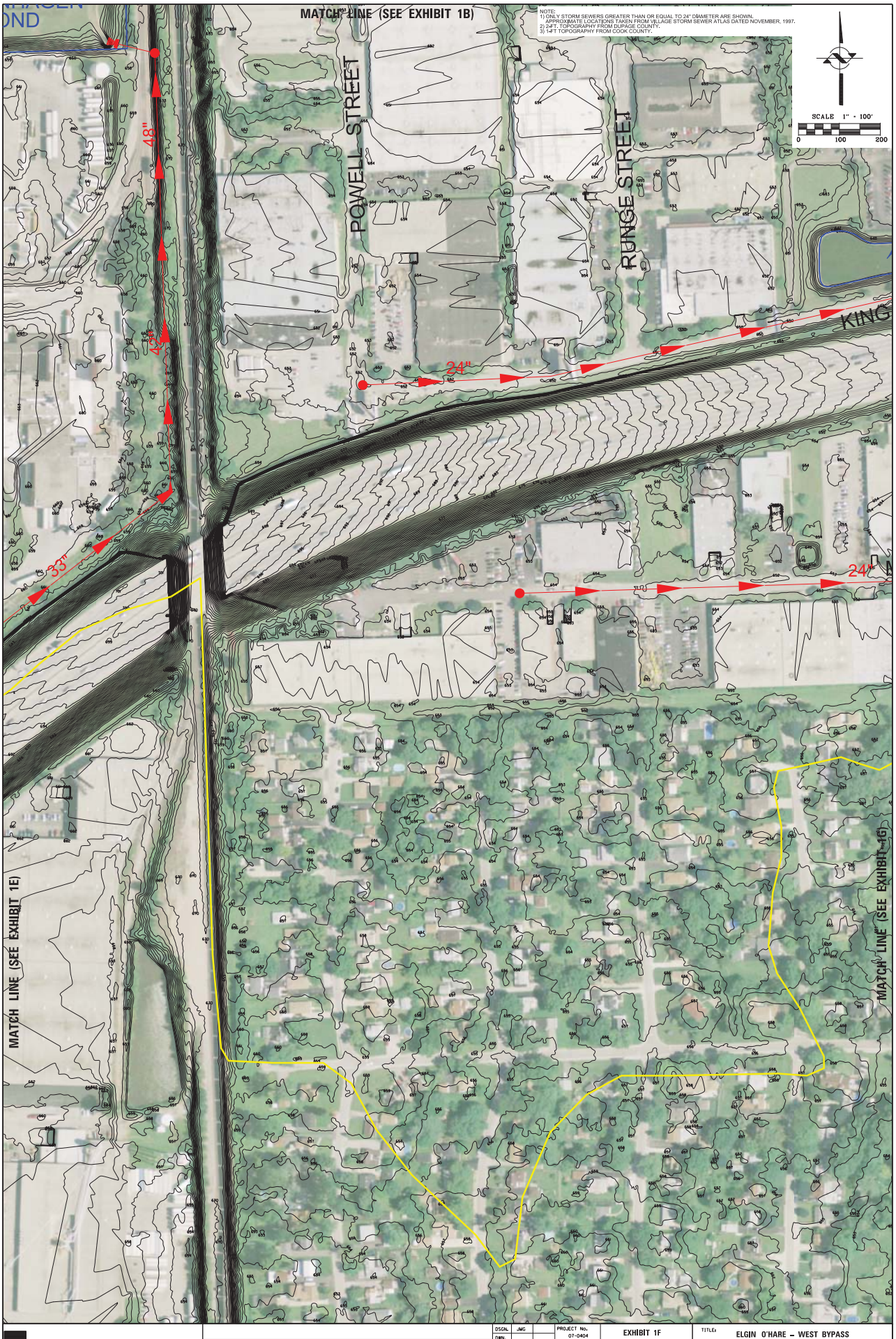
DSGN.	JMG
DWN.	
CHKD.	
SCALE	1"=150'
DATE	11/1/2011

PROJECT No. 07-0404

EXHIBIT 1E

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP



CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018 (847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCO\070404exhIF Franklin Park Watershed Map.dgn

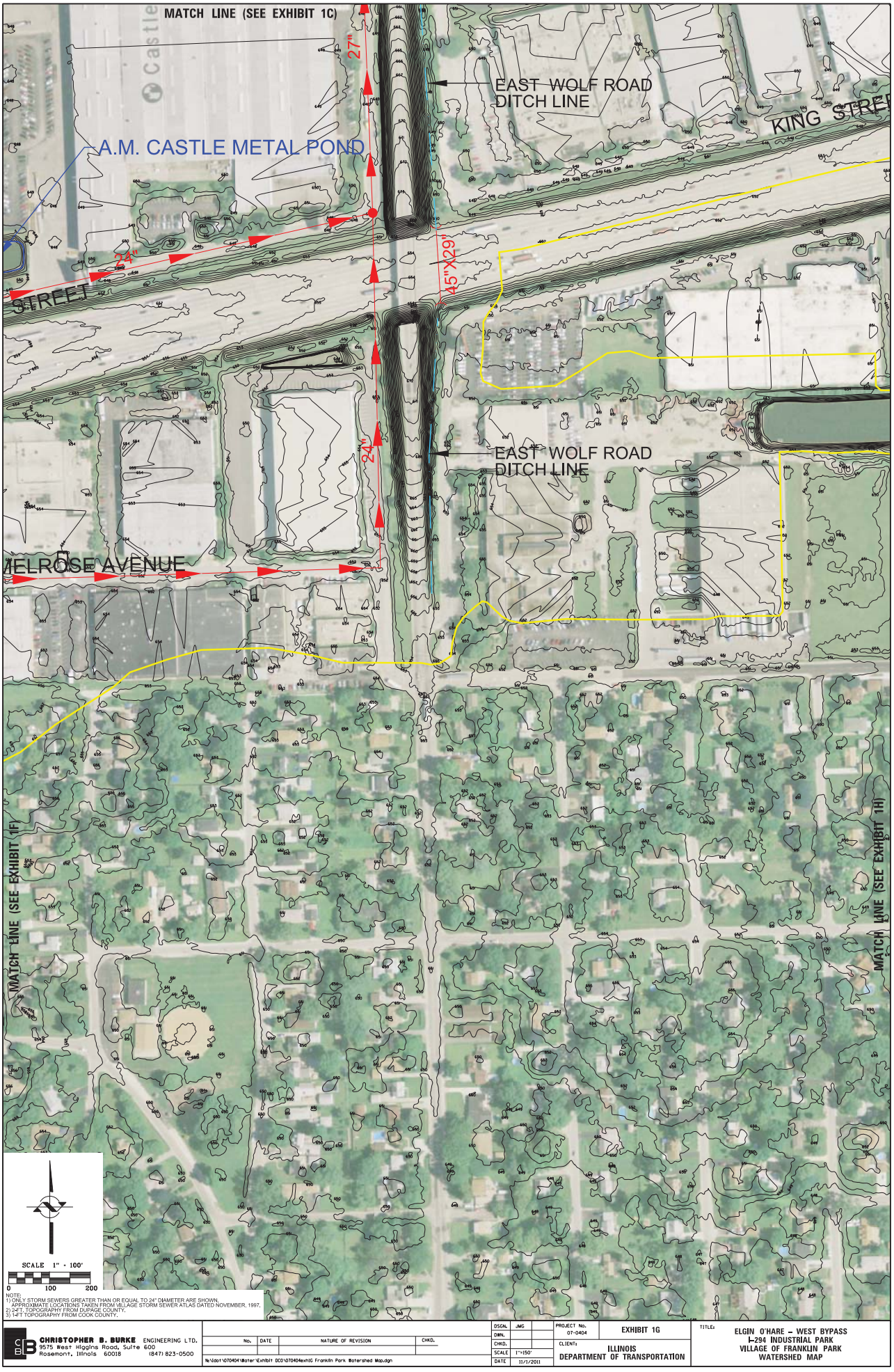
DSGN.	JMG
DWN.	
CHKD.	
SCALE	1"=150'
DATE	11/1/2011

PROJECT No. 07-0404

EXHIBIT 1F

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP



CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCD\070404exhIG Franklin Park Watershed Map.dgn

DSGN.	JMG
DWN.	
CHKD.	
SCALE	1"=150'
DATE	11/1/2011

PROJECT No. 07-0404

EXHIBIT 1G

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP

NOTE:
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9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

No.	DATE	NATURE OF REVISION	CHKD.

N:\dot\070404\Water\Exhibit DCO\070404exhib Franklin Park Watershed Mapdgn

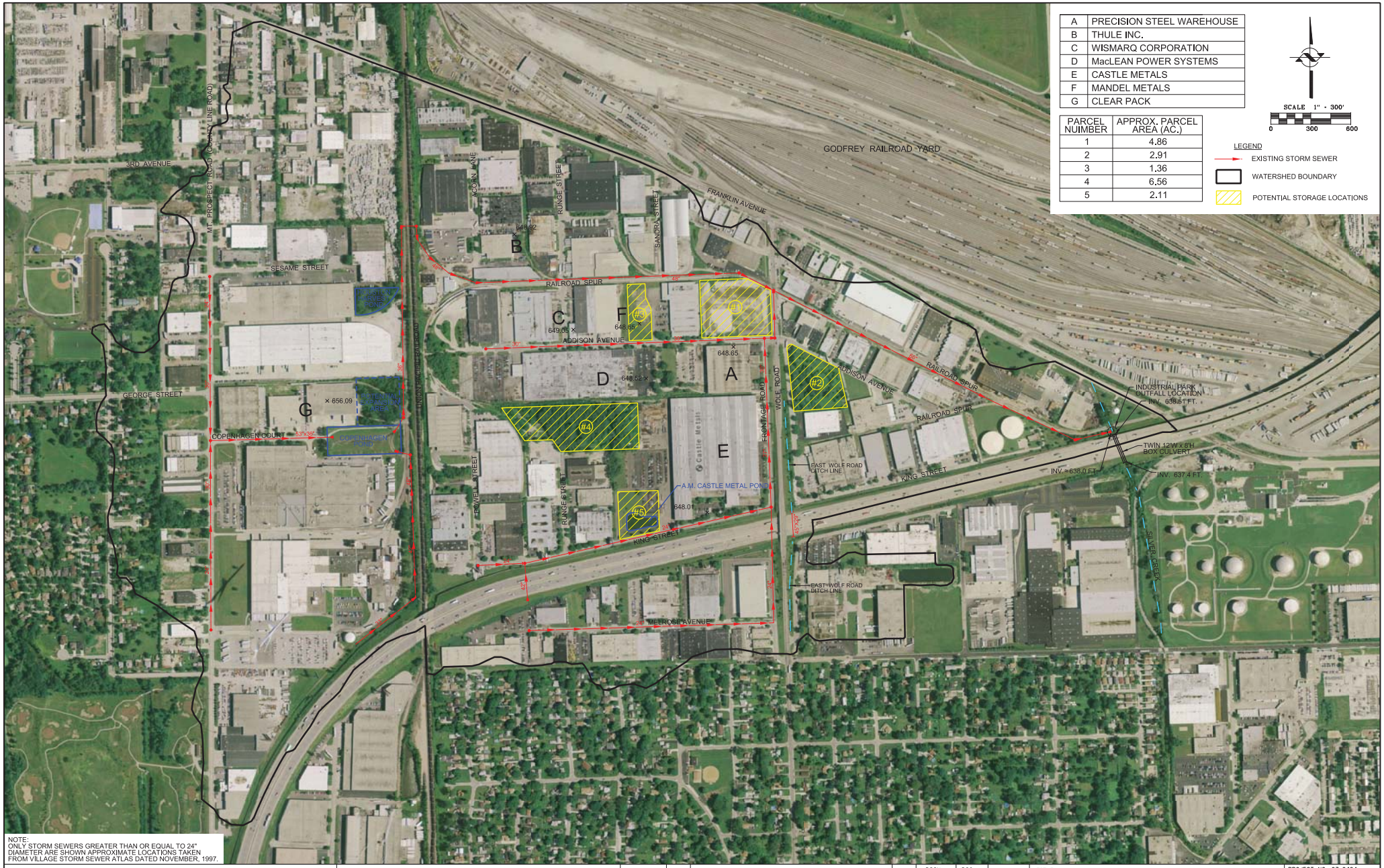
DSGN.	JMG
DWN.	
CHKD.	
SCALE	1"=150'
DATE	11/1/2011

PROJECT No. 07-0404

EXHIBIT 1H

CLIENT: ILLINOIS DEPARTMENT OF TRANSPORTATION

TITLE: ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
WATERSHED MAP



A	PRECISION STEEL WAREHOUSE
B	THULE INC.
C	WISMARQ CORPORATION
D	MacLEAN POWER SYSTEMS
E	CASTLE METALS
F	MANDEL METALS
G	CLEAR PACK

PARCEL NUIMBER	APPROX. PARCEL AREA (AC.)
1	4.86
2	2.91
3	1.36
4	6.56
5	2.11

SCALE 1" = 300'
0 300 600

LEGEND
EXISTING STORM SEWER
WATERSHED BOUNDARY
POTENTIAL STORAGE LOCATIONS

NOTE:
ONLY STORM SEWERS GREATER THAN OR EQUAL TO 24" DIAMETER ARE SHOWN APPROXIMATE LOCATIONS TAKEN FROM VILLAGE STORM SEWER ATLAS DATED NOVEMBER, 1997.

CHRISTOPHER B. BURKE ENGINEERING LTD.
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Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
ILLINOIS DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

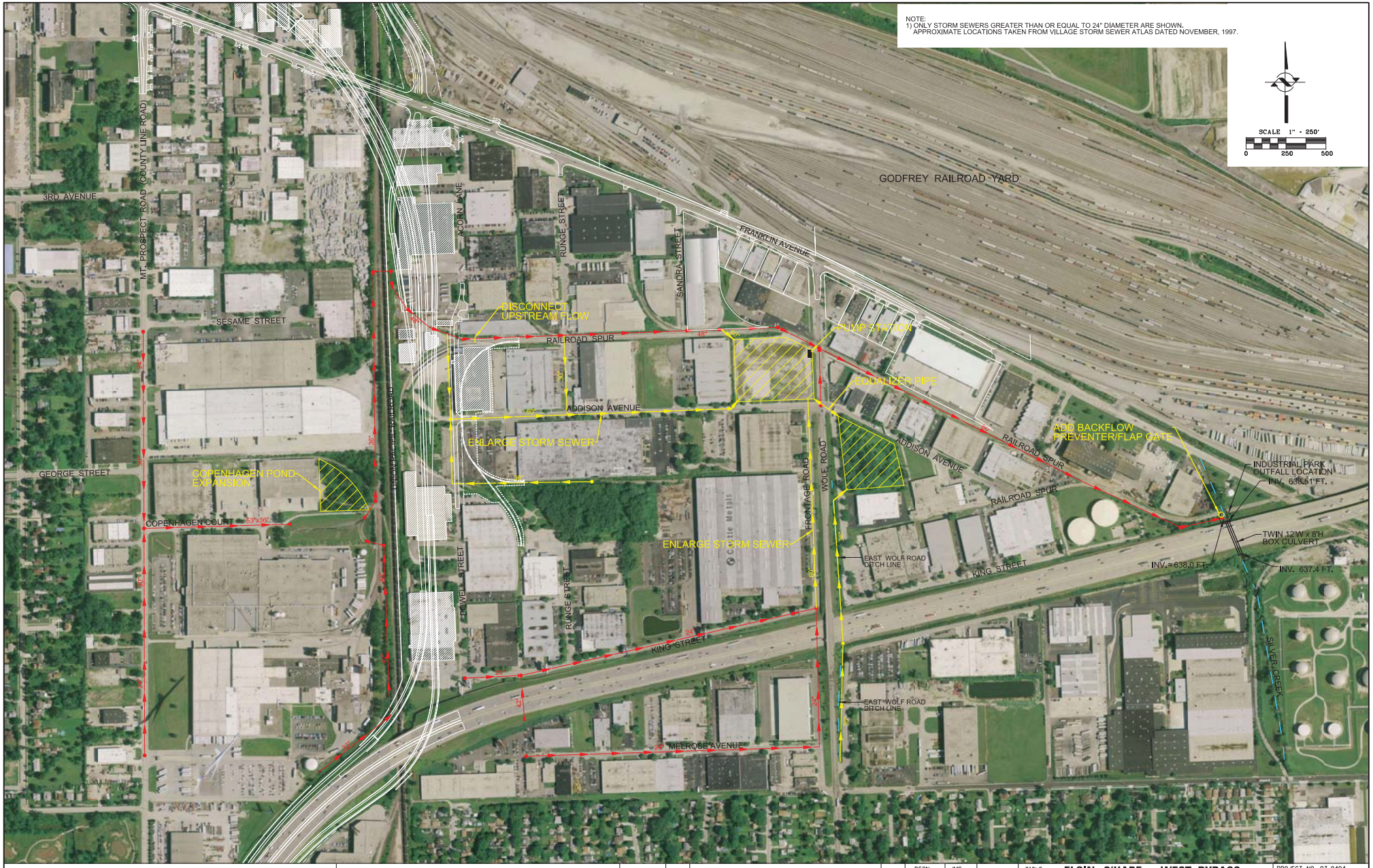
N:\dot\070404\Water\Exhibit DCO\070404exh2 Franklin Park Existing Conditions.dgn

DSGN.	DCO	
DWN.	EAT	
CHKD.		
SCALE:	1"=300'	

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
EXISTING DRAINAGE CONDITIONS

PROJECT NO. 07-0404
DATE: 3/27/2012
SHEET OF

EXHIBIT 2



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9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
ILLINOIS DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

N:\dot1\070404\Bater\Exhibit JMG\070404exh3 Franklin Park Proposed Conditions Alt 1.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=250'	

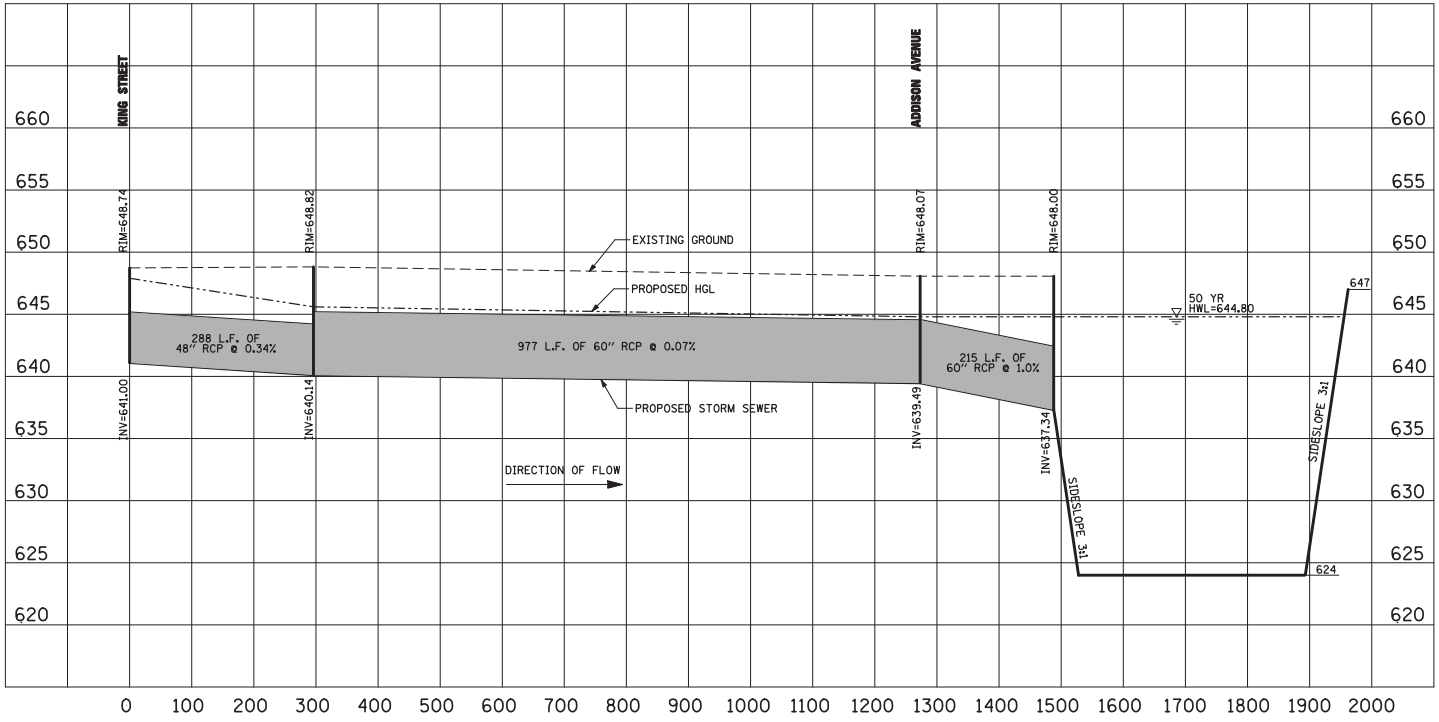
TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
PROPOSED DRAINAGE CONDITIONS
ALTERNATIVE 1

PROJECT NO.	07-0404
DATE:	12/5/2012
SHEET	OF

EXHIBIT 3

NORTH

PROPOSED FRONTAGE ROAD



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Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

FILE NAME: N:\Idot\070404\Water\Exhibit DC0\070404_EXH4_Pr Frontage Rd Storm Sewer.dgn

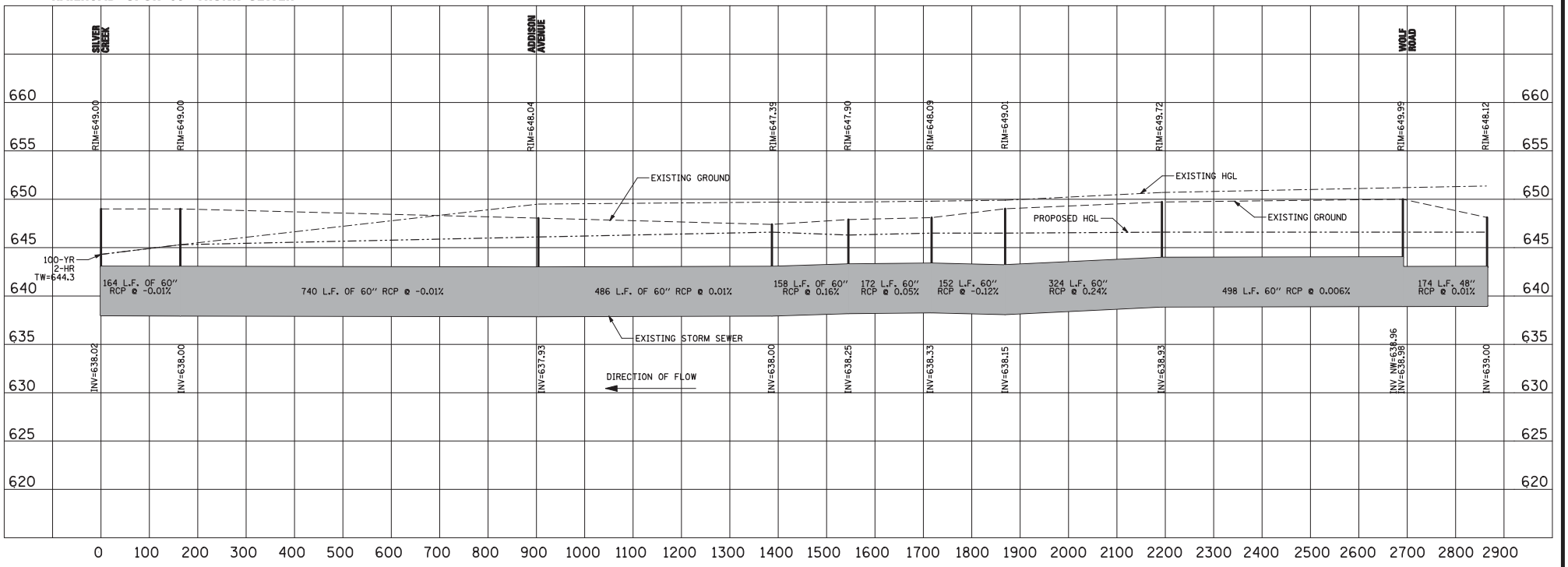
DSGN.	
DWN.	
CHKD.	
SCALE:	200'
PLOT DATE:	12/22/2011
CAD USER:	JGOWIN
MODEL:	Default

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
EXHIBIT 4
PROPOSED FRONTAGE ROAD STORM SEWER

PROJ. NO.	
DATE:	
SHEET	OF
DRAWING NO.	

NORTH

RAILROAD SPUR 60" TRUNK SEWER



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CLIENT:
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

DSGN.	
DWN.	
CHKD.	
SCALE:	200'
PLOT DATE:	12/22/2011
CAD USER:	JGOWIN
MODEL:	Default

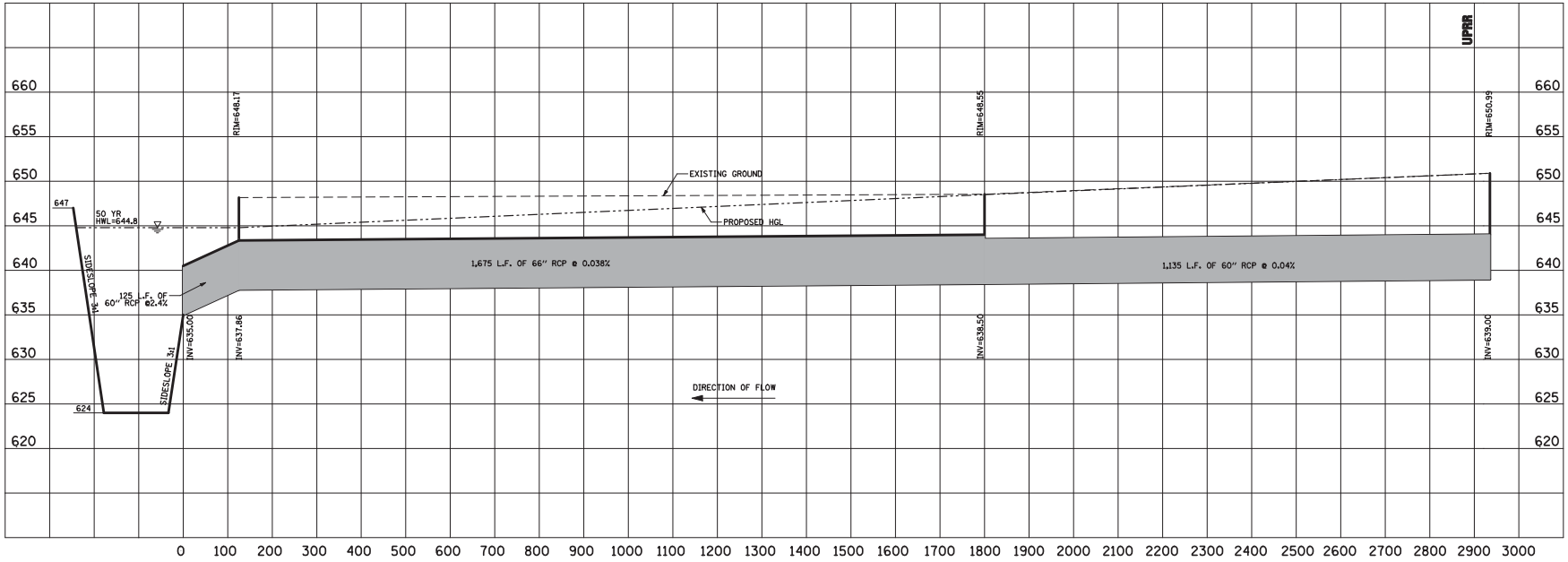
FILE NAME N:\Idot\070404\Water\Exhibit DCO\070404_EXH5_RR Spur 60 Trunk Sewer.dgn

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
EXHIBIT 5
RAILROAD SPUR 60" TRUNK SEWER

PROJ. NO.
DATE:
SHEET OF
DRAWING NO.

NORTH

PROPOSED ADDISON AVENUE STORM SEWER



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Rosemont, Illinois 60018
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CLIENT:
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

DSGN.	
DWN.	
CHKD.	
SCALE:	250'
PLOT DATE:	12/22/2011
CAD USER:	JGOWIN
MODEL:	Default

FILE NAME N:\dot\070404\Water\Exhibit DCO\070404_EXH6_Addison St Diversion.dgn

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
EXHIBIT 6
PROPOSED ADDISON AVENUE STORM SEWER

PROJ. NO.
DATE:
SHEET OF
DRAWING NO.

NOTE:
1) ONLY STORM SEWERS GREATER THAN OR EQUAL TO 24" DIAMETER ARE SHOWN. APPROXIMATE LOCATIONS TAKEN FROM VILLAGE STORM SEWER ATLAS DATED NOVEMBER, 1997.

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CLIENT:
ILLINOIS DEPARTMENT OF TRANSPORTATION

NO.	DATE	NATURE OF REVISION	CHKD.

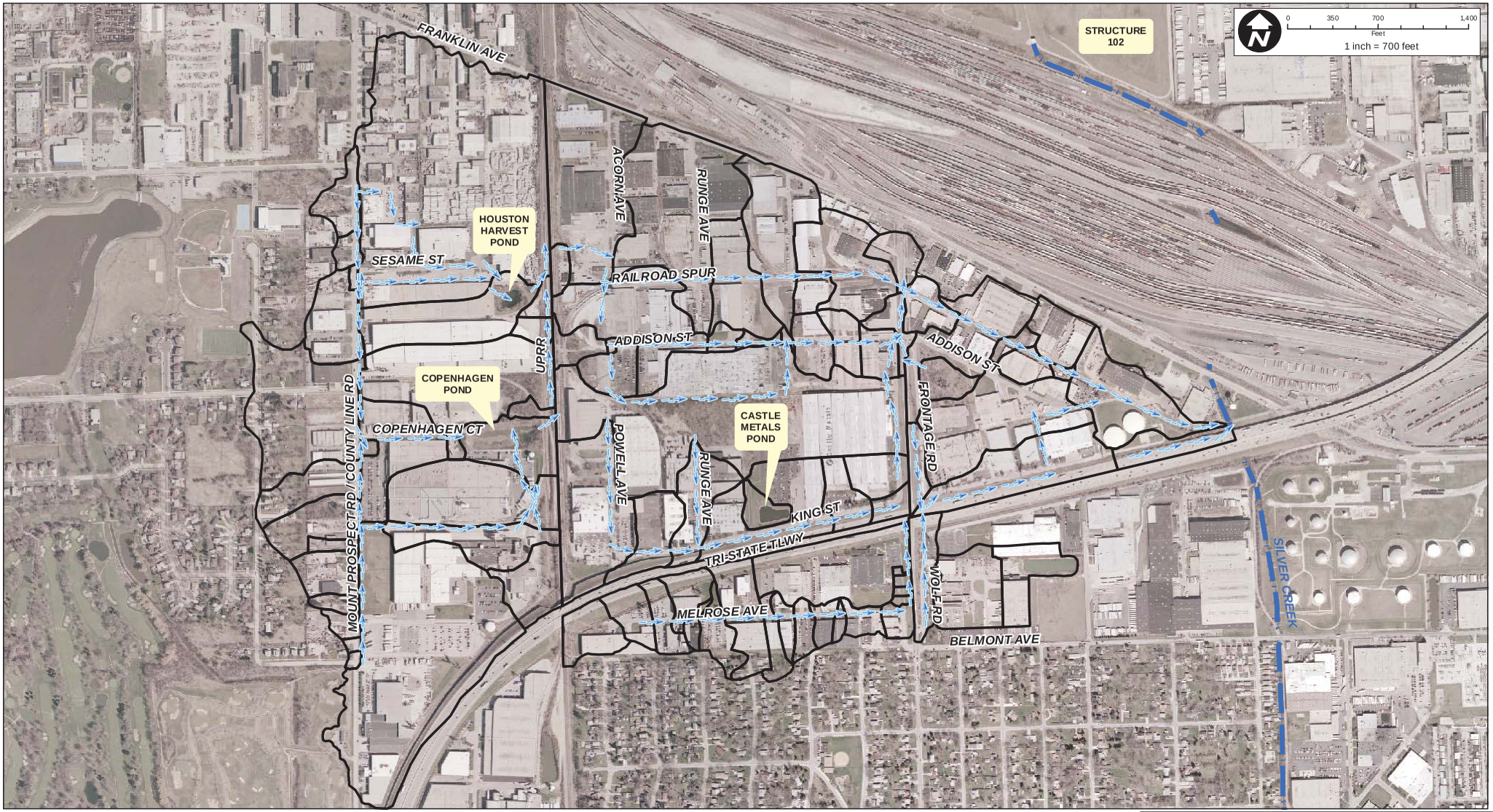
N:\dot\070404\Water\Exhibit JMG\070404exh7 Franklin Park Proposed Conditions Alt 2_2.dgn

DSGN.	JMG	
DWN.	EAT	
CHKD.		
SCALE:	1"=250'	

TITLE:
ELGIN O'HARE – WEST BYPASS
I-294 INDUSTRIAL PARK
VILLAGE OF FRANKLIN PARK
PROPOSED DRAINAGE CONDITIONS
ALTERNATIVE 4

PROJECT NO.	07-0404
DATE:	9/28/2012
SHEET	OF

EXHIBIT 7A



DSGN.	MJB	CHKD.	

Christopher B. Burke Engineering, Ltd.
9575 West Higgins Road, Suite 600
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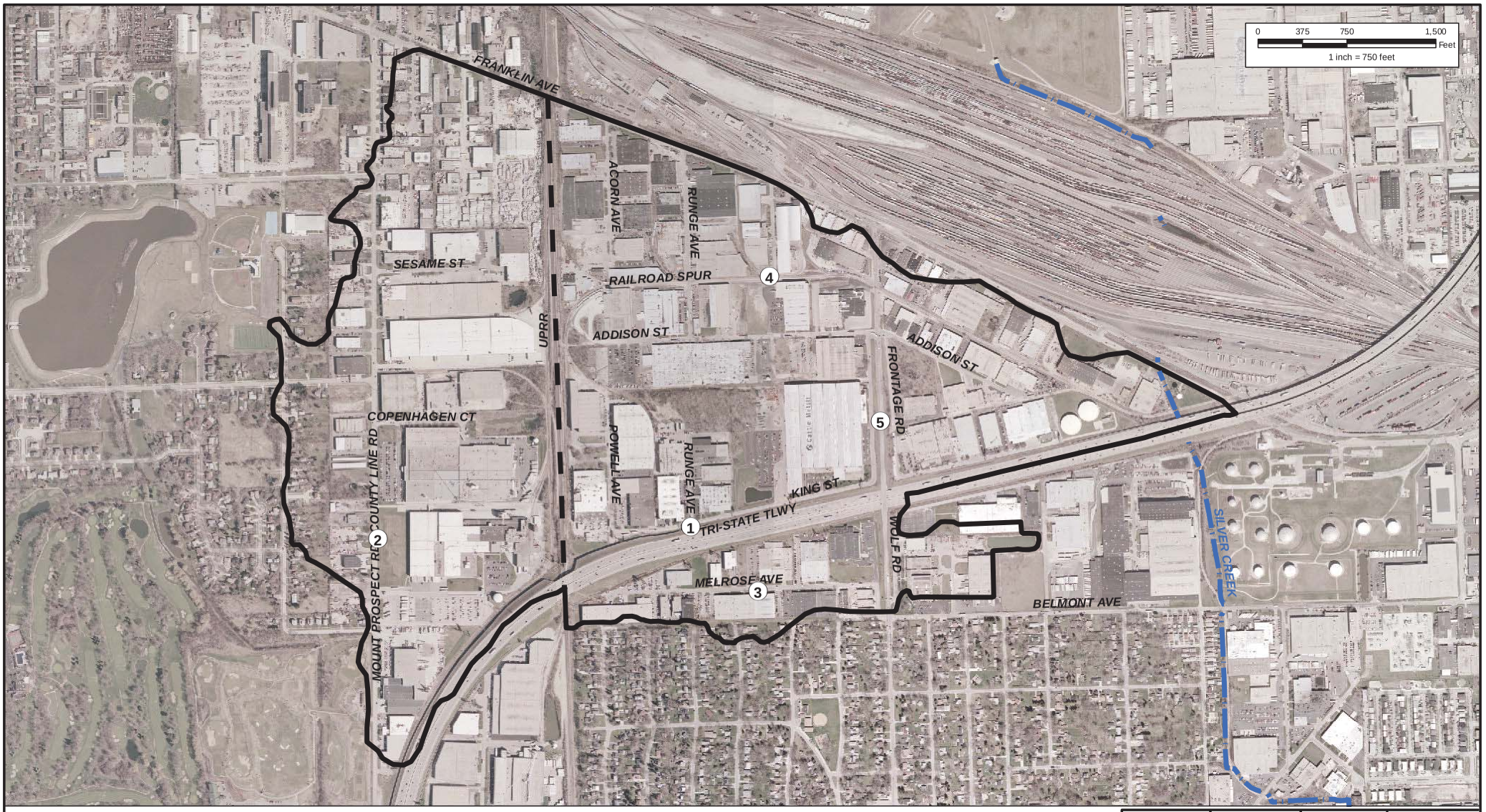
(847) 823-0500 / FAX (847) 823-0520

CLIENT	Illinois Department of Transportation	PROJECT NO. 07-0404	
TITLE	I-294 Industrial Park - Existing Overflow Routes Village of Franklin Park Elgin-O'Hare West Bypass	DATE 10/12/11	EXHIBIT 9



DSGN.	MJB	CHKD.	

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(847) 823-0500 / FAX (847) 823-0520

CLIENT	Illinois Department of Transportation	PROJECT NO. 07-0404	
TITLE	I-294 Industrial Park - Locations for Critical Duration Analysis Village of Franklin Park Elgin-O'Hare West Bypass	DATE 10/12/11	EXHIBIT 10