PROJECT ROUTE: US Route 41, Cornell Drive, Stony Island Avenue
LIMITS: Mobility Improvements to Support the SLFP
MUNICIPALITY/COUNTY: City of Chicago/Cook County
JOB NUMBER: Section 17-B7203-00-ES

PREPARED FOR: District One
Bureau of Programming
Hydraulics Section
DATE: 12/20/2019

PREPARED BY: CNECT
DATE: 12/20/2019
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9. November 30th, 2018 – Coordination with CDOT, Chicago Park District, and Department of Water Management.
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11. June 10th, 2019 – Coordination with IDNR

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1. South Lake Shore Drive As-Builts
2. City of Chicago Sewer Atlas
3. Lake Michigan Water Level Data
4. Department of Water Management Sewer Connection Details
5. Project Additional Impervious Area Summary
6. Inlet Spacing Analysis
7. Jackson Park SWMM Analysis
8. Outfall Hydrograph Calculations
9. South Lake Shore Drive Underpass Pump Station Analysis
10. Estimated Floodplain Fill Calculations
11. East and West Lagoon Hydrology Memorandum
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LOCATION DRAINAGE STUDY CHECKLIST

Project Route: US Route 41, Cornell Drive, Stony Island Avenue

Limits: Mobility Improvements to Support the SLFP

Municipality/County: City of Chicago/Cook County

Job Number: Section 17-B7203-00-ES

0-00 OVERALL PROJECT SCOPE

This project, in conjunction with the development of the Obama Presidential Center and the Chicago Park District’s 2018 South Lakefront Framework Plan, aims to create more contiguous parkland and reduce the effects of vehicular traffic within Jackson Park by consolidating roadways and improving circulation for all modes of travel.

This includes the closure of portions of Cornell Drive and Marquette Drive, the widening along portions of Lake Shore Drive and Stony Island Avenue, the addition and repositioning of trail throughout the park, and the addition of trail underpasses beneath Hayes Drive.

Lake Shore Drive (US Route 41) from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east. Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.

The scope of the 59th Street inlet bridge widening includes removing existing architectural stone cladding and reinstalling to the new bridge structure on the west face. The abutments will be extended to the west and new wingwalls will be constructed on the west side. The bridge widening includes some fill into the existing floodplain.

Stony Island Avenue from 59th Street to 64th Street would be widened to the east to provide an additional through lane in each direction, an all-day on street parking or loading zone lane on each side of the road, and a raised median with left-turn channelization at intersections. From 64th Street to 67th Street, Stony Island Avenue would be widened to provide a consistent cross section including three northbound lanes and four southbound lanes separated by a raised median. Intersections on Stony Island Avenue from 59th Street to 67th Street would be reconfigured to accommodate the roadway widening and provide additional turn lanes.

Parking would be removed on Hayes Drive from Lake Shore Drive to Cornell Drive to provide two lanes in each direction, separated by a barrier median. Modifications are required at the Lake Shore Drive/Coast Guard Drive, Richards Drive, and Cornell Drive/63rd Street intersections with Hayes Drive to accommodate the additional through lanes as well as the proposed closure of Cornell Drive north of 63rd Street. The existing triangular, stop-controlled intersection at Hayes Drive and Richards Drive would be reconfigured to create a signalized T-intersection. Hayes Drive would be realigned at Cornell Drive to provide a through movement for predominant travel through the intersection. The existing portion of Hayes Drive between Stony Island Avenue and Cornell Drive would be realigned to create a T-intersection with the realigned Hayes Drive.

The existing drainage within the project limits includes a large City of Chicago, 13-feet diameter combined sewer that flows to the north under Stony Island Avenue. In general, most of the roadway storm sewers within the project limits are ultimately tributary to this sewer. There is a control structure located on Hayes Drive just east of Stony Island that includes a backflow preventer (to prevent combined sewer flows from backing into the storm sewer) as well as a restrictor to limit discharge to the combined sewer. Flows that exceed the design flow will overflow to the existing Lagoons in Jackson Park through a series of weirs within the existing storm sewer system. The proposed design will maintain all existing control structures, including the orifice and weir overflow system, Per City of Chicago requirements. Modifications will only be made when maintaining existing structures is not possible.
Stony Island is drained entirely by combined sewers. There are local sewers that drain the roadway and surrounding areas that ultimately connect to the large 13-foot diameter interceptor sewer that runs down the center of Stony Island. The sewer is under Chicago Department of Water Management (DWM) jurisdiction. In the existing conditions there are also areas from Jackson Park that drain directly into the lagoons. Cornell Drive, north of Hayes discharges directly to the West Lagoon via an existing storm sewer.

1-00 EXISTING DRAINAGE SYSTEM (see Exhibit 1-00a, General Location Drainage Map; Exhibit 1-00b, Existing Drainage Plan)

1-01 IDENTIFIED DRAINAGE PROBLEMS (see Appendix C)

☒ Yes ☐ No

1-01.1 Description: The only known drainage issue in the project area is the 59th Street Inlet Bridge pedestrian underpass. The underpass was built in approximately 2003 as part of CDOT project number B-1-440. Drainage for the structure was provided by catch basins on either end of the structure and an outlet to the 59th Street Inlet Lagoon. When the structure was built, the water levels in Lake Michigan were lower than the current lake levels, which are now historically high. As a result, there is consistently standing water in the underpass that does not drain because the water level in the lake is higher than the rims of the underpass drainage structures.

Responsibility ☐ IDOT ☒ Others (Park District)

Action
An investigation of the existing drainage system was conducted (see Appendix D Attachment 14). The existing underpass storm sewers were cleaned and televised, and the sewers and existing backflow preventer were found to be in good condition. When the 59th Street pedestrian underpass was built, some of the structures for a future pump station were installed, but the pumps, control and wet well were not constructed. The pump station will be installed as a part of the proposed project. The pumps will drain storm water from the pedestrian underpass drainage system to the Lake Shore Drive mainline storm sewer. This will drain the underpass regardless of lake water levels and eliminate the current standing water in the pedestrian underpass.

☒ Incorporate into the Study
(See Section Section 2-07)

1-02 IDENTIFIED BASE FLOODPLAINS (see Exhibit 1-02a Flood Insurance Rate Map and Section 3-00) The Flood Insurance Rate Map for Cook County was examined for identified base floodplains, which were either traversed by or adjacent to (Project Route)

Floodplains ☒ Yes ☐ No

Location: Traversed by US Route 41
Sta. 81+06 to 81+82
Sta. 128+66 to 129+54

Adjacent to US Route 41
Sta. 81+82 to 128+66
Sta. 129+54 to 150+07

Floodways ☐ Yes ☒ No
1-03 MAJOR DRAINAGE FEATURES (see Exhibit 1-00a)

1-03.1 Bridges

Location: Lake Shore Drive, over 59th Street inlet.

Structure No.: 016-6195

Hydraulic Report Prepared by IDOT

Waterway Information Table Available:
☐ Yes (Exhibit 1-03.1a)
☒ No

Narrative Summary:
The existing structure is a single span arch bridge with a length of 46-feet (back to back of abutments) and a width of 91.2 feet (out to out bridge deck). There are no reports that this structure is subject to overtopping or other types of flooding. The bridge is located in a crest vertical curve above the approach pavements. The low chord for this structure is above the FEMA 100-year Lake Michigan elevation. This structure is over the connecting channel between Lake Michigan and the Jackson Park North Lagoon and provides access for small watercraft. There is no record of flow through the waterway under this structure. Therefore the waterway through this structure was not hydraulically modeled. The design high water elevations uses frequency high water elevations taken from the 'Revised Report on Great Lakes Open-Coast Flood Levels' by the US Army Corp of Engineers. The 50-year freeboard to the roadway is approximately 3.78-feet and the 50-year clearance at the bridge is 5.92-feet.

1-03.2 Major Culvert Crossings

N/A

1-03.3 Pump Stations

N/A

1-03.4 Reservoirs/Detention Facilities

N/A

1-03.5 Depressed Road

N/A

1-03.6 Channel and Zone A Floodplains

N/A
2-00 PROPOSED DRAINAGE SYSTEM (Exhibit 2-00a, Proposed Drainage Plan)

2-01 DESIGN CRITERIA (Exhibit 2-01a - Typical Existing Cross Section. Exhibit 2-01b - Typical Proposed Cross Sections)

Check all that apply:

☐ New Construction ☑ Reconstruction ☐ 3R Projects (Non-Freeways)
☐ 3R Projects (Freeways)

1. Proposed storm sewer conveyance systems will be designed for a \((10, 50)\) year storm frequency with a velocity between \(3\, \text{ft/sec} \) (\(900\, \text{mm/sec}\)) and \(10\, \text{ft/sec} \) (\(3000\, \text{mm/sec}\)). For storm sewers oversized for detention minimum velocity is \(2\, \text{ft/sec}\).
   ○ Yes ☐ No ☐ N/A

2. Proposed ditches will be designed for a \(50\) year storm frequency and desirable ditch grades will be no less than \(0.5\%\).
   ○ Yes ☐ No ☐ N/A

3. The roadway edge of pavement at the low grade point in a floodplain area for highways with a Design Hourly Volume (DHV) of \(100\) or more shall be a minimum of three feet above design headwater elevation.
   ○ Yes ☐ No (BDE 3100 Required) ☐ N/A

4. It is required that a minimum clearance of two (2) feet be established between the design high water and the low beam elevation of bridge structures. The bottom of the bridge super structure shall not be below the all-time high water elevation for the new freeway and expressway construction.
   ○ Yes ☐ No (BDE 3100 Required) ☐ N/A

5. The waterway openings of bridges and culverts will be designed for a \((30, 50)\) year storm frequency.
   ○ Yes ☐ No ☐ N/A
   The bridges over waterways are over lake waters and are not subject to flows resulting from storm water runoff. No hydraulic analysis is required for these structures. Because the 59th Inlet structure is used for navigation, the existing waterway opening will be maintained. There are no records of complaints that there is insufficient clearance for navigation

6. The vertical alignment for curbed pavements will have a minimum grade of \(0.3\%\) and a drainage maximum "K" value of \(167\) English Unit (\(51\) Metric Units).
   ○ Yes ☐ No ☐ N/A
7. Minimum Pavement cross slopes will be 1.5% or 2% per BDE Manual Section 34-2.01 (b).

☐ Yes   ☐ No   ☐ N/A

List every design exception separately, cite the presentation at the FHWA meeting and cite a copy of the meeting minutes included in Appendix C.

If the scope of work is changed during the P.S. & E. stage, the appropriate drainage design exemption approval, if any, will be processed through the Hydraulics Section by the District’s Bureau of Design.

2-02 OUTLET EVALUATION

Unless otherwise noted below, the various outlets within the limits of the subject improvement were determined to be suitable for continued use under proposed conditions without modifications or the provision of storm water detention.

Unsuitable outlets: ☐ Yes   ☑ No

Sensitive (receptor to rate, volume, and / or water quality) outlets:

☐ Yes   ☐ No

Location:  Lake Shore Drive – Outlet #11, Station 9954+19
Stony Island Avenue – Outlet #6, Station 260+46

Source:

Evaluation:

Recommendation:

For the proposed improvements a more detailed SWMM hydrologic and hydraulic model was created to analyze the existing and proposed conditions. DWM provide hydraulic grade line data for the 13.5’ diameter combined sewer (COCCS) along Stony Island Avenue that was used as a starting tailwater elevation for the model analysis. In summary the SWMM modeling shows that the hydraulic grade line for the Hayes Drive and Lake Shore Drive storm sewers are contained within the system up to approximately the 10-year elevation. Note that no revisions to the existing overflow elevations are proposed.
2-03 STORM WATER DETENTION ANALYSIS

This project has been reviewed in accordance with Drainage Manual, Section 1-303.03 “Storm Water Storage”.

2-03.1 Evaluation

☐ No storm water detention required

Comments:
The first flush, or 1-year runoff event, will be diverted to the local sewer system. The existing release rate will be maintained as described in Section 2-02 above. The overall roadway improvements will provide a net reduction of approximately 12 acres of impervious area that drain to the lagoons. The improvements on Stony Island Avenue, Hayes Drive, and South Lake Shore Drive will add approximately 2.6 acres of impervious area that will be tributary to the combined sewer on Stony Island. However, by maintaining the existing restrictors, number of catch basins on Stony Island, and release rates to the combined sewer, total flow will be maintained with the overflow being tributary to the lagoons. The total flow to the lagoons will still be reduced due to the overall reduction in impervious area.

☐ Storm water detention required

Comments:

Unsuitable outlets (see Section 2-02)

Location:

Sensitive outlets (see Section 2-02)

Location:

2-03.2 Recommendation

The allowable release rate for maintaining/providing the 1-year event detention will be 1 cfs per acre for the tributary drainage areas to the City of Chicago system.

Detention Ponds ☐ Yes ☒ No

Storage Pipes ☐ Yes ☒ No

Oversizing storm sewers/ditches ☐ Yes ☒ No

For Outlet at Station

Cu. Yds. ( ) year storm frequency storage; (10, 50, 100) year storm frequency release rate

Oversizing storm sewers/ditches location:

Control structure schematics (see Exhibit 2-03.2a)

☐ Yes ☒ No
2-04  RIGHT OF WAY ANALYSIS

The existing right-of-way is located at the back of curb for roadways within or on the side bordering Jackson Park. This defines the existing right-of-way for Lake Shore Drive, Cornell Drive, Midway Plaisance, Hayes Drive, Marquette Drive, and Richards Drive and the east side of Stony Island Avenue.

Right-of-way acquisitions have been avoided entirely and easements have been minimized to the maximum extent possible through detailed design of the proposed horizontal alignments and vertical profiles and selection of the narrowest possible roadway cross-section that meets safety and operational needs. However, dedications of Chicago Park District (CPD) land will still be needed where the existing right-of-way is of insufficient width to accommodate the proposed roadway improvements.

Temporary construction easements are also necessary for grading, driveway and sidewalk reconstruction, and site restoration. Temporary easements are also required around underpass structures, retaining walls and wing walls to allow for construction of these items.

In addition, permanent easements are required for utility relocations related to this improvement. Permanent easements are proposed for future maintenance of the following proposed utilities
- CDWM storm sewer
- CDWM water main
- CDOT electric duct
- Peoples Gas line

No additional right of way is required specifically for the proposed roadway drainage system.

❑ Yes  □ No  Additional easements for DWM are required around the proposed underpasses to accommodate the proposed drainage system.

The right of way requirements have been coordinated and accepted by the Project and Environmental Studies Section.

□ Yes  ❑ No  A drainage easement(s) is required to accommodate the proposed drainage system.

The drainage easement(s) have been coordinated and accepted by the Project and Environmental Studies Section.

2-05  DRAINAGE ALTERNATIVES
LOCAL AND OTHER AGENCY COORDINATION (see Appendix C)

☑ Yes ☐ No  Local ordinances considered
☑ Yes ☐ No  Joint participation
☐ Yes ☒ No  Sewer separation
☑ Yes ☐ No  Jurisdictional transfer
☐ Yes ☒ No  Letter of intent required/processed/approved
☑ Yes ☐ No  Coordination completed and comments provided.

Comments: Appendix C contains coordination meeting minutes with the various agencies and interest groups involved in the planning of the proposed improvements. This coordination has been with the following agencies:

City of Chicago, Department of Transportation
City of Chicago, Department of Water Management
City of Chicago, Park District
IDNR – Office of Water Resources
US Army Corps of Engineers
### 2-07.1 Roadway Drainage

#### Ditches and Swales

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>☑ Yes ☐ No</td>
<td>Regrade/reestablish existing ditches/swales</td>
</tr>
<tr>
<td></td>
<td>Limits:</td>
</tr>
<tr>
<td></td>
<td>Comments:</td>
</tr>
<tr>
<td>☑ Yes ☐ No</td>
<td>Construct new ditches/swales</td>
</tr>
<tr>
<td></td>
<td>Limits:</td>
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<td></td>
<td>Comments:</td>
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#### Storm Sewers

<table>
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<tr>
<th>Option</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>☑ Yes ☐ No</td>
<td>Utilize existing storm sewers with minor extensions and/or adjustment of existing drainage structures</td>
</tr>
<tr>
<td></td>
<td>Limits: Lake Shore Drive, Hayes Drive, Marquette Drive, Cornell Drive.</td>
</tr>
<tr>
<td></td>
<td>Comments: Storm sewers will remain where not affected by underpass grading or roadway widening/repositioning.</td>
</tr>
<tr>
<td>☑ Yes ☐ No</td>
<td>Replace/relocate/upsize existing storm sewers</td>
</tr>
<tr>
<td></td>
<td>Limits: Lake Shore Drive, Intersection of Hayes Drive and Lake Shore Drive, Intersection of Hayes Drive and Cornell Drive.</td>
</tr>
<tr>
<td></td>
<td>Comments: The mainline storm sewer will be relocated along a section of Lake Shore Drive as a result of the proposed pedestrian underpass. The existing storm sewer system at intersections with proposed underpasses will be rerouted to maintain the existing drainage pattern.</td>
</tr>
<tr>
<td>☑ Yes ☐ No</td>
<td>Abandon existing storm sewers</td>
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<td></td>
<td>Limits: Lake Shore Drive</td>
</tr>
<tr>
<td></td>
<td>Comments: Small section of storm sewer located under the roadway will be abandoned to avoid unnecessary disturbance to the roadway.</td>
</tr>
<tr>
<td>☑ Yes ☐ No</td>
<td>Construct new storm sewers (e.g. converting from an open drainage system to closed drainage system)</td>
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<td></td>
<td>Limits:</td>
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<td>Comments:</td>
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#### Combined Sewers

<table>
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<tr>
<th>Option</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>☑ Yes ☐ No</td>
<td>Utilize existing combined sewers with minor extensions and/or adjustment of existing drainage structures</td>
</tr>
<tr>
<td></td>
<td>Limits:</td>
</tr>
<tr>
<td></td>
<td>Comments:</td>
</tr>
</tbody>
</table>
Limits: Stony Island Avenue.

Comments: Combined sewers will remain where not affected by underpass grading or roadway widening/repositioning.

☐ Yes  ☐ No  Replace/relocate existing combined sewers

Limits: Stony Island Avenue between 59th Street and 68th Street.

Comments: Combined sewer will be replaced due to the poor existing condition. Sewer replacement sizes have been provided by Chicago DWM.

Outlets

☒ Yes  ☐ No  Regrade/reestablish/maintain existing outlets

Locations: Lake Shore Drive, Hayes Drive, Marquette Drive.

Comments: Existing outlets to the Stony Island Avenue combined storm sewer and overflows to the Jackson Park lagoons will be maintained.

☐ Yes  ☒ No  Construct new outlets

Locations and types:

Comments:

Cross Road Culverts

☐ Yes  ☒ No  Maintain/replace/extend existing cross road culverts

Locations:

Comments:

☐ Yes  ☒ No  Construct new cross road culverts

Locations:

Comments:

Other Items

☒ Yes  ☐ No  Construct/modify special drainage structures/sewers

Locations/limits and types: Intersection of Hayes Drive and Cornell Drive.

Comments: Control structure and weir will be relocated to account for grading changes caused by the proposed underpass.
2-07.2 Proposed Action for all Major Drainage Features

2-07.2.1 Bridges

Location: Lake Shore Drive over the 59th Street Inlet

Structure No.: 016-6195

Hydraulic Report Prepared by IDOT

Waterway Information Table Available:

☐ Yes (Exhibit 1-03.1a)
☒ No

Narrative Summary:
The existing single span arch bridge structure will be widened from 91.2 feet to 101.7 feet (back to back abutments to the west in order to provide an additional southbound lane. The existing waterway opening, clearance, and freeboard will be maintained. A scour narrative and analysis has been included in Appendix D.

2-07.2.2 Major Culvert Crossings

N/A

2-07.2.3 Pump Stations

Five separate pump stations will be installed as part of the Jackson Park Mobility Improvements to drain pedestrian underpasses. The proposed pump station locations are at two new underpasses at the intersection of Hayes Drive and Cornell Drive, the new underpass under Hayes Drive just west of South Lakeshore Drive, at the existing underpass just north of the 59th Street Inlet Bridge, new underpass under South Shore Drive near 67th Street, and a new underpass under Jeffrey just south of Marquette Drive. The pump station at the 59th Street Underpass will drain the existing underpass, which is experiencing drainage problems as a result of high Lake Michigan water levels. Only the pump stations near the 59th Street Inlet Bridge, as well as South Shore Drive near 67th Street will be under IDOT jurisdicational routes. Note that after construction all of the underpass pump stations will be operated and maintained by the Chicago Park District.

Also note that in addition there are two additional existing underpass pump stations within the project limits located at under the IDOT jurisdiction South Lake Shore Drive at 57th Drive and 63rd Street respectively. These existing underpass pump stations are functioning well and were not studied or analyzed further.

Appendix D, Attachment 9 includes the underpass pump station analysis as well as schematic drawings for the 59th Street Inlet underpass as well as the South Shore Drive near 67th Street underpass. The proposed pump stations will generally consist of a 10 foot manhole, used as the wet well, which pumps into a 7 foot discharge manhole before gravity draining to the main storm sewer system. The pumping rates and pump on/off sequencing have been checked to ensure water is not on the underpass low pavement elevation for the 10-year storm using a critical duration analysis. The 10-year design event was chosen because the downstream drainage systems that the pump station outlet to are also designed for the 10-year storm. The main stormwater storage areas consist of the pump station wet wells and the connected upstream drainage system (storm sewer and manholes). Note that the underpass area was included in the storage calculations in the event that the water level rose above the rim level of the underpass storm sewer system. However, since the 10 year water level remains below the underpass low grade elevation for the 10 year design storm, the underpass area is not considered part of the pump station storage.
2-08 WATER QUALITY BEST MANAGEMENT PRACTICES (BMP) PERMANENT MEASURES

The water quality will be maintained by directing the 1st flush (one-year storm) to the combined sewer. The overflow will drain to the lake or the lagoon. The highly urbanized nature of the area does not allow for any additional water quality features.

- Yes  □N/A Identification of USACE and other Federal/State BMP Requirements
  Comments:

- Yes  □N/A Coordination with Project & Environmental Studies
  Comments:

- Yes  □No Did you coordinate with other agencies? If yes, list them here
  Comments: Chicago Park District

- Yes  □N/A Green Infrastructure BMP Alternatives
  Comments:
  Limits:

□ Yes   □N/A Improve existing vegetated drainage facilities (ditches, swales, etc.)

□ Yes   □No Establish new BMP measures (see below)

- Yes  □No Consideration of open drainage system
  ("daylight" storm sewer)

- Yes  □No Bioretention or rain garden (separate facility)

- Yes  □No Constructed wetland detention or naturalized detention (multi-purpose storage)

- Yes  □No Bioswale or vegetated swale (multi-purpose conveyance)

- Yes  □No Bank/shoreline stabilization, native buffers, invasive species control, etc.
☐ Yes  ☐ No  Lengthened overland flow paths

☐ Yes  ☐ No  Riffle/Pool Conveyance

☐ Yes  ☐ No  Permanent Ditch Checks

☐ Yes  ☐ No  Permanent Sediment Traps

☐ Other:

☐ Yes  ☐ N/A  Grey Infrastructure BMP Alternatives

Comments:

Limits:

☐ Yes  ☐ N/A  Improve existing non-vegetated drainage facilities (paved or lined ditches, riprap, etc.)

 ☐ Yes  ☐ No  Establish new BMP measures (see below)

☐ Yes  ☐ No  Oversized pipes for detention

☐ Yes  ☐ No  Manufactured vaults or cisterns (underground detention)

☐ Yes above ☐ No  Wet pond or turf grass dry detention (traditional ground storage)

☐ Yes  ☐ No  Manufactured water quality unit or oil/grit separator

☐ Yes  ☐ No  Riprap erosion protection

☐ Other:

☐ Yes  ☐ N/A  Sufficient Right-of-Way Allocated for Recommended BMP Alternatives

Comments:

Limits:

☐ Yes  ☐ N/A  Sufficient Permanent Easement Allocated for Recommended BMP Alternatives

Comments:

Limits:

☐ Yes  ☐ N/A  Identify BMP Locations on the Proposed Drainage Plans

Comments:

Limits:

☐ Yes  ☐ N/A  Identify Right-of-Way/Permanent Easement on the Proposed Drainage Plans

Comments:

Limits:

☐ Yes  ☐ N/A  Adequate BMP Guidelines provided for Phase II Designer to Comply with NPDES Requirements

Comments:

Limits:
☐ Yes  ☐ N/A  Adequate BMP Guidelines provided for Phase II Designer to Comply with USACE Requirements

Comments:

Limits:
3-00 FLOODPLAIN ENCROACHMENT EVALUATION

The proposed project has been reviewed in accordance with Executive Order 11988 “Floodplain Management”; Section 26-7.05(d) "Assessment and Documentation of Floodplain Encroachments" as contained in the Illinois Department of Transportation, Bureau of Design and Environment Manual; Drainage Manual; and 17 Illinois Administration Code 3708 “Floodway Construction in Northeastern Illinois.”

☐ No Potential Floodplain Encroachment
☒ Potential Floodplain Encroachment

3-00.1 Location of base floodplain: Station: 59th Street Inlet Bridge Stream:
(see Exhibit 1-02a, Flood Insurance Rate Map)

Type of potential encroachment

☒ Transverse ☐ Longitudinal

Overtopping elevation

☒ greater than 100 year frequency flood elevation
☐ less than 100 year frequency flood elevation

Fill in the floodplain fringe, or floodplain if no floodway:

☒ Yes ☐ No

32.27 Cubic yards at normal-10 year storm frequency elevation

24.20 Cubic yards at 10-100 year storm frequency elevation

Excavation in the Floodplain fringe, or floodplain if no floodway:

☐ Yes ☒ No

Fill in the floodway:

☐ Yes ☒ No

Compensatory storage for fill in the floodway

☐ Yes ☒ No

Explanation and Location(s):

Evaluation:

The 59th Street Inlet Bridge widening will require a transverse encroachment of fill within the 100-year floodplain to accommodate an additional lane on southbound Lake Shore Drive. The FHWA Alternatives Analysis shows Purpose and Need is not met without widening of Lake Shore Drive in conjunction with reconfiguring Hayes Drive and widening Stony Island Avenue; therefore, there are no practicable alternatives to the impact at this location. Widening of the bridge structure to accommodate an additional
southbound lane and reestablishment of the existing trail connection has been minimized to reduce impacts to floodplain fill. The existing bridge and roadway meet freeboard and clearance criteria. The fill will not result in increased floodplain elevations or impact the adjacent areas and therefore will not increase the risk of flooding. Therefore the encroachment is not considered significant.

Coordination with IDNR has occurred and email correspondence as well as meeting minutes have been included in Appendix C. Lake Michigan is a Public Body of Water therefore an Individual Permit from IDNR will be required and floodplain compensatory storage is not required.
 required

☐ Required   ☐ Not Required

☒ Individual Permit

Location: Lake Shore Drive Bridge crossing the 59th Street Inlet

☐ Statewide Permit #

Location:

☐ Floodway Permit

☐ Regulated Floodway Construction Permit

Location:

☐ Regional Permit #1

Location:

☐ Regional Permit #2

Location:

☐ Regional Permit #3

Location:

☐ Permit Summary form completed and included in Appendix C

☒ IDNR-OWR coordination documented and included in Appendix C
5-00 Appendix A: Source Data Reviewed

USGS Maps* - Quadrangle Map and/or Hydrologic Atlas (date)
   A. U.S. Department of the Interior
      U.S. Geological Survey
      Jackson Park Quadrangle
      Illinois – Indiana
      Date: 2015

Survey notes*

Local Drainage Plans*  Appendix D

As Built and/or Microfilm Highway Plans***  Appendix D

Flood Insurance Study*
   A. National Flood Insurance Program
      Firm, Flood Insurance Rate Map
      Cook County, Illinois
      Panel 540 of 832
      Map panel no. 17031C0540J
      Date: 08/19/2008

Proposed Geometrics**

* On file in the Hydraulics Section
** On file in the Project and Environmental Studies Section
*** Transmitted to the Bureau of Design

5-00 Appendix B: Exhibits (suggested exhibits as follows)

General Location Drainage Map, Exhibit 1-00a
Existing Drainage Plan, Exhibit 1-00b
Floodway and Flood Boundary Map, Exhibit 3-00.1a
Proposed Drainage Plan, Exhibit 2-00a
Typical Existing Cross Sections, Exhibit 2-06a
Typical Proposed Cross Sections, Exhibit 2-06b
Control Structure Schematic, Exhibit 2-04.2a

5-00 Appendix C: Correspondence

December 12th, 2017 – Coordination with IDOT Hydraulics
June 6th, 2018 – Coordination with Department of Water Management
June 19th, 2018 – Coordination with USACE
June 26th, 2018 – Coordination with USACE
September 5th, 2018 – Coordination with Department of Water Management
September 26th, 2018 – Coordination with IDOT Hydraulics and Department of Water Management
August 28th, 2018 – Coordination with IDNR

November 16th, 2018 – Coordination with USACE

November 30th, 2018 – Coordination with CDOT, Chicago Park District, and Department of Water Management.

5-00 Appendix D: Supporting Documents

South Lake Shore Drive As-Builts

Chicago Sewer Atlas

Department of Water Management Sewer Connection Details

Additional Impervious Area Summary

Inlet Spacing Analysis

Jackson Park SWMM Analysis

Outfall Hydrograph Calculations

Underpass Pump Station Analysis

Estimated Floodplain Fill Calculations

East and West Lagoon Hydrology Memorandum

59th Street Bridge Scour

Sewer Televaising Summary

59th Street Drainage Investigation
Mobility Improvements to Support the SLFP
Location Drainage Study Appendix B – Exhibits
Proposed Conditions

IMPROVEMENT OVERVIEW

- Reconfigure traffic flow and safety in the area where Midway meets Stony
- Clarence Darrow bridge improvement (via separate contract)
- Widen 59th Street Inlet Bridge
- Improve Stony Island, balancing needs for people walking, driving, taking transit, biking, and parking
- Reconfigure Cornell and Stony 65th to 67th to accommodate closure of northbound Cornell
- No work will be done east of LSD
- Improve LSD, Hayes, & intersections to accommodate diverted traffic
- Reconfigure traffic

Jackson Park Proposed Conditions

IMPROVEMENT OVERVIEW
Obama Presidential Center Improvements to Support the South Lakefront Framework Plan
Section 17-B7203-00-ES
Proposed Revisions to Roadway Jurisdiction

Jurisdictions
- State
- Other State Agency
- County
- Municipal
- Private
- Township

Existing Jurisdiction
Proposed Jurisdiction

1 in = 0.25 miles
CDOT Division of Engineering
March 16, 2018
LEGEND:
- Overflow
- Outlet
- Combined Sewer
- Storm Sewer

Notes:
1. "Tributary Project Area" of Outlet 6 includes tributary drainage areas from Outlets 11-1o and 12.
2. "Tributary Area" of Outlet 11 includes storm sewer overflow areas from Outlets 8, 9, and 10.
3. "Tributary Area" of Outlet 10 includes storm sewer overflow areas from Outlets 8 and 9.
4. "Tributary Area" of Outlet 9 includes storm sewer overflow areas from Outlet 8.
5. "Tributary Area" of Outlet 8 includes storm sewer overflow areas from Outlet 7.

Outlet 13 Tributary Area = 2.9 ac
Outlet 12 Tributary Area = 1.1 ac
Outlet 11 Tributary Area = 12.6 ac
Outlet 10 Tributary Area = 4.4 ac
Outlet 9 Tributary Area = 8.9 ac
Outlet 8 Tributary Area = 9.8 ac
Outlet 7 Tributary Area = 20.8 ac
Outlet 6 Tributary Project Area = 73.0 ac
Outlet 5 Tributary Area = 2.5 ac
Outlet 4 Tributary Area = 8.3 ac
Outlet 3 Tributary Area = 67.0 ac
Outlet 2 Tributary Area = 16.7 ac
Outlet 1 Tributary Area = 25.8 ac

Combined Sewer
30" Storm Sewer
Outlet 13
24" Storm Sewer
Outlet 12
15" Storm Sewer
Outlet 11
12" Storm Sewer
Outlet 10

Lake Michigan
2-15" & 24" Storm Sewer Overflow
Outlet 11-1o

Scale: 1" = 350'
Notice
1. Storm sewer on Marquette Drive and Richards Drive are City of Chicago jurisdiction.
Notes:
1. All storm sewer on Lake Shore Drive is IDOT jurisdiction.
2. Sewers must drain eventually into one Chicago Park District jurisdiction.
3. The "As-Built" referenced on storm sewer line work is the 2002 South Lake Shore Drive Mainline Reconstruction As-Built.

EXISTING DRAINAGE PLAN

OPC MOBILITY IMPROVEMENTS

CHICAGO DEPARTMENT OF TRANSPORTATION

MUSEUM OF SCIENCE AND INDUSTRY

LAKE SHORE DR

LAKE MICHIGAN

BEACH

PARK

12' (Atlas)

18" (As-Built)

24" (As-Built)

30" (As-Built)

30" (As-Built)

24" (As-Built)

24" (As-Built)

See Sheet 14 for additional details.
1. "Tributary Project Area" of Outlet 6 includes tributary drainage areas from Outlets 1 and 2.
2. "Tributary Area" of Outlet 1 includes storm sewer overflow area from Outlets 1-1o and 1-2o.
3. "Tributary Area" of Outlet 2 includes storm sewer overflow areas from Outlets 2-2o and 2-3o.
4. "Tributary Area" of Outlet 3 includes storm sewer overflow areas from Outlets 3-1o and 3-2o.
5. "Tributary Area" of Outlet 4 includes storm sewer overflow area from Outlet 4.

Notes:
- Lake Michigan
- 18" Storm Sewer Overflow
- Outlet 13-1o (CDWM)
- Combined Sewer
- 15" Storm Sewer
- Outlet 13 (CDWM)
- Lake Michigan
- 2-15" & 24" Storm Sewer Overflow
- Outlet 11-1o (CDWM)
- Combined Sewer
- 30" Storm Sewer
- Outlet 11 (CDWM)
- 13-1/2' Combined Sewer
- Outlet 6 (CDWM)
- OPC
- Field Athletic
- Proposed OPC Site
- Overflow From Outlet 4 (TBD)
- Outlet 13 Tributary Area = 2.9 ac
- Outlet 12 Tributary Area = 1.1 ac
- Outlet 11 Tributary Area = 12.6 ac
- Outlet 10 Tributary Area = 4.4 ac
- Outlet 9 Tributary Area = 8.9 ac
- Outlet 8 Tributary Area = 9.8 ac
- Outlet 7 Tributary Area = 20.8 ac
- Outlet 6 Tributary Project Area = 55.9 ac
- Outlet 5 Tributary Area = 2.4 ac
- Outlet 4A Tributary Area = 9.8 ac
- Outlet 4 Tributary Area = 19.0 ac
- Outlet 3 Tributary Area = 67.0 ac
- Outlet 2 Tributary Area = 16.7 ac
- Outlet 1 Tributary Area = 25.8 ac

LEGEND:
- Storm Sewer
- Combined Sewer
- Overflow

DRAFT
FOR DISCUSSION ONLY
**Symbols and Legends**

- **Existing Storm Sewer**: Continuous line with arrows.
- **Proposed Storm Sewer**: Continuous line without arrows.
- **Existing Culvert**: Broken line with arrows.
- **Proposed Culvert**: Broken line without arrows.
- **Existing Storm Sewer Manhole**: Circle with a cross.
- **Proposed Storm Sewer Manhole**: Circle.
- **Existing Base**: Thin line.
- **Proposed Base**: Thick line.
- **Existing Street**: Thin line.
- **Proposed Street**: Thick line.
- **Existing Storm Systems**: Thin line with arrows.
- **Proposed Storm Systems**: Thick line with arrows.
- **Existing Structure**: Thin line with cross.
- **Proposed Structure**: Thick line with cross.
- **Existing Drainage Area**: Thin line with dots.
- **Proposed Drainage Area**: Thick line with dots.
- **Existing No Build Area**: Thin line with cross.
- **Proposed No Build Area**: Thick line with cross.

**Notes**:

1. All contours and elevations are in City of Chicago Datum (CCD). The following equation (CCD to NAVD88) is used to convert from CCD to NAVD88: CCD = NAVD88 - 579.19.
2. All proposed storm sewers are City of Chicago ownership.
3. All combined sewers are City of Chicago jurisdiction.
4. All existing storm sewers and combined sewers are to be cleaned of debris and repaired.
5. All proposed storm sewers are Class A RCP unless otherwise noted.

**Method Details**:

- **Maintenance Station**: 5001+00
- **Survey Date**: 12/20/2019
- **Plot Scale**: 2' x 2' Box
- **Plot Date**: 11/20/2019
- **Cad File Name**: Untitled
- **Model**: Model Name
- **File Name**: W1-1/

**Legend**

- **NOTEBOOK**
- **RT. OF WAY CHECKED**
- **NO. STRUCTURE NOTATED**
- **CPI**
- **LEVEL 2 5002+00**
- **SHEETS**
- **DATE**
- **5002+00**
- **DITCH**
- **SHALLOW CONC. / GUTTER FLOW**
- **FLOODWAY BOUNDARY**
- **FLOODPLAIN BOUNDARY**
- **DRAINAGE DIVIDE**
- **AND STATIONING REFERENCE LINE/CENTERLINE**

**Figure Components**

- **Water Flows**
- **Drainage Systems**
- **Existing Structures**
- **Proposed Structures**

**Map Features**

- **64th St**
- **4'**
- **150 12**
- **11 20**
- **19**

**Crown Details**

- **Existing Crown**
- **Proposed 50 Year HGL**

**Elevation Details**

- **12 Profile Survey**
- **To ST. Survey**
- **100 Surveyed**

**Scale Details**

- **5000+00**
- **5003+00**

**Dimensions**

- **Proposed roadway profile**
- **Proposed 36" storm sewer**
- **Proposed 30" storm sewer**

**Additional Notes**

- **All proposed storm sewers are City of Chicago ownership.**
- **All existing storm sewers and combined sewers are to be cleaned of debris and repaired.**
- **All proposed storm sewers are Class A RCP unless otherwise noted.**

**Contract Details**

- **CHICAGO DEPARTMENT OF TRANSPORTATION**
- **OPC MOBILITY IMPROVEMENTS PROPOSED DRAINAGE PLAN**
- **ADJ MATERIAL**
- **C B**
- **PARK**
- **N.G.S. MONUMENT**

**Datum Details**

- **NAVD88: CCD = NAVD88 - 579.19**
- **The following equation can be used to convert from CCD to NAVD88: CCD = NAVD88 - 579.19.**

**Elevations**

- **Existing MH**: $6.59$ (N)
- **Existing MH**: $6.79$ (S)
- **Proposed MH**: $6.69$ (S)
- **Existing MH**: $6.72$ (S)
- **Proposed MH**: $6.79$ (S)

**Contour Levels**

- **Existing Contour Levels**: $30"$ (Survey)
- **Proposed Contour Levels**: $30"$ (Survey)
- **Existing Contour Levels**: $30"$ (Survey)
- **Proposed Contour Levels**: $30"$ (Survey)

**Design Details**

- **Proposed 18" storm sewer**
- **Proposed 30" storm sewer**
- **Proposed 50 Year HGL**
- **Proposed pedestrian underpass**

**Other Details**

- **Provenance**: Chicago Department of Transportation
- **Scale**: 1" = 40'"
CHICAGO DEPARTMENT OF TRANSPORTATION
OPC MOBILITY IMPROVEMENTS
PROPOSED DRainAGE PLAN

Notes:
1. All sewers on this sheet are within the City of Chicago jurisdiction.
2. The "2001 As-Built" referenced on the title block shows the work is the 2001 South Lake Shore Drive Contract 1 - Advance Work.
3. All existing storm sewers and drainage structures to be utililized under the proposed roadway profile attached at lateral and required to remain.
4. All proposed storm sewers are shown on the map and noted.

The Existing backflow preventer is to be televised and utilized under the proposed roadway profile.

The Existing weir to be constructed to remain.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

The Existing 36" storm sewer to be lined.

NOTE: & M - 12/10/2019

Existing 30" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing 36" storm sewer to be lined.

Existing weir to be constructed to remain.

Proposed roadway profile is "as built" conditions to be televised and utilized under the proposed roadway profile.

Existing ground profile and Proposed roadway profile are "as built" conditions to be televised and utilized under the proposed roadway profile.
1. All storm sewer on Lake Shore Drive is IDOT jurisdiction.
2. All sewers on Hayes Drive are City of Chicago jurisdiction.
3. The "2001 As-Built" referenced on storm sewer work is the 2001 South Lake Shore Drive Mainline Reconstruction As-Built.
4. The "2002 As-Built" referenced on storm sewer work is the 2002 South Lake Shore Drive Mainline Reconstruction As-Built.
5. All existing storm sewers and drainpipes structures to be cleaned of debris and repaired if needed.
6. All proposed storm sewers are shown as PPC unless otherwise noted.

Notes:

1. All storm sewer on Lake Shore Drive is IDOT jurisdiction.
2. All sewers on Hayes Drive are City of Chicago jurisdiction.
3. The "2001 As-Built" referenced on storm sewer work is the 2001 South Lake Shore Drive Mainline Reconstruction As-Built.
4. The "2002 As-Built" referenced on storm sewer work is the 2002 South Lake Shore Drive Mainline Reconstruction As-Built.
5. All existing storm sewers and drainpipes structures to be cleaned of debris and repaired if needed.
6. All proposed storm sewers are shown as PPC unless otherwise noted.
Connect drainage structures on proposed Cornell realignment to maintain existing drainage pattern.

1. All combined sewers are City of Chicago jurisdiction.
2. Storm sewer on Cornell Drive is City of Chicago jurisdiction.
3. All existing storm sewers and drainage structures to be cleaned of debris and repaired if needed.
4. Existing Cornell Drive north of 111th Street is tributary to Outlet 3 which drains to the Rock River.
5. Existing storm sewers and drainage structures to be maintained in good condition. To be escalated and cleaned if debris is required for clearing.

Proposed storm sewer on Cornell Drive is tributary to Outlet 3.

Notes:

All existing storm sewers are City of Chicago jurisdiction.

2. Storm sewer on Cornell Drive is City of Chicago jurisdiction.

Existing Cornell Drive north of 111th Street is tributary to Outlet 3 which drains to the Rock River.

All existing storm sewers and drainage structures to be maintained in good condition. To be escalated and cleaned if debris is required for clearing.

All proposed storm sewers are City of Chicago jurisdiction.

1. All combined sewers are City of Chicago jurisdiction.

2. Storm sewer on Cornell Drive is City of Chicago jurisdiction.

Existing Cornell Drive north of 111th Street is tributary to Outlet 3 which drains to the Rock River.

All existing storm sewers and drainage structures to be maintained in good condition. To be escalated and cleaned if debris is required for clearing.

All proposed storm sewers are City of Chicago jurisdiction.

1. All combined sewers are City of Chicago jurisdiction.

2. Storm sewer on Cornell Drive is City of Chicago jurisdiction.

Existing Cornell Drive north of 111th Street is tributary to Outlet 3 which drains to the Rock River.

All existing storm sewers and drainage structures to be maintained in good condition. To be escalated and cleaned if debris is required for clearing.

All proposed storm sewers are City of Chicago jurisdiction.

1. All combined sewers are City of Chicago jurisdiction.

2. Storm sewer on Cornell Drive is City of Chicago jurisdiction.

Existing Cornell Drive north of 111th Street is tributary to Outlet 3 which drains to the Rock River.

All existing storm sewers and drainage structures to be maintained in good condition. To be escalated and cleaned if debris is required for clearing.

All proposed storm sewers are City of Chicago jurisdiction.
Notation:
1. All combined sewers are City of Chicago jurisdiction.
2. Storm sewer on Stony Island Avenue and Cornell Drive are DOT jurisdiction.
3. All existing storm sewers and combined sewers to be televised under the proposed conduit to be enclosed and cleaned of debris and repaired if needed.
4. Catch basins on Stony Island Avenue are to be considered for additional elements of DOT jurisdiction.
5. All proposed storm sewers are Class A RCP unless otherwise noted.
1. All combined sewers and sewers on Hayes Drive and Stony Island Avenue are City of Chicago jurisdiction.

2. Outlets 7-1 and 7-2 are utilized under the proposed drainage structures to be maintained by City of Chicago.

3. Stony Island will be maintained north of 63rd Street.

4. All existing stone sewers and manholes identified in the preliminary plans are to remain in place and condition to be maintained by City of Chicago.

5. Catch basins on Stony Island and on Hayes Drive and Stony Island will be City of Chicago jurisdiction.

6. All combined stone sewers are City A RCP unless otherwise noted.

7. Key map notes:

   1. All existing combined sewers and sewers on Hayes Drive and Stony Island Avenue are City of Chicago jurisdiction.

   2. Outlets 7-1 and 7-2 are utilized under the proposed drainage structures to be maintained by City of Chicago.

   3. Stony Island will be maintained north of 63rd Street.

   4. All existing stone sewers and manholes identified in the preliminary plans are to remain in place and condition to be maintained by City of Chicago.

   5. Catch basins on Stony Island and on Hayes Drive and Stony Island will be City of Chicago jurisdiction.

   6. All combined stone sewers are City A RCP unless otherwise noted.

   7. Key map notes:

   1. All existing combined sewers and sewers on Hayes Drive and Stony Island Avenue are City of Chicago jurisdiction.

   2. Outlets 7-1 and 7-2 are utilized under the proposed drainage structures to be maintained by City of Chicago.

   3. Stony Island will be maintained north of 63rd Street.

   4. All existing stone sewers and manholes identified in the preliminary plans are to remain in place and condition to be maintained by City of Chicago.

   5. Catch basins on Stony Island and on Hayes Drive and Stony Island will be City of Chicago jurisdiction.

   6. All combined stone sewers are City A RCP unless otherwise noted.
1. All sewers on Stony Island north of 63rd Street will be reconstructed.
2. Existing storm sewers and drainage structures to be utilized under the proposed alignment. Existing manholes and catch basins to be utilized if needed.
3. storm sewers on Stony Island will be utilized under the proposed grand plan, and catch basins to be utilized if needed.
4. All proposed storm sewers and combined sewer with restrictions to be determined by the Chicago Department of Water Management.
5. 1. All proposed storm sewers are Class A MH unless otherwise noted.
1. All sewers shown on this sheet are City of Chicago jurisdiction.

2. No proposed drainage improvements on this sheet.

3. All existing storm sewers and drainage structures to be utilized under the proposed condition to be determined and repaired if needed.

4. All proposed storm sewers are Class A RCP unless otherwise noted.

Note:  
- All sewers shown on this sheet are City of Chicago jurisdiction.
- No proposed drainage improvements on this sheet.
- All existing storm sewers and drainage structures to be utilized under the proposed condition to be determined and repaired if needed.
- All proposed storm sewers are Class A RCP unless otherwise noted.
NOTES:
1. All combined sewers are City of Chicago jurisdiction.
2. Storm sewer on Stony Island Avenue south of 65th Place and on Cornell Drive are City of Chicago jurisdiction.
3. Storm sewer on Marquette Drive are City of Chicago jurisdiction.
4. All existing storm sewers and drainage structures to be utilized under the proposed condition as to be maintained free of debris and repaired if needed.
5. All proposed storm sewers are Class 8.25 unless otherwise noted.

M A R Q U E T T E  D R
MARQUETTE DR
MARQUETTE DR
COMMERCIAL
RESIDENTIAL
RESIDENTIAL
GOLF COURSE
PARK
PARK
OPC MOBILITY IMPROVEMENTS
LEGEND:
COMBINED SEWER EXCEPT AS NOTED
MAINTAIN EXISTING INFRASTRUCTURE WITH OXS/INXS
SCALE: 1" = 50'
11. Combined sewers and storm sewers on Calumet Avenue under the proposed condition to be deleted and checked off on the Plan. Existing pumps and pump stations to remain as noted.

12. Existing storm sewers and weir structures to be utilized, unless otherwise noted.

13. Storm Sewer No. 3 as Restored, Outlet No. 3-8.

14. Combined sewer and weir structures to be utilized, unless otherwise noted.

15. Existing storm sewer and weir structures to be utilized, unless otherwise noted.

16. Storm Sewer No. 3 as Existing, Outlet No. 3-8.

17. Combined sewer and weir structures to be utilized, unless otherwise noted.

18. Existing storm sewer and weir structures to be utilized, unless otherwise noted.

19. Existing storm sewer and weir structures to be utilized, unless otherwise noted.

20. Existing storm sewer and weir structures to be utilized, unless otherwise noted.

21. Existing storm sewer and weir structures to be utilized, unless otherwise noted.

22. Existing storm sewer and weir structures to be utilized, unless otherwise noted.
Notes:
1. All storm sewer on Lake Shore Drive is IDOT jurisdiction.
2. Storm sewer along Jackson Park are Chicago Park District jurisdiction.
3. All existing storm sewers and drainage structures to be flushed out, televised and cleaned of debris and repaired if needed.
4. All proposed storm sewers are Class A RCP unless otherwise noted.
Note:
1. All storm sewers on Lake Shore Drive in 2017 jurisdiction.
2. Storm sewers that drain Jackson Park are Chicago Park District jurisdiction.
3. All existing storm sewers and drainage structures to be utilized under the proposed drainage plan. New storm sewers and drainage structures are utilized as needed.
4. All proposed storm sewers are Class A RCP unless otherwise noted.

OPC MOBILITY IMPROVEMENTS
PROPOSED DRAINAGE PLAN

RTE.

Proposed 10 Year HGL

Lake Michigan

Lake Michigan Ordinary High Water Mark

Ex. 24" Chicago Park District

Existing 24" Storm Sewer

Outlet 9
24" Storm Sewer
Ex. 24" Chicago Park District

Outlet 10
24" Storm Sewer

Existing 24" Storm Sewer

Outlet 11

Existing 18" Storm Sewer

Outlet 12

Existing 18" Storm Sewer

Outlet 13

Existing 18" Storm Sewer

Outlet 14

Existing 18" Storm Sewer

Outlet 15

Existing 18" Storm Sewer

Outlet 16

Existing 18" Storm Sewer

Outlet 17

Existing 18" Storm Sewer

Outlet 18

Existing 18" Storm Sewer

Outlet 19

Existing 18" Storm Sewer

Outlet 20

Existing 18" Storm Sewer

Outlet 21

Existing 18" Storm Sewer

Outlet 22

Existing 18" Storm Sewer

Outlet 23

Existing 18" Storm Sewer

Outlet 24

Existing 18" Storm Sewer

Outlet 25

Existing 18" Storm Sewer

Outlet 26

Existing 18" Storm Sewer

Outlet 27

Existing 18" Storm Sewer

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Existing 18" Storm Sewer

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Existing 18" Storm Sewer

Outlet 105

Existing 18" Storm Sewer

Outlet 106

Existing 18" Storm Sewer

Outlet 107

Existing 18" Storm Sewer

Outlet 108

Existing 18" Storm Sewer

Outlet 109

Existing 18" Storm Sewer
1. All storm sewers on Lake Shore Drive is IDOT jurisdiction.
2. Sewers that drain Jackson Park are Chicago Park District jurisdiction.
3. The "As-Built" referenced on storm sewer the work is the 2002 South Lake Shore Drive Bridge Reconstruction Rebuilt.
4. All existing storm sewers and drainage structures to be widened under the proposed condition to be relined and covered with concrete and repaired if needed.
5. All proposed storm sewers are Class A NPS unless otherwise noted.
REVISIONS TO STA. 1' & VAR. 2

COMBINATION CONCRETE CURB AND GUTTER B-V.12 (DEPRESSED)
AGGREGATE PRIME COAT (DURING TEMPORARY STAGING)

NORTHBOUND TRAFFIC

DATE

SCALE:

DRILL AND GROUT BARS (AT 30' CENTERS)

BY

1

3

NO SCALE

19' & VAR.

DESCRIPTION

2

14' AT BUS PAD

3

NORTHBOUND TRAFFIC

DATE

CHECKED:

DRAWN:

DESIGN:

LOCATION KEY

MTK

DR

DR

NO.

SURFACE COURSE, MIX “E”, N70

POLYMERIZED HOT-MIX ASPHALT

LEVELING BINDER (HAND METHOD)

IL-19.0, N90

POLYMERIZED LEVELING BINDER

IL-4.75

TYPE

MIX

HOT-MIX ASPHALT MIXTURE REQUIREMENTS

EXISTING ROW.

EXISTING ROW.

13.5' AND

VARIES 66'-70'

11'-13'

EAST 64TH STREET TO EAST 63RD STREET

STA 226+15.80 TO STA 233+40.30

S. STONY ISLAND AVE.

EXISTING TYPICAL SECTION

PROPOSED

STA 226+22.80 TO STA 233+40.30

S. STONY ISLAND AVE.

PROPOSED TYPICAL SECTION

SOUTHBOUND TRAFFIC

DATE

CHECKED:

DRAWN:

DESIGN:

LOCATION KEY

VARIES 50' TO 55'

VARIES

69.5'

VAR.

0'-11'


VARIES

10'

VAR.

7' AND VARIES

H

14" AT BUS PAD

1' (TYP)

FOR PEDESTRIAN ACCESS TO BUS STOP

SEE PLANS

FOR LOCATION OF CONCRETE MEDIAN,
SEE PLANS

FOR LOCATION OF PARKING LINES,
SEE PLANS

LEGEND:

2. ASPHALT

3. TRACK ZONE

4. SUB-BASE GRANULAR MATERIAL

5. COMBINATION CONCRETE CURB AND GUTTER

6. P.C. CONCRETE MEDIAN

7. EXISTING PARKWAY/LANDSCAPING

8. CONCRETE/LANDSCAPE MEDIAN

9. P.C. CONCRETE BASE

PROPOSED

1. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, W-71, N70, 1 3/4"

2. HOT-MIX ASPHALT CURB COURSE, W-920, N90, 2 1/4"

3. MINERAL MATERIALS PRIME COAT

4. POLYMERIZED LEVELING ISLAND MATERIAL, IL-4.75, N50, 3/4" - 1"

5. RUBBER MATERIALS PRIME COAT

6. PORTLAND CEMENT CONCRETE CURB COURSE, 10"

7. LEVELING ISLAND MATERIAL, TYPE IL-90

8. COMBINATION CONCRETE CURB AND GUTTER, TYPE B-V.12

9. 6" TIE BAR

10. PORTLAND CEMENT CONCRETE MEDIAN, 5"

11. SAND CUSHION, VARIABLE DEPTH

12. UNIT PAVER

13. CURB ATTACHED TO CONCRETE SIDEWALK

14. PARKWAY, SEE LANDSCAPE PLANS

15. COMBINATION CONCRETE CURB AND GUTTER B-V.12 DERESSED

16. AGGREGATE PRIME COAT DURING TEMPORARY STAGING

17. SKIRT AND CIRCUIT BARS (AT 30' CENTERS)

18. STRUCTURAL SOIL, PRIME SEE LANDSCAPING DETAILS

NOTES

1. TYPICALLY AT LEAST 6 INCH GRANULAR MATERIAL WILL BE USED / ALLEY / ALLEY / ALLEY / PAVEMENT TO ABUT AT A CUTOFF SLOPE OF NO LESS THAN 1:24 OR LESS.

2. THE REMAINING WIDTH OF SIDEWALK MAY HAVE A CROSS SLOPE OF 1:24 OR LESS.

3. FOR LOCATION OF CONCRETE MEDIAN, SEE PLANS

4. FOR LOCATION OF PARKING LINES, SEE PLANS

5. FOR LOCATION, SEE PLANS

NOT-WASH ASPHALT MIXTURE REQUIREMENTS

LOCATION KEY

POLYMERIZED NOT-WASH ASPHALT SURFACE COURSE, W-71, N70

BP HMA, IL-19.0, N90

POLYMERIZED LEVELING ISLAND MATERIAL, IL-90, N90

LEVELING ISLAND HAND METHOD

Type

Mix

Depth

Rift

POLYMERIZED NOT-WASH ASPHALT SURFACE COURSE, W-71, N70

BP HMA, IL-19.0, N90

POLYMERIZED LEVELING ISLAND MATERIAL, IL-90, N90

LEVELING ISLAND HAND METHOD

1. FOR LOCATION OF CONCRETE MEDIAN

2. FOR LOCATION OF PARKING LINES

3. FOR LOCATION

4. SEE PLANS

5. SEE LANDSCAPE PLANS FOR TREE PIT AND PLANTER LOCATIONS

6. POOR GRANULAR BASE / SUBBASE MATERIAL WILL BE USED WHERE THE SUBGRADE IS DEEMED UNSTABLE TO SUPPORT THE PROPOSED CONSTRUCTION

7. THE REMAINING WIDTH OF SIDEWALK MAY HAVE A CROSS SLOPE OF 1:24 OR LESS.

8. FOR PEDESTRIAN ACCESS TO BUS STOP

9. SEE BUS PAD DETAILS FOR PAVING SECTIONS AT RELEVANT LOCATIONS.

TYPICAL SECTIONS S. STONY ISLAND AVE.

JACKSON PARK MOBILITY IMPROVEMENTS

CONTRACT NO.

TOTAL SHEET NO.

1142

55

GEN-55

CDOT

ENGINEERING DEPARTMENT OF TRANSPORTATION

C'NICT
**TYPICAL ROADWAY CROSS SLOPE**

**SIDEWALK**

- Typical cross slope varies between 1.4% and 3.6% as indicated on the plans.
- The remaining width of sidewalk may have a cross slope of 1:24 or less.
- The sidewalk must have a cross slope of 1:64 or less.

**UNIT PAVER**

- See plans for paving sections at relevant locations.

**PORTLAND CEMENT CONCRETE**

- See structural plans.

**POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE**

- Mix "E", N70, 1 3/4"

**REVERSIBLE POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE**

- Il-4.75, N50, 3/4" - 1"

**HOT-MIX ASPHALT BINDER COURSE**

- Il-19.0, N90, 2 1/4"

**PORTLAND CEMENT BASE COURSE**

- See landscape plans.

**PARKWAY**

- See landscape plans.

**S. STONY ISLAND AVE.**

- Existing.

**SIDEWALK**

- P.C. concrete sidewalk.

**LEGEND**

- A. Asphalt
- B. Track Zone
- C. Sub base granular material
- D. Combination concrete curb and gutter
- E. P.C. concrete sidewalk
- F. Existing pavement/landscape
- G. Concrete/landscape median
- H. P.C. concrete base

**NOTES**

1. Typically at least 6'-10" minimum of proposed sidewalk width, unless otherwise noted. The remaining width of sidewalk may have a cross slope of 1:24 or less.
2. Typical roadway cross slope varies between 1:24 or less as indicated on the plans.
3. See landscape plans for tree pit and planter locations.
4. Porous granular embankment material shall be used at the discretion of the Commissioner underSub-grade and structures where the subgrade is judged insufficient to support the proposed construction.
5. The remaining width of sidewalk may have a cross slope of 1:24 or less.
6. Leveling under rock and gravel embankments and sub-grade shall be used at the discretion of the Commissioner under sub-grade and structures where the subgrade is judged insufficient to support the proposed construction.
7. Asperco stone or aggregate may be placed to prepare unfinished road surface for temporary traffic during construction staging.
8. All remaining will be paid as hot mix asphalt surface removal, porous stone aggregate.
9. See map and details for paving sections at relevant locations.
SURFACE COURSE, MIX "E", N70
POLYMERIZED HOT-MIX ASPHALT
LEVELING BINDER (HAND METHOD)
N50, 3/4" - 1"
POLYMERIZED LEVELING BINDER
IL-19.0, N90
HOT-MIX ASPHALT BINDER COURSE,
MIXTURE TYPE

POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70
POLYMERIZED LEVELING BINDER, MIX IL-4.75, N50, 3/4" - 1"
LEVELING BINDER, MIX IL-4.75, N50, 50 GYR.

NOTES:
1. TYPICALLY AT LEAST 6'-0" WIDEPATH / 4' MINIMUM OF PROPOSED SIDEWALK.
2. TYPICAL SIDEWALK CROSS SLOPE VARIES BETWEEN 1:24 AND 1:64.
3. POLYMERIZED ASPHALT PAVEMENT SHOULD BE USED TO SUPPORT THE PROPOSED CONSTRUCTION.
4. LEVELING BINDER (HAND METHOD) SHALL BE USED TO SUPPORT THE PROPOSED CONSTRUCTION.
5. ALL HMA MILLING TO BE PAID AS HOT-MIX ASPHALT SURFACE REMOVAL, VARIABLE DEPTH.
6. SEA LEVELING BINDER (MACHINE METHOD) IL-4.75, N50, 3/4" - 1"
7. LEVELING BINDER (MACHINE METHOD) IL-4.75, N50, 3/4" - 1"
8. HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 2 1/4"
9. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 1 3/4"
10.ｼｯﾁｭ ー NS. STONY ISLAND AVE.
11. EXITING TYPICAL SECTION
12. PROPOSED TYPICAL SECTION
13. EXISTING TYPICAL SECTION
14. SOUTH STONY ISLAND AVE.
15. PROPOSED TYPICAL SECTION
16. EXISTING TYPICAL SECTION
17. PROPOSED TYPICAL SECTION
18. SOUTH STONY ISLAND AVE.
AGGREGATE PRIME COAT (DURING TEMPORARY STAGING) VARIES 6 VAR. 7 C 10'-11' BY 10' NO SCALE 3 1 TO STA. 3 D

DATE SCALE: DRILL AND GROUT BARS (AT 30" CENTERS) 10' 1 C 10' STRUCTURAL SOIL TRENCH (SEE LANDSCAPING DETAILS) COMBINATION CONCRETE CURB AND GUTTER B-V.12 (DEPRESSED) 1 6 .0 0 0 0 ' / in .
AGGREGATE PRIME COAT (DURING TEMPORARY STAGING)

DESIGN:
- STRUCTURAL SOIL TRENCH (SEE LANDSCAPING DETAILS)
- Bituminous Materials Prime Coat
- Polymeric Leveling Binder (Machine Method), IL-4.75, N50, 3/4" - 1"
- Retaining Wall, See Structural Plans
- Portland Cement Concrete Base Course, 10"
- Sub-base Granular Material, Type B, 6"
- Combination Concrete Curb and Gutter, Type B-V.12
- * # Tie Bar
- Portland Cement Concrete Sidewalk, 5"
- Base Course (Core Data Not Available)
- Asphalt Surface (Core Data Not Available)
- Sub Base Course (Core Data Not Available)
- See Plans for Location of Concrete Sidewalk to Remove

NOTES:
1. TYPICALLY 1:4% @ 70 GYR. 4% @ 90 GYR.
2. BASE COURSE THICKNESS: 
   - 2 1/4" (TYP)
   - 1 3/4" (AL)
   - 0 3/4" (RP)
3. SLAB GIRDER IN HORIZONTAL PLANTS
4. CONCRETE SIDEWALKS DO NOT ACROSS DRIVEWAYS / ALLEYS AS INDICATED ON THE PLANS.
5. SEE LANDSCAPE PLANS FOR LANDSCAPE MEDIAN.
6. EXISTING PARKWAY/LANDSCAPING
7. COMBINATION CONCRETE CURB AND GUTTER B-V.12 (DEPRESSED)
8. FOR LOCATION OF CONCRETE SIDEWALK, SEE PLANS
9. SEE BUS PAD DETAILS FOR PAVING SECTIONS AT RELEVANT LOCATIONS.
**Proposed Typical Section**

**Location:**
- STA 8011+92.00 TO STA 8013+45.00
- **Looking North**

**Description:**
- Combination Concrete Curb and Gutter
- Drainage and Grout Bars (at 30" centers)
- 913'

**Date:**
- 11/3

**Structural Soil Trench (See Landscaping Details)**

**TYPICAL SECTIONS**

**S. Cornell Dr.**

**Location Key**
- MTK
- DR
- DR

**Legend:**

1. Asphalt
2. Track Zone
3. Subgrade Drainage Writings
4. Combination Concrete Curb and Gutter
5. P.C. Concrete Sidewalk
6. Existing Parke/Landscape
7. Concrete/Landscape Median
8. P.C. Concrete Base

- **Proposed**
  - Polymerized Hot-Mix Asphalt Surface Course, Mix "E", N70, 1 3/4"
  - Hot-Mix Asphalt Binder Course, IL-19.0, N90, 2 1/4"
  - Bituminous Writings Prime Coat
  - Polymerized Leveling Binder Writings, IL-4.75, N50, 3/4" - 1"
  - Retaining Wall, See Structural Plans
  - Portland Cement Concrete Base Course, 10"
  - Subgrade Granular Material, Type B, 6"
  - Combination Concrete Curb and Gutter, Type B-422
  - #4 Tie Bar
  - Portland Cement Concrete Sidewalk, 5"
  - Sand Cushion, Variable Depth
  - Unit Paver
  - Curb Attached to Concrete Sidewalk
  - Parke, See Landscape Plans
  - Combination Concrete Curb and Gutter B-422 (Retrieved)
  - Aggregate Prime Coat During Temporary Staging
  - Soil and Grout Bars (at 30" Centers)
  - Structural Soil trench (see landscaping details)

**Notes:**
- Typically at least 1 foot thick / Normally at Proposed sidewalk / driveway / alley width must have a cross slope of 1% or less.
- The remaining width of sidewalk may have a cross slope of 1% or less.

- Typical roadway cross slope varies between 1% and 3% as indicated on the plans.
- See Landscape Plans for Tree Pit and Planter Locations.
- Porous Granular Embankment, Subgrade shall be used at the discretion of the Commissioner under structures and structures where the subgrade is deemed unstable to sustain the proposed construction.
- Tie bars at subline and longitudinal reinforcement units are incidental to curb and sidewalk items. Where these are indicated and omissions, and existing p.c. base is required, these should be paid for separately as small and other bars, unless otherwise noted.
- Leveling Trench Hardscape Method, and shall be used at the discretion of the Commissioner where the proposed back of roadway and alley approaches the 200 existing F.A. pavement.
- Aggregate Prime Coat may be placed to prepare unfinished Sidewalk for temporary usage during construction staging.
- All Items will be paid as Hot-Mix Asphalt Surface Removal, Variable Depth.
- See Bus Pad Details for paving sections at relevant locations.
**CONSTRUCTION DETAILS**

**ELEVATION PROFILE SECTION**

- **Construction Method:**
  - Existing PCC Base
  - Ex: 30" Minimum
  -钻孔和灌浆棒

- **Surface Course:**
  - Polymerized Hot-Mix Asphalt
  - Mix "E", N70, 1 3/4"

- **Leveling Binder:**
  - Polymerized Leveling Binder (Hand Method), IL-19.0, N90, 2 1/4"

- **Base Course:**
  - Portasolid Concrete Base Course, IL-4.75, N50, 3/4" - 1"

- **Sub-Base:**
  - Sub-base Material, Type B, 6"

**TYPICAL ROADWAY CROSS SLOPE**

- Varies between 1.4% and 3.6%

- Remaining width of sidewalk may have a cross slope of 1:24 or less.

- TYPICALLY AT LEAST 6' (PREFERRED) / 4' (MINIMUM) OF PROPOSED SIDEWALK / DRIVEWAY / ALLEY WIDTH MUST HAVE A CROSS SLOPE OF 1:64 OR LESS.

**NOTES:**

- All HMA Milling to be paid as Hot-Mix Asphalt Surface Removal.

- Surface for temporary traffic during construction staging.

- Aggregate Prime Coat may be placed to prepare unfinished HMA surface, tie bars at curbline and longitudinal pavement joints are incidental to the construction unless otherwise noted.

- PCC Concrete base is required; then they shall be paid for separately as small and stone work, unless otherwise noted.

- Leveling binder method, N50 shall be used at the discretion of the Commissioner under subgrades and structures where the subgrade is deemed unsuitable to support the proposed construction.

- The radius at curble and longitudinal pavement joints are incidental to the curb and concrete items unless noted. Existing PCC base is required to be kept for separation as small and stone work, unless otherwise noted.

- All HMA milling to be paid as Hot-Mix Asphalt Surface Removal, variable depth.

- See bus pad details for paving sections at relevant locations.

**LEGEND:**

- A: Asphalt
- B: Drainage
- C: Combination Concrete Curb and Gutter
- D: PCC Concrete Base
- E: Existing PCC Sidewalk
- F: Concrete Landscape Median
- G: PCC Concrete Base
- H: Combination Concrete Curb and Gutter, Type B-V.12
- I: M. Trench
- J: Portland Cement Concrete Sidewalk, 5" S.D.C.
- K: Sand Cushion, Variable Depth
- L: Unit Pavement
- M: Curb Attached to Concrete Sidewalk
- N: Parkway, see landscape plans
- O: Combination Concrete Curb and Gutter, Type B-V.22
- P: Additive Prime Coat during Temporary Staging
- Q: Tire and Grout Bars (at 30' Centered)
- R: Structural Soil Trench (see Landscape Details)

**EXISTING KEY:**

- 1. PCC Concrete Base
- 2. Concrete/Landscape Median
- 3. Existing Parkway/Landscaping
- 4. Retaining Wall, see structural plans
- 5. P.C. Concrete Sidewalk
- 6. P.C. Concrete Base
- 7. Drainage
- 8. Combination Concrete Curb and Gutter, Type B-V.12
- 9. Strip Pedestrian
- 10. Existing PCC Sidewalk
- 11. Combination Concrete Curb and Gutter, Type B-V.22
- 12. Structural Soil Trench (see landscape details)

**NOTES:**

- See Landscaping Plans for tree pit and planter locations.

- Porous Granular Fillament, subbase shall be used at the discretion of the Commissioner under subgrades and structures where the subgrade is deemed unsuitable to support the proposed construction.

- The radius at curble and longitudinal pavement joints are incidental to the curb and concrete items unless noted. Existing PCC base is required to be kept for separation as small and stone work, unless otherwise noted.

- Leveling binder method, N50 shall be used at the discretion of the Commissioner under subgrades and structures where the subgrade is deemed unsuitable to support the proposed construction.

- All HMA milling to be paid as Hot-Mix Asphalt Surface Removal, variable depth.

- See bus pad details for paving sections at relevant locations.
EXISTING E. 63RD ST.

**LEGEND**

- A: ASPHALT
- B: TRACK ZONE
- C: SUB BASE GRAVEL MATERIAL
- D: COMBINATION CONCRETE CURB AND GUTTER
- E: P.C. CONCRETE SIDEWALK
- F: EXISTING PARKWAY/LANDSCAPING
- G: CONCRETE/LANDSCAPE MEDIAN
- H: P.C. CONCRETE BASE

**TYPICAL SECTIONS**

E. 63RD ST.
STA 4005+95.38 TO STA 4006+40.00
LOOKING EAST

**TYPICAL SECTIONS**

E. 63RD ST.
STA 4006+40.00 TO STA 4007+48.00
INTERSECTION

**NOT-NCH ASPHALT MIXTURE REQUIREMENTS**

- POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70
- HOT-MIX ASPHALT SURFACE COURSE, IL-9.5 mm
  - THICKNESS: 1.375" (LAYS 0.75"
  - UNIT WEIGHT: 95 GYR. @ 4% @ N70

- POLYMERIZED LEVELING BINDER, MIX "E", N70
  - THICKNESS: 0.375" (LAYS 0.375"
  - UNIT WEIGHT: 90 GYR. @ 4% @ N70

- LEVELING BINDER (HAND METHOD), IL-4.75
  - THICKNESS: 1.375" (LAYS 0.75"
  - UNIT WEIGHT: 70 GYR. @ 4% @ N70

- BASE COURSE (CORE DATA NOT AVAILABLE)
- SUB BASE (CORE DATA NOT AVAILABLE)
- ASPHALT SURFACE (CORE DATA NOT AVAILABLE)

**NOTES**

1. TYPICALLY AT LEAST 6' PROFILED / IF RECOMMENDED BY SURVEY / DEFLECTION OF PROPOSED CURBLINE
2. SUB BASE GRAVEL MATERIAL, TYPE D, 6" (HAND METHOD)
3. LEVELING BINDER, SEE STRUCTURAL PLANS
4. UNDERLayment MATERIALS PRIME COAT
5. BITUMINOUS MATERIALS PRIME COAT
6. SANDING,劍VARIABLE DEPTH
7. SAND CUSHION, VARYING DEPTH
8. POLYMERIZED LEVELING BINDER (HAND METHOD), IL-4.75, N70, 3/4" - 1"
9. BITUMINOUS MATERIALS PRIME COAT
10. POLYMERIZED LEVELING BINDER (MACHINE METHOD), IL-19.0, N90, 2 1/4"
11. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 1 3/4"
12. POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N90, 2 1/4"
13. SUB BASE GRAVEL MATERIAL, TYPE B, 6"
14. P.C. CONCRETE BASE COURSE
15. P.C. CONCRETE SIDEWALK
16. COMBINATION CONCRETE CURB AND GUTTER
17. AGGREGATE PRIME COAT
18. DRILL AND GROUT BARS
19. HPC CONCRETE BASE
20. PORTLAND CEMENT CONCRETE SIDEWALK, 5"
21. P.C. CONCRETE SIDEWALK
22. EXISTING PARKWAY/LANDSCAPING
23. PORTLAND CEMENT CONCRETE SIDEWALK, 5"
24. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70
25. HOT-MIX ASPHALT MIXTURE REQUIREMENTS

**FILE NAME:**

p:\civil\pwp\int_civiltech.local\civiltech Projects\Projects\3153\CAD\Sheets\Typical X Sheets\sheet-63rd.png

**FILE DATE:**

5/30/2019

**FILE SCALE:**

1:6000' / in.

**NOTES:**

SEE BUS PAD DETAILS FOR PAVING SECTIONS AT RELEVANT LOCATIONS.

SEE LANDSCAPE PLANS FOR TREE PIT AND PLANTER LOCATIONS.

SEE LANDSCAPE PLANS.

**EXISTING TYPICAL SECTION**

EAST 63RD STREET
STA 4005+95.38 TO STA 4006+40.00

**PROPOSED TYPICAL SECTION**

EAST 63RD STREET
STA 4006+40.00 TO STA 4007+48.00

**LOOKING EAST**

**LOCATION KEY**

- A: ASPHALT SURFACE (CORE DATA NOT AVAILABLE)
- B: BASE COURSE (CORE DATA NOT AVAILABLE)
- C: SUB BASE (CORE DATA NOT AVAILABLE)
- D: ASPHALT SURFACE (CORE DATA NOT AVAILABLE)
- E: LEVELING BINDER (HAND METHOD)
- F: LEVELING BINDER (MACHINE METHOD)
- G: POLYMERIZED LEVELING BINDER
**Scale:**

1 6.0000' / in.

**Description:**

- Drill and grout bars (at 30" centers) and grout bars
- See plans
- 12.5'
- Combination concrete curb and gutter (type B-V.12, depressed)

**Notes:**

- Existing roadway alignment differs from proposed alignment at intersection of east and south Cornell Drive West approach. See plans.
- For location of south drive, see plans.
- Lithicous materials prime coat.
- Portland cement concrete base course, 2 1/4".
- Portland cement concrete curb and gutter, type B-V.12.
- Portland cement concrete sidewalk, 5".
- Sand cushion, variable depth.
- Unit pave.
- Curb attached to concrete sidewalk.
- Parkway, see landscape plans.
- Combination concrete curb and gutter (type B-V.12 expressed).
- Aggregate prime coat during temporary staging.
- Drill and grout bars at 30' centers.
- Structural soil trench, see landscape details.

**Notes:**

1. Typically, at least 4'-6" of paved / 4'-6" minimum of proposed sidewalk
   / driveway / alley with not more than a cross slope of 1:24 or less.
   The remaining width of sidewalk may have a cross slope of 1:48 or less.
2. Typically, roadway cross slope varies between 1:24 and 1:64 as indicated on the plans.
3. See landscape plans for tree pit and planter locations.
4. Porous granular embankment, subgrade shall be used at the discretion of the Commissioner under surfaces and structures where the subgrade is deemed infeasible to support the proposed construction.
5. The base at curbs and longitudinal pavement joints are incidental to curb and curb, curb items unless grading and grooving into existing PCC base is required. This may be paid for separately as curb and groove base, unless otherwise noted.
6. Leveling binder prime coat may be placed to prepare unpaved main surface for temporary traffic during construction staging.
7. All main paving to be placed as monolithic asphalt surface removal, variable depth.
8. See bus pad details for paving sections at relevant locations.

**Legend:**

- Asphalt
- Track zone
- Sub base, granular material
- Combination concrete curb and gutter
- P.C. concrete sidewalk
- Existing Parkway/landscaping
- Concrete landscape median
- P.C. concrete base

**Typical Sections:**

- E. 63rd St.

**Project No.**

B-7-203

**Drawing No.**

SHEETS: 67
**Revision:**

Combination Concrete Curb and Gutter B-V.12 (Depressed)

Aggregate Prime Coat (During Temporary Staging)

No Scale

Drill and Grout Bars (At 30" Centers)

**Description:**

Structural Soil Trench (See Landscaping Details)

13.5' To Sta.

**Date:**

5/30/2019

**Plot Scale:**

**File Name:**

pw:\civil-pw-in\t.civiltech.local:Civiltech Projects\Documents\Projects\3153\CAD\Sheets\Typical XS\xtyphayes.dgn

**Date:**

05/31/2019

**Location Key:**

MTK

DR

**Notes:**

Surface Course, Mix "E", N70

Polymerized Hot-Mix Asphalt

N50, 3/4" - 1"

(Highway Method), IL-4.75,

Polymerized Leveling Binder

IL-19.0, N90

HOT-MIX ASPHALT BINDER COURSE,

MIXTURE TYPE

HOT-MIX ASPHALT MIXTURE REQUIREMENTS

\[ \begin{array}{|c|c|c|}
\hline
\text{MATERIAL} & \text{THICKNESS} & \text{LIFT} \\
\hline
\text{Polymized Hot-Mix Asphalt Surface Course} & 1 3/4" & 2 1/4" \\
\text{Polymized Hot-Mix Binder Course} & 2 1/4" & 1.5" \\
\text{Polymerized Leveling Binder Course} & 2 1/4" & 1.5" \\
\text{Mixtures Type} & \text{Requirements} & \text{Lift} \\
\hline
\end{array} \]

**Total Sheets:**

1142

**Sheets:**

68
NOTES:

1. For location of E. Hayes Dr. and S. Richards Dr. intersection, see plans.
2. For location of driveway on north side, see plans.
3. See plans for locations of future pedestrian facilities and reconstruction.
4. Base course core data not available.
5. Base course core data not available.
6. For future pedestrian and cycling facilities, see plans.
7. Existing median at S. Cornell Dr.
8. Existing median at S. Richards Dr.
9. See plans for limits of new sidewalk and Existing median.
10. See plans for limits of new sidewalk and existing median.

LEGEND:

1. Asphalt
2. Track Zone
3. Sub-BASE Gravel Material
4. Combination Concrete Curb and Gutter
5. P.C. Concrete Sidewalk
6. Existing Parkway/Landscaping
7. Concrete/Landscape Median
8. P.C. Concrete Base

PREREQUISITES:

1. Polymethacrylate Wet-Mix Asphalt Surface Course, Mix "E", N70, 1 1/4"
2. Hot-Mix Asphalt Under Course, IL-19.0, N90, 1 1/4"
3. Bituminous Material Prime Coat
4. Polymethacrylate Wet-Mix Shrink Aiming Material, IL-7.0, N70, 1 1/4" - 1 1/2"
5. Retaining wall, see structural plans
6. Portland Cement Concrete Base Course, 15" - 20" Base Course (Core Data Not Available)
7. Backfill Gravel Material, Type B, 6"
8. Combination Concrete Curb and Gutter, Type B-1/2
9. Tie Bar
10. Portland Cement Concrete Sidewalk, 5" - 8"
11. Sand Cushion, Variable Depth
12. Unit Paver
13. Curb Attached to Concrete Sidewalk
14. Parkway, see landscape plans
15. Combination Concrete Curb and Gutter (B-1/2 Expressway)
16. Aggregate Prime Coat During Temporary Staging
17. Steel and Circuit Ramps (At 15' Centers)
18. Structural Soil Trench (see landscaping details)

OTHER:

1. Typically at least 6'-0" (minimum width) for Proposed sidewalk.
2. Typically at least 5'-0" for Proposed median.
3. Width and length of proposed sidewalk may vary from plans.
4. Portland cement concrete sidewalk, 5" - 8" Gravel material, 6" - 12" Sub-base material, 15" - 20" Portland cement concrete base course.
5. Base course core data not available.
6. Existing median at S. Cornell Dr.
7. Existing median at S. Richards Dr.
8. See plans for limits of new sidewalk and Existing median.
9. See plans for future pedestrian and cycling facilities.
10. See plans for locations of future pedestrian facilities and reconstruction.
11. See plans for limits of new sidewalk and Existing median.
TYPICAL SECTIONS

EXISTING E. HAYES DR.

STA 5014+32.00 TO STA 5017+09.00 RT

STA 5014+42.00 TO STA 5017+11.00 LT

PROPOSED E. HAYES DR.

STA 5015+00.00 TO STA 5016+72.00

LEGEND

- Asphalt
- Track Zone
- Sub Base Granular Material
- Combination Concrete Curb and Gutter
- PCC Concrete Sidewalk
- Existing Pavement/Landscaping
- Concrete/Landscape Median
- PCC Concrete Base

PROPOSED

1. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N70, 1" +
2. HOT-MIX ASPHALT BINDER COURSE, IL-50, 2 1/4"
3. BASE GRADE MATERIAL PRIME COAT
4. POLYMERIZED LEVELING RIDDOR-MACHINE METHOD, IL-19.0, N90, 2 1/4" + 1"
5. RETAINING WALL SEE STRUCTURAL PLANS
6. PORTLAND CEMENT CONCRETE BASE COURSE, 10"
7. SUB-BASE GRANULAR MATERIAL, TYPE B, 6"
8. COMBINATION CONCRETE CURB AND GUTTER, TYPE B-V.12
9. "5" THE BAR
10. PORTLAND CEMENT CONCRETE SIDEWALK, 5"
11. SAND CUSHION, VARIABLE DEPTH
12. LINT PAPER
13. CURB ATTACHED TO CONCRETE SIDEWALK
14. PARKWAY, SEE LANDSCAPE PLANS
15. COMBINATION CONCRETE CURB AND GUTTER B-V.12 (DEPRESSED)
16. AGGREGATE PRIME COAT (DURING TEMPORARY STAGING)
17. STRUCTURAL SOIL TRENCH (SEE LANDSCAPING DETAILS)
18. POLYMERIZED LEVELING BINDER (HAND METHOD), N70, 0 3/4"

NOTES:

- Typically at least 6" thick or a minimum of proposed surface thickness / allowable depth with a cross slope of 1:64 or less.
- The remaining width of the pavement may have a cross slope of up to 1:64.
- The cross slope on the Existing Pavement shall be at least 3%.
- See landscape plans for tree pit and planter locations.
- TYPICAL ROADWAY CROSS SLOPE VARY BETWEEN 1.4% AND 3.6% AS INDICATED ON THE PLANS.
- The sidewalk has a maximum cross slope of 1:24 or less.
- THE REMAINING WIDTH OF SIDEWALK MAY HAVE A CROSS SLOPE OF 1:64 OR LESS.
- TYPICALLY AT LEAST 6' (PREFERRED) / 4' (MINIMUM) OF PROPOSED SIDEWALK OF THE COMMISSIONER WHERE THE PROPOSED BACK OF DRIVEWAY AND ALLEY TIE INTO EXISTING HMA.
- THE REMAINING WIDTH OF SIDEWALK MAY HAVE A CROSS SLOPE OF 1:64 OR LESS.
- The existing pavement is required; then they shall be paid for separately as small and short bars, please coordinate note.
- The bars at curbs and longitudinal pavement joints are incidental to curb and are not included unless specified in the specification. This excludes the pipe shall be paid for separately as small and short bars, please coordinate note.
- AGGREGATE PRIME COAT MAY BE PLACED TO PREPARE UNFINISHED HMA APRONS TIE INTO EXISTING HMA Pavement.
- POLYMERIZED HOT-MIX ASPHALT SURFACE REMOVAL VARIABLE DEPTH.
- See BDS P&O for paving sections at relevant locations.
**Description:** Combination Concrete Curb and Gutter B-V12 (Depressed)

**Date:** 05/31/2019

**Legend:**
- **A:** Asphalt
- **B:** Track Zone
- **C:** Base Course
- **D:** Combination Concrete Curb and Gutter
- **E:** Existing Concrete Sidewalk
- **F:** Existing Parkway/Landscaping
- **G:** Concrete-Landscape Median
- **H:** P.C. Concrete Base

**Specifications:**
- **1.** Polymeric Hot-Mix Asphalt Surface Course, Mix "E"; N70; 1 3/4"
- **2.** Hot-Mix Asphalt Binder Course, IL-19.0; N90; 2 1/4"
- **3.** Porous Granular Embankment, Subgrade Shall Be Used At The Discretion Of The Commissioner Where The Subgrade Is Deemed Unstable To Support The Proposed Back Of Drive And Alley Width Must Have A Cross Slope Of 1:64 Or Less. The Remaining Width Of Sidewalk May Have A Cross Slope Of 1:24 Or Less.
- **4.** Aggregate Prime Coat May Be Placed To Prepare Unfinished HMA Aprons Tie Into Existing HMA Pavement.
- **5.** The Remaining Width Of Sidewalk May Have A Cross Slope Of 1:24 Or Less.

**Notes:**
- **1.** Base Course Code Data Not Available
- **2.** Sub Base Code Data Not Available
- **3.** Removal

**Typical Sections:**
- **E. Hayes Dr.**
- **Nordheim Dr.**
- **Wynkoop St.**
- **Prentice St.**
- **Westwood St.**
- **Glen Dr.**
- **Emerson St.**
- **Parkway, See Landscape Plans**

**Additional Information:**
- See Plans For Width Of Reconstruction, Side Walk To Remain, See Plans For Location Of Right Turn Lane, See Plans For Location Of Proposed Sidewalk And Existing Sidewalk To Remain.

**Material Requirements:**

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Mix Type</th>
<th>Air Voids</th>
<th>Minimum</th>
<th>Maximum</th>
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</thead>
<tbody>
<tr>
<td>Polymeric Hot-Mix Asphalt Surface Course</td>
<td>Mix &quot;E&quot;; N70</td>
<td>4%</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>Polymeric Hot-Mix Binder Course</td>
<td>IL-19.0; N90</td>
<td>4%</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>Polymeric Leveling Binder Machine Method</td>
<td>IL-4.75; N50</td>
<td>4%</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>Polymeric Leveling Binder Hand Method</td>
<td>IL-9.5 mm; N70</td>
<td>4%</td>
<td>2%</td>
<td>6%</td>
</tr>
</tbody>
</table>

**Construction Details:**
- See Plans For Width Of Reconstruction, Side Walk To Remain.
- See Plans For Location Of Right Turn Lane, See Plans For Location Of Proposed Sidewalk And Existing Sidewalk To Remain.
- Driveway - See Plans For Width Of Reconstruction, Side Walk To Remain.
- See Plans For Width Of Reconstruction, Side Walk To Remain.

**Note:**
- **1.** For Limits Of Full Depth Reconstruction Or Overlay, See Plans.
- **2.** See Plans For Width Of Reconstruction, Side Walk To Remain.
1. Asphalt surface coat data not available.
2. Base course coat data not available.
3. Sub base coat data not available.
4. Existing roadway alignment differs from proposed.
5. Drain and Grout Bars (at 30" centers)
6. Hot-Mix Asphalt Surface Course, "E", N70, 1 3/4"
7. Hot-Mix Asphalt Under Course, IL-19.0, N90, 2 1/4"
8. Bituminous materials prime coat
9. Polymerized Leveling Binder (Machine Method), IL-4.75, N50, 3/4" - 1"
10. Retaining Wall, See Structural Plans
11. Portland Cement Concrete Base Course, IL-19.0, N90, 2 1/4"
12. Porous Granular Embankment, Subgrade shall be used at the discretion of the Commissioner where the subgrade is deemed unsuitable to support the proposed construction.
13. Pic Concrete Base
14. Pic Concrete Sidewalk
15. Concrete/Landscape Median
16. PCC Concrete Sidewalk
17. Existing Parkway/Landscaping
18. Landscape plans for tree pit and planter locations.

NOTES:

1. Typically at least 6" preferred; / # minimum of proposed sidewalk / driveway / alley, width must have a cross slope of 1% or less.
2. The remaining width of sidewalk may have a cross slope of 1/2% or less.
3. Typical roadway cross slope varies between 1% and 2% as indicated on the plans.
4. See landscape plans for future fit and planter locations.
5. Pic Concrete embankment, subgrade shall be used at the discretion of the Commissioner on structures and structures where the subgrade is deemed unsuitable to support the proposed construction.
6. The basas at curbs and longitudinal pavement joints are incidental to curbs and some curb items unless spelled out and greeting into existing curb base is required. They shall be paid for separately as small or curb items, unless otherwise noted.
7. Leveling sand and base method, IL-19.0, N90, 2 1/4"
8. Existing Pic base is required. They shall be paid for separately as small or Pic base items, unless otherwise noted.
9. All Pic paving to be paid as mix-text asphalt surface removal. Variable depth.
10. See bus pad details for paving sections at relevant locations.

LEGEND:

- A. Asphalt
- B. Track Zone
- C. Sub Base Granular Material
- D. Combination Concrete Curbs and Gutters
- E. Pic Concrete Sidewalk
- F. Existing Parkway/Landscaping
- G. Concrete/Landscape Median
- H. Pic Concrete Base
- I. Polymeric Hot-Mix Asphalt Surface Course, "E", N70, 1 3/4"
- J. Hot-Mix Asphalt Under Course, IL-19.0, N90, 2 1/4"
- K. Bituminous materials prime coat
- L. Polymeric Leveling Binder (Machine Method), IL-4.75, N50, 3/4" - 1"
- M. Retaining Wall, See Structural Plans
- N. Portland Cement Concrete Base Course, IL-19.0, N90, 2 1/4"
- O. Pic Concrete Base
- P. Pic Concrete Sidewalk
- Q. Concrete/Landscape Median
- R. Pic Concrete Sidewalk
- S. Existing Parkway/Landscaping
- T. Landscape plans for tree pit and planter locations.
SOUTH LAKE SHORE DRIVE

EXISTING TYPICAL SECTION
STA. 9946+30 TO STA. 9946+72 (SOUTH OF 57TH DR.)
STA. 9951+90 TO STA. 9954+72 (SOUTH OF 57TH DR.)

NOTE 1

PROPOSED TYPICAL SECTION
STA. 9946+30 TO STA. 9946+72 (SOUTH OF 57TH DR.)
STA. 9951+90 TO STA. 9954+72 (SOUTH OF 57TH DR.)

NOTES:

1. SEE ELECTRICAL PLANS FOR LIGHT POLE LOCATIONS.
2. TIE BARS AT CURBLINE AND LONGITUDINAL PAVEMENT JOINTS ARE INCIDENTAL.
3. SUB-BASE GRANULAR MATERIAL VARIES AT CURB LOCATIONS.
4. PROPOSED IMPROVEMENTS FOR SOUTH OF 57TH DR. NOT SHOWN.
5. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, N80, 2"
6. PORTLAND CEMENT CONCRETE SIDEWALK, 5"
7. BITUMINOUS MATERIALS PRIME COAT
8. SAND CUSHION, VARIABLE DEPTH
9. COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24
10. COMBINATION CONCRETE CURB AND GUTTER B-V.12 (DEPRESSED)
11. AGGREGATE PRIME COAT (DURING TEMPORARY STAGING)
12. PORTLAND CEMENT CONCRETE MEDIAN AND BASE
13. PORTLAND CEMENT CONCRETE MEDIAN/PARKWAY
14. POLYMERIZED LEVELING BINDER (MACHINE METHOD), IL-4.75, N50, 3/4" - 1"
15. RETAINING WALL, SEE STRUCTURAL PLANS
16. COMBINATION CONCRETE MEDIAN AND BASE
17. PORTLAND CEMENT CONCRETE BARRIER WALL
18. P.C. CONCRETE PAVED MEDIAN 4"

LEGEND:

A. CONCRETE MEDIAN AND BASE
B. PORTLAND CEMENT CONCRETE SIDEWALK
C. EXISTING PARKWAY/LANDSCAPING
D. P.C. CONCRETE PAVED MEDIAN 4"
E. CONCRETE MEDIAN/PARKWAY
F. BITUMINOUS MATERIALS PRIME COAT
G. CONCRETE MEDIAN AND BASE
H. P.C. CONCRETE BARRIER WALL
I. POLYMERIZED LEVELING BINDER (MACHINE METHOD), IL-4.75, N50, 1"
J. PORTLAND CEMENT CONCRETE BARRIER WALL
K. BITUMINOUS BIKE AND PEDESTRIAN PATH
L. COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24
M. PORTLAND CEMENT CONCRETE BASE COURSE, 9"
N. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, N80, 2"
O. SAND CUSHION, VARIABLE DEPTH
P. COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24
Q. EXISTING TYPICAL SECTION
R. PORTLAND CEMENT CONCRETE SIDEWALK, 5"
S. BITUMINOUS MATERIALS PRIME COAT
T. SAND CUSHION, VARIABLE DEPTH
U. COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24
V. SUBBASE GRANULAR MATERIAL
W. PORTLAND CEMENT CONCRETE BASE COURSE, 9"
X. POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, N80, 2"
Y. SAND CUSHION, VARIABLE DEPTH
Z. COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24

NOTES:

1. USE ELECTRICAL PLANS FOR LIGHT POLE LOCATIONS.
2. SUB-BASE GRANULAR MATERIAL VARIES AT CURB LOCATIONS.
3. PORTLAND CEMENT CONCRETE BARRIER WALL
4. FOR PERCENT OF RAP, SEE DISTRICT ONE SPECIAL PROVISIONS.
CROSS SECTIONS
S. STONY ISLAND AVE.

JACKSON PARK MOBILITY IMPROVEMENTS

SCALE: AS INDICATED

TOTAL SHEETS

SHEET NO.

MPK
05/31/2019

DESIGN:
DRAWN:
CHECKED:
APPROVED:
DATE:

REVISIONS
NO.
BY
DATE
DESCRIPTION

FILE NAME:

FILL DATE:

FILL SCALE:

20.0000 '/ in.

5/29/2019

1022

1142

1148

239+00.00

239+50.00

P R O  R O W

P R O  R O W

E X  R O W

E X  R O W

F = 2.66 SQ FT

C = 95.34 SQ FT

F = 2.20 SQ FT

C = 88.13 SQ FT

1.50 %

-2.51 %

-2.32 %

0.31 %

0.31 %

-2.16 %

-2.02 %

-2.29 %

EX ROW

EX ROW

PR ROW

PR ROW
Proposed Pedestrian Underpass
Sheet Pile Cutoff Wall
CROSS SECTIONS
1. LAKE SHORE DR.

JACKSON PARK MOBILITY IMPROVEMENTS

C = 19.07 SQ FT
F = 2.43 SQ FT

C = 11.67 SQ FT
F = 29.61 SQ FT

C = 9.48 SQ FT
F = 49.21 SQ FT

C = 10.00 SQ FT
F = 20.00 SQ FT

C = 10.00 SQ FT
F = 20.00 SQ FT

C = 10.00 SQ FT
F = 20.00 SQ FT

C = 10.00 SQ FT
F = 20.00 SQ FT

C = 10.00 SQ FT
F = 20.00 SQ FT
Mobility Improvements to Support the SLFP

Location Drainage Study Appendix C – Correspondence
Table of Contents

1. December 12th, 2017 – Coordination with IDOT Hydraulics
2. June 6th, 2018 – Coordination with Department of Water Management
3. June 19th, 2018 – Coordination with USACE
4. June 26th, 2018 – Coordination with USACE
5. September 5th, 2018 – Coordination with Department of Water Management
6. September 26th, 2018 – Coordination with IDOT Hydraulics and Department of Water Management
7. August 28th, 2018 – Coordination with IDNR
8. November 16th, 2018 – Coordination with USACE
9. November 30th, 2018 – Coordination with CDOT, Chicago Park District, and Department of Water Management.
10. May 1st, 2019 – Coordination with CDOT and Department of Water Management
11. June 10th, 2019 – Coordination with IDNR
The primary purpose of the meeting was to discuss with the IDOT Hydraulics Section the proposed Obama Presidential Center (OPC) Mobility Improvements and the required drainage submittals. The following is a summary of the meeting discussion:

**Project Overview**

- The proposed OPC Mobility Improvements are generally located in the City of Chicago between 56th Street and 67th Street and bounded by Stony Island to the west and South Lake Shore Drive to the east. Cornell Drive will be closed, and an additional traffic lane will be added to south bound Lake Shore Drive, and additional lanes will be added to Stony Island Avenue.
- Generally within the project limits Cornell Drive and South Lake Shore Drive are under IDOT jurisdiction. Stony Island is under CDOT jurisdiction, however south of 55th it becomes IDOT jurisdiction.
- The proposed improvements are following the NEPA 404 Merger process. The purpose and need for the project will be presented on January 5, 2018. The project team is currently working on roadway design alternatives.
- The Timeframes Agreement (12/01/2017) targets completion of NEPA on 11/19/2018.

**Existing Drainage**

- With regards to existing drainage within the project limits there is a large City of Chicago 13-feet diameter combined sewer that flows to the north under Stony Island Avenue. In general most of the roadway storm sewers within the project limits are tributary to this sewer. There is a control structure located on Hayes Drive just east of Stony that acts as a backflow preventer (to prevent combined sewer flows from backing into the storm sewer) as well as a restrictor to limit discharge to the combined sewer to the 1 year flow. Flows that exceed the 1-year design flow will overflow to the existing Lagoons in Jackson Park through a series of weirs within the existing storm sewer system.
- A Location Drainage Study dated September 2000 was completed for the previous South Lake Shore Drive Improvements.
Anticipated Drainage Submittals

- The proposed improvements will require an Existing Drainage Plan (EDP) as well as a Proposed Drainage Plan (PDP). The possibility of doing an Addendum to the South Lake Shore Drive Location Drainage Study (LDS) was discussed, however this was dismissed as this study is older (circa 2000) and was completed in metric units. So a new separate LDS will be completed for the OPC Mobility Improvements.

- The need for a Hydraulic Report for the 59th Street Inlet Structure on South Lake Shore Drive was also discussed. The existing structure will be widened on the west side to accommodate an additional traffic lane. Civiltech will investigate what was include in the previous South Lake Shore Drive LDS for this structure. Subsequent to the meeting it was determined that there was not a previous Hydraulic Report prepared for the 59th Street Inlet Structure (Structure No. 016-6195). The LDS includes a discussion that the bridge low chord is above the FEMA defined 100-year elevation and there is no history of overtopping. Since there is not a tributary drainage area a hydraulic analysis was not completed.

- IDOT requested that the EDP document the sources of the information shown (i.e. survey, record plans, etc.)

- Submittals should go through IDOT Local Roads. Civiltech will submit the first draft of the EDP for review in mid-January 2018. IDOT committed to review times on submittals of between 2 weeks and 1 month. In order to meet the overall project schedule the PDP will likely need to be approved by July 2018.

Local Drainage Coordination

- The project will require drainage coordination with Chicago Department of Water Management as well as the Chicago Park District. There are no sewers under MWRD jurisdiction within the project limits.

By: Tom Liliensiek, P.E. (CNECT)
Date: December 23, 2017
# Attendance Roster

**Project Description:** Drainage Coordination Meeting  
OPC Mobility Improvements  

**Meeting Location:** IDOT District One  
Schaumburg, IL  
Programming Conference Room

**Date:** December 12, 2017  
**Time:** 10:00 a.m.

**Attending:**

<table>
<thead>
<tr>
<th>NAME/ AFFILIATION</th>
<th>TEL</th>
<th>EMAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ken Smorynski</td>
<td>312-960-1262</td>
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</tr>
<tr>
<td>Mesfin Geraminegou</td>
<td>847-915-7575</td>
<td><a href="mailto:mesfin.geraminegou@illinois.gov">mesfin.geraminegou@illinois.gov</a></td>
</tr>
<tr>
<td>ELEFTHERIOS MAZOURIDIS</td>
<td>847-715-4474</td>
<td><a href="mailto:ELEFTHERIOS.MAZOURIDIS@ILLINOIS.GOV">ELEFTHERIOS.MAZOURIDIS@ILLINOIS.GOV</a></td>
</tr>
</tbody>
</table>

**John Sadler (via conference call)**
Meeting Minutes

Re: Mobility Improvements to Support the SLFP DWM Coordination Meeting

Date: June 8, 2018

Location: Jardine Water Plant

Time: 9:00 a.m.

Attending: See attached.

The primary purpose of the meeting was to discuss with the Department of Water Management the proposed OPC Mobility Improvements, potential impacts to the existing drainage in the corridor, and the proposed drainage design criteria for the project. The following is a summary of the meeting discussion:

Project Overview

- Lake Shore Drive from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east. Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.

- Stony Island Avenue from 59th Street to 64th Street would be widened to the east to provide an additional through lane in each direction, an all-day onstreet parking or loading zone lane on each side of the road, and a raised median with left-turn channelization at intersections. From 64th Street to 67th Street, Stony Island Avenue would be widened to provide a consistent cross section including three northbound lanes and four southbound lanes separated by a raised median. Intersections on Stony Island Avenue from 59th Street to 67th Street would be reconfigured to accommodate the roadway widening and provide additional turn lanes.

- Parking would be removed on Hayes Drive from Lake Shore Drive to Cornell Drive to provide two lanes in each direction, separated by a barrier median. Modifications are required at the Lake Shore Drive/Coast Guard Drive, Richards Drive, and Cornell Drive/63rd Street intersections with Hayes Drive to accommodate the additional through lanes as well as the proposed closure of Cornell Drive north of 63rd Street. The existing triangular, stop-controlled intersection at Hayes Drive and Richards Drive would be reconfigured to create a signalized T-intersection. Hayes Drive would be realigned at Cornell Drive to provide a through movement for predominant travel through the intersection. The existing portion of Hayes Drive between Stony Island Avenue and

https://tinyurl.com/JPIImprovements
Cornell Drive would be realigned to create a T-intersection with the realigned Hayes Drive.

- Roadway Improvements are scheduled to begin in 2019.

**Existing Drainage**

- Under existing conditions there are areas from Jackson Park that drain directly into the lagoons. Cornell Drive, north of Hayes discharges directly to the West Lagoon via an existing storm sewer. The roadway right of way on South Lake Shore Drive south of 59th Street as well as Hayes Drive discharges to the combined sewer on Stoney Island. The system is designed to take the 1-year flow (first flush) with the storm sewer overflow that exceeds the 1-year storm going to the Lagoons. In general the intent of the OPC Mobility Improvements is to maintain the existing drainage patterns as closely as possible.

- The water levels in the East and West Lagoons are generally maintained by a control structure located to the west of the 59th Street inlet. When Lake Michigan is low the weir/control structure maintains the levels in the East and West lagoons.

- Stony Island is drained entirely by combined sewers. There are local sewers that drain the roadway and surrounding areas that ultimately connect to the large 13-feet diameter interceptor sewer that runs down the center of Stony Island. The sewer is DWM jurisdiction (not MWRD).

- Lake Michigan as well as the inner harbors are mapped FEMA floodplains.

**Proposed Drainage**

- The overall proposed improvements will have a net reduction in impervious area within the project corridor. However there will be increased impervious area on Stony Island that will be directly tributary to existing combined sewers. Proposed catch basins on Stony Island will be the City of Chicago standard for arterial streets.

- The DWM will be concerned with maintaining the existing flow/release rates to the combined sewer on Stony Island. DWM will not require any specific modeling analysis but may incorporate the proposed drainage into their own model.

- Details of the proposed pedestrian underpasses at Hayes and Cornell as well as at Hayes and South Lake Shored Drive are still being developed. The proposed underpasses may require stormwater pump stations.

- Additional drainage coordination with the Park District, USACE, as well as with DWM will be required for the proposed roadway improvements.
Next Steps/Immediate Action Items

- When further developed, CNECT (TKL) to provide DWM with a full sized copy of the project Proposed Drainage Plan.

By: Tom Liliensiek, P.E. (CNECT)
Date: July 31, 2018

Meeting Materials:
1. Agenda
2. Attendance Roster
OPC Mobility Improvements – Coordination Meeting  
June 8, 2018, 9:00 AM  
JARDINE WATER PLANT

The purpose of the meeting is to discuss with the Department of Water Management the proposed OPC Mobility Improvements, potential impacts to existing drainage in the corridor, and the proposed drainage design criteria for the project.

1. Introductions

2. Project Overview  
   a. Overview of Proposed Improvement  
   b. Jurisdictions within the Project Limits  
   c. Project Status and Schedule

3. Midway and Cornell Vacation and Dedication

4. Existing Drainage  
   a. Existing Major Watershed Divides within the Project Limits  
   b. Major Drainage Features  
   c. Existing Drainage Problems  
   d. South Lake Shore Drive LDS (Study for previous improvements)  
   e. Existing Underpass Drainage

5. Proposed Drainage  
   a. Hayes/Cornell/South Lake Shore Drive Proposed Drainage  
   b. Stony Island Proposed Drainage  
   c. Drainage Design Criteria  
   d. Proposed Underpass Drainage

6. Drainage Coordination  
   a. Chicago Park District  
   b. USACE

7. Open Discussion
Obama Presidential Center Improvements to Support the South Lakefront Framework Plan
Section 17-B7203-00-ES
Proposed Revisions to Roadway Jurisdiction

1 in = 0.25 miles

CDOT Division of Engineering
March 16, 2018
# Attendance Roster

**Re:** OPC Mobility Improvements – Coordination Meeting  
**Date:** June 8, 2018  
**Location:** Jardine Water Plant  
**Time:** 9:00 a.m.

**Attending:**

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Meeting Minutes

Re: Mobility Improvements to Support the SLFP
USACE Coordination Meeting

Date: June 19, 2018

Location: 30 N LaSalle Suite 2624

Time: 10:30 a.m.

Attending: See attached.

The primary purpose of the meeting was to begin coordination with the USACE regarding the required permitting for the proposed OPC Mobility Improvements. The following is a summary of the meeting discussion:

Status of NEPA 404 Merger Process

- The Purpose and Need obtained concurrence in March.
- Alternatives to be carried forward obtained concurrence in May.
- Presenting the Preferred Alternative on Thursday June 21.

Preferred Improvement Plan

- Lake Shore Drive from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east. Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.
- The scope of the inlet bridge widening includes removing existing architectural stone cladding and reinstalling to the new bridge structure on the west face. The abutments will be extended to the west and new wingwalls will be constructed on the west side. The construction includes both temporary and permanent impacts to waters of the US, but the areas are minimal totaling less than 0.04 acres for both.
- Stony Island Avenue from 59th Street to 64th Street would be widened to the east to provide an additional through lane in each direction, an all-day onstreet parking or loading zone lane on each side of the road, and a raised median with left-turn channelization at intersections. From 64th Street to 67th Street, Stony Island Avenue would be widened to provide a consistent cross section including three northbound lanes and four southbound lanes separated by a raised median. Intersections on Stony Island Avenue from 59th Street to 67th Street would be reconfigured to accommodate the roadway widening and provide additional turn lanes.

https://tinyurl.com/jPlImprovements
Parking would be removed on Hayes Drive from Lake Shore Drive to Cornell Drive to provide two lanes in each direction, separated by a barrier median. Modifications are required at the Lake Shore Drive/Coast Guard Drive, Richards Drive, and Cornell Drive/63rd Street intersections with Hayes Drive to accommodate the additional through lanes as well as the proposed closure of Cornell Drive north of 63rd Street. The existing triangular, stop-controlled intersection at Hayes Drive and Richards Drive would be reconfigured to create a signalized T-intersection. Hayes Drive would be realigned at Cornell Drive to provide a through movement for predominant travel through the intersection. The existing portion of Hayes Drive between Stony Island Avenue and Cornell Drive would be realigned to create a T-intersection with the realigned Hayes Drive.

Section 404 Process

- The widening of the Lake Shore Drive Bridge spanning the 59th Street Inlet will result in permanent fill/impact to Lake Michigan and will therefore require a Section 404/10 Permit from the USACE. This is the only anticipated project impact to USACE jurisdictional wetlands or Waters of the US as a result of the OPC Mobility Improvements. It is anticipated that the bridge construction would be covered under Regional Permit 3 and the cofferdams under Regional Permit 7.
- The USACE has already established an LRC permit number for the proposed OPC Mobility Improvements. This permit/reference number should be used on all future submittals to the USACE.
- The USACE has already discussed internally and the OPC Mobility Improvements will be considered a separate project (for permitting purposes) from the Obama Library development.
- The OPC Mobility Improvements project has completed a Wetland Delineation Report for the entire project corridor. The USACE recommended submitting the report for concurrence (it can be submitted prior to the full permit application). The USACE offered a field meeting in Jackson Park to confirm wetland review. The USACE will likely provide a formal determination of the isolated wetlands in the Midway Plaissance, just west of Stony Island Avenue.
- The NEPA 404 merger process has initiated the Section 7 (i.e. endangered species) consultation. The coordination is ongoing, however IDNR has already indicated that there are no anticipated impacts to state endangered species.
- If the Obama Library site development has no impacts to Wetlands or Waters of the US they could submit the plans and wetland delineation and apply for a Letter of No Objection from the USACE. This process is not mandatory but provides a concurrence from the USACE that a permit is not required.
• The USACE recommended a pre-application meeting for the 404 permit process.

Section 408 Coordination

• The GLFER project consists of restoration and improvements within Jackson Park that were completed and funded by the USACE and the Chicago Park District.
• Because the OPC Mobility Improvements will impact some of the restored GLFER areas within Jackson Park the Section 408 process will be initiated.
• The Section 408 process is a separate track from the 404 process. However the 408 process will need to be approved prior to the issuance of a 404 permit.
• The status of the GLFER project is that everything around the east and west lagoons is completed. In general the areas north of Hayes Drive have also been planted. The areas south of Hayes Drive have had the invasive species removed, but have not been planted yet.
• The direct impacts to the GLFER project as a result of the OPC Mobility Improvements will need to be quantified and mitigated.
• It was suggested recommended to have a separate follow-up meeting with the USACE to specifically discuss the GLFER project and 408 coordination. This meeting could include additional personnel from the USACE specific to the GLFER project (i.e. hydrologist, botanist).

Schedule

• The first construction contracts for the OPC Mobility Improvements are anticipated for the Spring of 2019. Therefore the 404 Permit will be needed in the February/March of 2019 time frame.

Next Steps/Immediate Action Items

• City to forward wetland delineation report to USACE.
• Schedule a follow-up meeting with the USACE to discuss the GLFER Impacts and 408 permit process

By: Tom Liliensiek, P.E. (CNECT)
Date: July 6, 2018

Meeting Materials:
1. Agenda
2. Attendance Roster
OPC Mobility Improvements – USACE Coordination Meeting
June 19, 2018, 10:30 AM
30 North LaSalle Suite 2624

The purpose of the meeting is to discuss with the USACE the proposed OPC Mobility Improvements and potential impacts to the corridor.

1. Introductions

2. Status of NEPA/404 Merger Process
   · Purpose & Need
   · Alternatives to be Carried Forward
   · Preferred Alternative

3. Preferred Improvement Plan
   · Lake Shore Drive
   · Stony Island Avenue
   · Hayes Drive
   · 59th Street Inlet Bridge

4. Section 404 Process
   · Status of the bridge design and review
   · Anticipated impacts
   · Schedule

5. Section 408 Process
   · Anticipated GLFER Impacts
   · Lagoon Outfall
   · Schedule

6. Overall Project Schedule
# Attendance Roster

**Re:** OPC Mobility Improvements – USACE Coordination Meeting  
**Date:** June 19, 2018  
**Location:** Civiltech Engineering – 30 North LaSalle Suite 2624  
**Time:** 10:30 a.m.

## Attending:

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The primary purpose of the meeting was to begin coordination with the USACE regarding the Section 408 process due to the impacts to the GLFER project in Jackson Park as a result of the proposed OPC Mobility Improvements. The following is a summary of the meeting discussion:

Preferred Improvement Plan

- Lake Shore Drive from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east. Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.
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Cornell Drive would be realigned to create a T-intersection with the realigned Hayes Drive.

Section 408 Coordination

- The GLFER project consists of restoration and improvements within Jackson Park that were completed and funded by the USACE and the Chicago Park District.
- Because the OPC Mobility Improvements will impact some of the restored GLFER areas within Jackson Park the Section 408 process will be required.
- The Section 408 process is a separate track from the 404 permit process. However the 408 process will need to be approved prior to the issuance of a 404 permit.
- The current status of the GLFER project is that the proposed improvements surrounding the East and West Lagoons are complete. In general the areas north of Hayes Drive have also been planted, along with the removal of invasive species. The areas south of Hayes Drive have had the invasive species removed, but have not been planted yet.
- The direct impacts to the GLFER project as a result of the OPC Mobility Improvements will need to be quantified and mitigated. It is preferred to mitigate the impacted areas within Jackson Park as close by as possible. The USACE stated that direct impacts may be mitigated through planting of the areas south of Hayes that were part of the original GLFER project but never planted. The Park District stated that they would consider recent updates to the South Lakefront Framework Plan in assessing potential mitigation areas.
- The GLFER project did not complete a detailed hydrologic/hydraulic analysis of the water levels in the lagoons. The water levels in the East and West Lagoons are generally maintained by a control structure located to the west of the 59th Street inlet. When Lake Michigan is low the weir/control structure maintains the levels in the East and West lagoons.
- Under existing conditions there are areas from Jackson Park that drain directly into the lagoons. Cornell Drive, north of Hayes discharges directly to the West Lagoon via an existing storm sewer. The roadway right of way on South Lake Shore Drive south of 59th Street as well as Hayes Drive discharges to the combined sewer on Stoney Island. The system is designed to take the 1-year flow (first flush) with the storm sewer overflow that exceeds the 1-year storm going to the Lagoons. In general the intent of the OPC Mobility Improvements is to maintain the existing drainage patterns as closely as possible.
- The USACE will be concerned with quality of flow/runoff entering the lagoons. If additional flow or volume is proposed the USACE will be concerned if the plants can
tolerate the increase or will be impacted and this could be considered an indirect impact to the GLFER project.

- As part of the 408 approval process a public notice is not required and the submittals will be reviewed at the District level. There is no formal 408 permit application or permit issued.
- The mitigated areas will require a Maintenance and Monitoring Plan. The maintenance and monitoring will likely be required for 5 years.
- The Chicago Park District will act as applicant for all Section 408 coordination with the USACE (including both CDOT and OPC work).

**Schedule**

- Based on previous coordination, the Section 408 coordination will likely require two months between the Chicago Park District and USACE. The Section 408 coordination will need to conclude prior to the Section 404 permit, which is needed in the February/March of 2019 time frame.

**Next Steps/Immediate Action Items**

- The USACE can provide the project specifications and quantity of plants that have been put in place.
- CONNECT (TKL) to complete an initial estimate of the GLFER impact areas as a result of the OPC Mobility Improvements.
- CONNECT (TKL) to complete a memorandum that describes and documents the hydrologic and hydraulic impacts to Jackson Park as a result of the OPC Mobility Improvements.

| By: | Tom Liliensiek, P.E. (CNECT) |
| Date: | July 6, 2018 |

**Meeting Materials:**

1. Agenda
2. Attendance Roster
The purpose of the meeting is to discuss with the USACE the proposed OPC Mobility Improvements and potential impacts within the corridor to the GLFER project.

1. Introductions

2. GLFER Project
   · History
   · Project Status

3. Roadway Preferred Improvement Plan
   · Lake Shore Drive
   · Stony Island Avenue
   · Hayes Drive
   · 59th Street Inlet Bridge
   · OPC Site Plan

4. Anticipated GLFER Impacts
   · Adjacent to OPC
   · Roadway Improvements

5. Section 408 Application Process

6. Mitigation

7. Next Steps
# Attendance Roster

**Re:** OPC Mobility Improvements – USACE Coordination Meeting  
**Date:** June 26, 2018  
**Location:** Civiltech Engineering – 30 North LaSalle Suite 2624  
**Time:** 10:30 a.m.

## Attending:

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**Jenn Hyman**  
**Aaron Perles**  
**Conf**
The primary purpose of the meeting was to discuss with the Department of Water Management (DWM) the proposed OPC Mobility Improvements, as well as the Vacation Dedication Exhibits and Proposed Drainage Plan provided for DWM review on 8/21/2018. The following is a summary of the meeting discussion:

**Project Overview**

- Lake Shore Drive from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east. Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.

- Stony Island Avenue from 59th Street to 64th Street would be widened to the east to provide an additional through lane in each direction, an all-day on-street parking or loading zone lane on each side of the road, and a raised median with left-turn channelization at intersections. From 64th Street to 67th Street, Stony Island Avenue would be widened to provide a consistent cross section including three northbound lanes and four southbound lanes separated by a raised median. Intersections on Stony Island Avenue from 59th Street to 67th Street would be reconfigured to accommodate the roadway widening and provide additional turn lanes.

- Parking would be removed on Hayes Drive from Lake Shore Drive to Cornell Drive to provide two lanes in each direction, separated by a barrier median. Modifications are required at the Lake Shore Drive/Cornell Drive/63rd Street intersections with Hayes Drive to accommodate the additional through lanes as well as the proposed closure of Cornell Drive north of 63rd Street. The existing triangular, stop-controlled intersection at Hayes Drive and Richards Drive would be reconfigured to create a signalized T-intersection. Hayes Drive would be realigned at Cornell Drive to provide a through movement for predominant travel through the intersection. The existing portion of Hayes Drive between Stony Island Avenue and...
Cornell Drive would be realigned to create a T-intersection with the realigned Hayes Drive.
- Roadway Improvements are scheduled to begin in 2019.

Hayes Drive and South Lake Shore Drive – Vacation and Dedications

- DWM inquired if the existing 36-inch storm sewer near the existing intersection of Cornell and Hayes could be relocated under the proposed roadway pavement. The proposed pedestrian underpasses prohibit the relocation of the storm sewer. DWM prefers that the sewers be located within the roadway footprint (i.e. the roadway right of way under CDOT jurisdiction). There is a proposed ‘utility corridor’ that will be located within a permanent easement.
- DWM expressed concern that DWM sewers within Jackson Park, outside the roadway right of way, would be difficult access and to coordinate/locate in OUC. CDOT proposed memorializing the proposed easements on the Park District Atlases to ensure future coordination.
- DWM requested a 33-feet easement on each side of a sewer (66-feet overall) as a starting point, since this is a typical right of way.
- The proposed easements will require future coordination with the Park District to establish final limits that will be memorialized in an agreement. The easements will also need to be coordinated with the Park District’s South Lake Framework Plan.

Proposed Drainage

- DWM provided their marked comments on the full size Proposed Drainage Plan. A few of the general comments were to show the proposed Hydraulic Grade Line elevations on the profile, add sheets numbers on the key map, and to clarify the drainage areas in the legend.
- DWM noted that the existing mainline 12-inch sewers on the west side of Stony Island may require lining (the existing clay sewer dates to 1894). DWM requested that these existing sewers be televised and agreed to TV with DWM forces utilizing CDOT funding. DWM would clean the sewers prior to televising.
- The DWM capacity map shows several issues to the west of Stony Island. DWM requested to verify that the existing overflows to the interceptor sewer exist. They may request that additional overflows be included in the proposed sewer design.
• The DWM is concerned with maintaining the existing flow/release rates to the combined sewer on Stony Island. CNECT is currently developing a SWMM hydrologic/hydraulic model to simulate the existing and proposed conditions.
• Details of the proposed pedestrian underpasses at Hayes and Cornell as well as at Hayes and South Lake Shore Drive are still being developed. The proposed underpasses will likely require stormwater pump stations. Details for the pump stations will be provided when available.
• Additional drainage coordination with the Park District, USACE, as well as with DWM will be required for the proposed roadway improvements.
• CDOT confirmed it would fund build-out of impacted facilities related to roadway improvements.

Next Steps/Immediate Action Items

• CNECT (TKL) to scan and provide a PDF copy of the Proposed Drainage Plan with DWM marked comments.
• DWM to provide a written summary of their comments on the Vacation/Dedication Exhibits as well as the Proposed Drainage Plan.
• A follow-up meeting with IDOT is scheduled for September 26 at DWM. CNECT (TKL) to provide updated Proposed Drainage Plan after the meeting.

By: Tom Liliensiek, P.E. (CNECT)
Date: October 1, 2018

Meeting Materials:
1. Agenda
2. Attendance Roster
The purpose of the meeting is to discuss with the Department of Water Management the proposed OPC Mobility Improvements, Vacations and Dedications, potential impacts to existing drainage in the corridor, and the proposed drainage design for the project.

1. Introductions

2. Project Update
   a. Brief Overview of Proposed Improvement
   b. Project Status and Schedule

3. Hayes Drive and South Lake Shore Drive - Vacation and Dedications

4. Existing Drainage
   a. Existing Drainage Problems
   b. Existing Underpass Drainage

5. Proposed Drainage Plan
   a. Hayes/Cornell/South Lake Shore Drive Proposed Drainage
   b. Stony Island Proposed Drainage
   c. Drainage Design Criteria
   d. Proposed Underpass Drainage

6. On Going Drainage Coordination
   a. IDOT (DWM Coordination meeting on 9/26)
   b. Chicago Park District
   c. USACE

7. Open Discussion
# Attendance Roster

**Re:** OPC Mobility Improvements – Coordination Meeting  
**Date:** September 5, 2018  
**Location:** Jardine Water Plant  
**Time:** 10:30 a.m.

**Attending:**

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<tr>
<th>NAME</th>
<th>AFFILIATION</th>
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<th>EMAIL</th>
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The primary purpose of the meeting was to discuss with the Department of Water Management (DWM) and IDOT Hydraulics the proposed OPC Mobility Improvements, review comments from both agencies, potential impacts to existing drainage in the corridor and the proposed drainage design for the project. The following is a summary of the meeting discussion:

Project Overview

- Lake Shore Drive from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east. Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.

- Stony Island Avenue from 59th Street to 64th Street would be widened to the east to provide an additional through lane in each direction, an all-day on-street parking or loading zone lane on each side of the road, and a raised median with left-turn channelization at intersections. From 64th Street to 67th Street, Stony Island Avenue would be widened to provide a consistent cross section including three northbound lanes and four southbound lanes separated by a raised median. Intersections on Stony Island Avenue from 59th Street to 67th Street would be reconfigured to accommodate the roadway widening and provide additional turn lanes.

- Parking would be removed on Hayes Drive from Lake Shore Drive to Cornell Drive to provide two lanes in each direction, separated by a barrier median. Modifications are required at the Lake Shore Drive/Coast Guard Drive, Richards Drive, and Cornell Drive/63rd Street intersections with Hayes Drive to accommodate the additional through lanes as well as the proposed closure of Cornell Drive north of 63rd Street. The existing triangular, stop-controlled intersection at Hayes Drive and Richards Drive would be reconfigured to create a signalized T-intersection. Hayes Drive would be realigned at Cornell Drive to provide a through movement for predominant travel through the intersection. The existing portion of Hayes Drive between Stony Island Avenue and

https://tinyurl.com/JPIImprovements
Cornell Drive would be realigned to create a T-intersection with the realigned Hayes Drive.

- It is anticipated that the Jurisdictional Transfer will be effective March/April of 2019. Roadway Improvements are scheduled to begin in 2019.

**Hayes Drive, Cornell, and South Lake Shore Drive – Proposed Drainage**

- CNECT has completed a preliminary SWMM model hydrologic and hydraulic analysis of the existing and proposed mainline storm sewer that extends from South Lake Shore Drive, west on Hayes and discharges to the interceptor combined sewer on Stony Island. The original design limited the discharge to the combined sewer on Stony Island to the one-year ‘first flush’ flow with the remainder going over weir control structures to the adjacent lagoons and harbors. CNECT noted that the SWMM model has produced different results as compared to the original HYDRA analysis that was included in the circa 2000 South Lake Shore Drive Location Drainage Study.

- The proposed pedestrian underpass at Hayes Drive, near the intersection of South Lake Shore Drive will require a stormwater pump station. The existing storm sewer that drains a section of South Lake Shore Drive to the east of the underpass is proposed to be routed around the underpass.

- On the Hayes mainline storm sewer, a new restrictor and overflow is proposed upstream of the proposed pedestrian underpass at Hayes and Cornell. The new restrictor location will lower the hydraulic grade line just downstream in the area of the pedestrian underpass.

- In general it is the preference of DWM to maintain the existing release rate to the interceptor sewer on Stony Island.

**Stony Island - Proposed Drainage**

- CNECT noted that the proposed gutter flow line on the east side of Stony will be located where the proposed bus drop-off lane meets the mainline pavement. DWM noted that the catch basins in the depressed gutter should still use the standard city round open lid, but that these structures would not have restrictors. The catch basins on the west side of Stony will have the standard restrictors. Additional stormwater detention as a result of the widened pavement on Stony Island is not required.
Cornell South of Hayes - Proposed Drainage

- Under existing conditions the roadway section of Cornell south of Hayes is under IDOT jurisdiction. The existing drainage for Cornell includes a storm sewer that drains the roadway to the north, crosses Hayes, and discharges into the West Lagoon. Under proposed conditions this section of Cornell will be jurisdictionally transferred to the City.
- The proposed storm sewer for this section of Cornell will be routed around the pedestrian underpass at Hayes and Cornell and will remain tributary to the West Lagoon (not tributary to the storm sewer that flows to the combined sewer on Stony Island). DWM inquired if there were any possible ways to treat the water prior to discharging to the Lagoon.
- There was a discussion regarding MS4 reporting. The IEPA MS4 is a general permit that covers stormwater outfalls. It was noted that although the upstream storm sewer will be revised, the existing outfall to the West Lagoon will remain unchanged. There are no new stormwater outfalls as a result of the proposed improvements.

South Lake Shore Drive – North of 59th Street Inlet Bridge - Proposed Drainage

- North of 59th Street, South Lake Shore Drive drains north, around an existing pedestrian underpass at 57th Street and discharge to an existing combined sewer on 56th Street. There is an existing restrictor and backflow preventer just upstream of the connection to the 56th Street combined sewer. In the proposed condition there will be an additional lane in the south bound direction between 57th and 59th that will be tributary to this outlet. CNECT is preparing a SWMM model hydrologic/hydraulic analysis to compare the existing and proposed conditions. The model analysis will document if there is a change in the proposed release rate to the combined sewer. The current design leaves the existing storm sewer and restrictor in place, with new catch basins to accommodate the widened pavement.
- In approximately 2004, shortly after the previously South Lake Shore Drive improvements were completed there was a flooding issue related to the storm sewer overflow just east of South Lake Shore Drive at the 57th Street Pedestrian underpass. Apparently the overflow storm sewers had been covered up by lake/beach sand.

Proposed Drainage Coordination

- Additional drainage coordination with the Park District, USACE, as well as with DWM will be required for the proposed roadway improvements.
Next Steps/Immediate Action Items

- CNECT (TKL) to provide updated Proposed Drainage Plan with a disposition of IDOT and DWM comments.
- DWM to provide tailwater elevations for the Stony Island interceptor for reference in hydraulic analysis of existing and proposed sewers.

By: Tom Liliensiek, P.E. (CNECT)
Date: October 5, 2018

Meeting Materials:
1. Agenda
2. Attendance Roster
OPC Mobility Improvements – Coordination Meeting
September 26, 2018, 1:00 PM
JARDINE WATER PLANT

The purpose of the meeting is to discuss with the Department of Water Management and IDOT the proposed OPC Mobility Improvements, review comments from both agencies, potential impacts to existing drainage in the corridor, and the proposed drainage design for the project.

1. Introductions

2. Project Update
   a. Brief Overview of Proposed Improvement
   b. Project Status and Schedule
   c. Existing/Proposed Jurisdictions within the Project Limits
   d. Review Comments, IDOT and DWM

3. Existing Drainage
   a. Existing Drainage Problems?

4. Proposed Drainage Plan
   a. Hayes/Cornell/South Lake Shore Drive Proposed Drainage
      i. SWMM HGL Analysis
      ii. Proposed Underpass Pump Station
   b. Stony Island Proposed Drainage
      i. Inlet Spacing Criteria
      ii. Connections to Existing Sewers
      iii. Sewer Televising and Lining
   c. Cornell South of Hayes
      i. Jurisdictional Transfer
      ii. Drainage Outlet
   d. South Lake Shore Drive – North of 59th Street Inlet Bridge
      i. Stormwater Detention
      ii. HGL Analysis

5. On Going Drainage Coordination
   a. IDOT
   b. Chicago Park District
   c. USACE

6. Open Discussion
# Attendance Roster

**Re:** OPC Mobility Improvements – Coordination Meeting  
**Date:** Sept. 26, 2018  
**Location:** Jardine Water Plant  
**Time:** 1:00 p.m.

### Attending:

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Michael S. Anaszewicz

From: Thomas K. Liliensiek, P.E.
Sent: Wednesday, August 29, 2018 10:19 AM
To: Michael S. Anaszewicz
Subject: FW: City of Chicago - S. Lake Shore Drive/59th Street Inlet Structure - IDNR Permit Requirements

Mike – Can you please include this email in the ‘correspondence section’ of the LDS

Thanks

From: Casey, James [mailto:James.Casey@Illinois.gov]
Sent: Tuesday, August 28, 2018 8:39 AM
To: Thomas K. Liliensiek, P.E. <TLiliensiek@civiltechinc.com>
Cc: Kessen, James <James.Kessen@illinois.gov>; Hall, Soren G LRC (Soren.G.Hall@usace.army.mil) <Soren.G.Hall@usace.army.mil>
Subject: RE: City of Chicago - S. Lake Shore Drive/59th Street Inlet Structure - IDNR Permit Requirements

Dear Mr. Liliensiek,

Gary Jereb forwarded me your email below. In response to your questions:

1. The project would be considered in Lake Michigan (a public body of water) and would require an Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR) permit. For projects in Lake Michigan the IDNR/OWR issues a joint permit with the Illinois Environmental Protection Agency (IEPA).
2. IDNR/OWR Statewide Permit No. 12 would not apply as the project will take place within a public body of water. An Individual Permit will be required.
3. Compensatory storage will not be required.

The application-for-permit should be submitted to the IDNR/OWR’s Chicago Office at the address below.

If you have any questions, feel free to contact me.

Sincerely,

James P. Casey, Chief
Lake Michigan Management Section
IDNR/OWR
160 N. LaSalle Street, Suite S-703
Chicago, IL 60601
(312) 793-5947
(312) 793-5968 fax
James.casey@illinois.gov

From: Thomas K. Liliensiek, P.E. [mailto:TLiliensiek@civiltechinc.com]
Sent: Friday, August 24, 2018 11:27 AM
To: Jereb, Gary <Gary.Jereb@Illinois.gov>
Subject: [External] City of Chicago - S. Lake Shore Drive/59th Street Inlet Structure - IDNR Permit Requirements
Hi Gary

I was hoping to clarify the IDNR permit requirements for a bridge widening project.

The project is located on South Lake Shore Drive which is IDOT jurisdictional and maintained by the City of Chicago. In the area on Lake Shore Drive, south of 59th Street, the pavement will be widened to the west in order to provide an additional southbound lane. This will require widening the existing 59th Street Inlet structure bridge approximately 12-feet to the west.

- My understanding is that since Lake Michigan is a Public Body of Water, IDOT would not issue the permit...the permit would be issued by IDNR?

- Do you think Statewide Permit #12 would apply? The structure has not been a source of flood damage

- There will be some fill in the floodplain due to the bridge/roadway embankment widening. Is floodplain compensatory storage required?

As always, appreciate your help/guidance

Thanks
Tom

Thomas K. Liliensiek, P.E.
Director of Water Resources | tliliensiek@civiltechinc.com

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The primary purpose of the meeting was to present/update the USACE on the proposed Mobility Improvements to Support the South Lakefront Framework Plan (SLFP) and to discuss the anticipated permit requirements. The following is a summary of the meeting discussion:

**Status of Project Federal Approval Process**

The project is being processed as a joint federal approval by Federal Highway Administration (FHWA) and the National Park Service (NPS). NPS is the lead federal agency for the NEPA Environmental Assessment (E.A.), FHWA is the lead federal agency for the NHPA Section 106 Review. The project team presented at the NEPA / 404 agency coordination meetings for the FHWA portion of the E.A. earlier this year. The project team is now working on a combined E.A. for public review. The project team is also currently drafting a Section 106 Assessment of Effects and Section 4(f) document. The goal is to conclude the Phase I portion of the project in April 2019.

**Preferred Improvement Plan**

- Lake Shore Drive from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east (i.e. towards Lake Michigan). Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.

- The scope of the inlet bridge widening includes removing existing architectural stone cladding and reinstalling to the new bridge structure on the west face. The abutments will be extended to the west and new wingwalls will be constructed on the west side. The construction includes both temporary and permanent impacts to waters of the US, but the areas are minimal totaling less than 0.04 acres for both.

- Stony Island Avenue from 59th Street to 64th Street would be widened to the east to provide an additional through lane in each direction, an all-day on-street parking or
loading zone lane on each side of the road, and a raised median with left-turn channelization at intersections. From 64th Street to 67th Street, Stony Island Avenue would be widened to provide a consistent cross section including three northbound lanes and four southbound lanes separated by a raised median.

- Parking would be removed on Hayes Drive from Lake Shore Drive to Cornell Drive to provide two lanes in each direction, separated by a barrier median. Modifications are required at the Lake Shore Drive/Coast Guard Drive, Richards Drive, and Cornell Drive/63rd Street intersections with Hayes Drive to accommodate the additional through lanes as well as the proposed closure of Cornell Drive north of 63rd Street. The existing triangular, stop-controlled intersection at Hayes Drive and Richards Drive would be reconfigured to create a signalized T-intersection. Hayes Drive would be realigned at Cornell Drive to provide a through movement for predominant travel through the intersection. The existing portion of Hayes Drive between Stony Island Avenue and Cornell Drive would be realigned to create a T-intersection with the realigned Hayes Drive.

- The USACE noted that they will be a cooperating agency for the NEPA E.A. and will be a signatory to the NHPA Section 106 Memorandum of Agreement (MOA) Programmatic Agreement (PA).

Section 404 Permit

- The widening of the Lake Shore Drive Bridge spanning the 59th Street Inlet will result in permanent fill/impact to Lake Michigan and will therefore require a Section 404 Permit from the USACE. This is the only anticipated project permanent impact to USACE jurisdictional wetlands or Waters of the US as a result of the Mobility Improvements. It is anticipated that the bridge construction would be covered under Regional Permit 3 (Transportation Projects) and the cofferdams under Regional Permit 7 (Temporary Impacts). The City is also considering repairs to the existing Hayes Drive Bridge spanning the inner harbor. Proposed repairs to the substructure may require temporary cofferdams and dewatering, but no permanent impacts.

- The USACE inquired if coordination with the Coast Guard had occurred to confirm that they do not have jurisdiction. Subsequent to the meeting the City/CNECT received correspondence from the US Coast Guard confirming that a Section 9 Permit will not be required. The correspondence with the US Coast Guard will be included the 404 application to the USACE.
The USACE has established a permit number, LRC-2017-676, for the proposed OPC Mobility Improvements. This permit number should be used on all future submittals to the USACE.

The Federal process has initiated the Section 7 (i.e. endangered species) consultation. The coordination is ongoing, however IDNR has already indicated that there are no anticipated impacts to state endangered species.

Section 408 Coordination

- The GLFER project consists of restoration and improvements within Jackson Park that were completed and funded by the USACE and the Chicago Park District.
- Because the OPC Mobility Improvements will impact some of the restored GLFER areas within Jackson Park the Section 408 process will be initiated.
- The Section 408 process is a separate track from the 404 process, with different USACE staff providing the review. However the 408 process will need to be approved prior to the issuance of a 404 permit.
- Currently, GLFER improvements have been completed around the east and west lagoons (north of Hayes Drive). Invasive species have been removed south of Hayes Drive, GLFER planting scope still remains to be completed.
- The direct impacts to the GLFER project as a result of the OPC Mobility Improvements have been quantified. CNECT and the City are currently working with the Chicago Park District to develop the restoration and improvement plan.
- The Chicago Park District will be the applicant for the 408 application.

Schedule

- The NEPA Public Hearing for the project is planned for February 2019.
- Advertisement of the project construction documents after NEPA Determination, possibly in late April 2019 with construction beginning in the Fall of 2019.
Meeting Minutes

Next Steps/Immediate Action Items

- CNECT/City to inform the USACE when the Environmental Assessment (EA) is ready.
- Submit 404/408 permit applications for USACE review.

By: Tom Liliensiek, P.E. (CNECT)  
Date: December 10, 2018

Meeting Materials:
1. Agenda  
2. Attendance Roster

https://tinyurl.com/jPlimprovements
The purpose of the meeting is to present/update to the USACE the proposed OPC Mobility Improvements and anticipated permit requirements.

1. Introductions

2. Preferred Improvement Plan
   - Lake Shore Drive
   - Stony Island Avenue
   - Hayes Drive
   - 59th Street Inlet Bridge

3. Status of Environmental Reviews
   - NPS / FHWA Co-Federal Leads
   - NEPA E.A. Status (NPS)
   - NHPA Section 106 Status (FHWA)

4. Section 404 Process
   - Status of the bridge design and review
   - Anticipated impacts
   - Schedule

5. Section 408 Process
   - Anticipate GLFER Impacts
   - CDOT / CPD Coordination

6. Overall Project Schedule
# Attendance Roster

**Re:** OPC Mobility Improvements – USACE Coordination Meeting - LRC-2017-676  
**Location:** US Army Corp of Engineers – 231 South LaSalle Suite 1500  
**Date:** November 16, 2018  
**Time:** 1:30 p.m.

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<tr>
<td>John Sadler</td>
<td>CDOT</td>
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<td><a href="mailto:John.Sadler@cityofchicago.org">John.Sadler@cityofchicago.org</a></td>
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<tr>
<td>Nate Roseberry</td>
<td>CDOT</td>
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<td><a href="mailto:Nathan.Roseberry@cityofchicago.org">Nathan.Roseberry@cityofchicago.org</a></td>
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<tr>
<td>Colin Smalley</td>
<td>USACE</td>
<td>C</td>
<td><a href="mailto:Colin.C.Smalley@usace.army.mil">Colin.C.Smalley@usace.army.mil</a></td>
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<td>Kathy Chernich</td>
<td>USACE</td>
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<td><a href="mailto:Kathleen.G.Chernich@usace.army.mil">Kathleen.G.Chernich@usace.army.mil</a></td>
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<td><a href="mailto:TLiliensiek@civiltechinc.com">TLiliensiek@civiltechinc.com</a></td>
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The primary purpose of the meeting was to coordinate Chicago water main and storm sewer facilities in and adjacent to Jackson Park. The following are notes summarizing the discussion and action items (responsibility noted in **bold**) resulting from the meeting:

1. **Introduction**
   - CDOT noted that the City of Chicago and the Chicago Park District (CPD) have an opportunity to memorialize existing city facilities that are not documented and new ones required as part of the roadway improvements through new vacations/dedication and easements.

2. **Museum Campus Agreements**
   - CDOT and CPD made reference to the Museum Campus project documentation for lighting facilities as an example. The reference demonstrates the level of detail that will likely be needed and how responsibilities could be assigned.

3. **Proposed 36" Water Main relocation along Stony Island Avenue**
   - CDOT explained that the existing 36" water main is shallow and would be in conflict with the proposed roadway improvements.
   - Within the OPC site area, CDOT proposes to locate the replacement water main in its same location, but deeper at approximately 5 feet below grade. In this area, there will be City ROW behind the curb extending to the OPC site boundary which could accommodate drainage structures, light poles and electrical ducts.
   - South of the OPC site/62nd Street, the ROW by definition is located at the back of curb. Therefore, any utilities behind the curb would be on CDP property and require some type of easement or agreement. In this area, the current proposal is also to relocate the water main in its same location 5 feet below grade.
   - In the area south of 62nd Street relocating the water main in its same location would require easements for the water main, drainage structures, lighting and electrical conduits/ducts. Additionally, there are existing trees and likely proposed trees that would probably fall within DWM-desired "no build" limits.
   - Participants discussed potential "no build" limits. For the 36' water main DWM mentioned potential limits of an approximate 6' wide trench and 5' offset to a tree's drip line which could result in 20' to 25' or more from the edge of the water main to a tree.
   - Participants discussed the possibility of stating a DWM-desired “no build” limit of 15’ each side of their facilities along with a variance for a reduced limit for trees in the easement documents.
Future DWM repairs to the 36" water main would require CPD to fund and facilitate tree roots pruning or other protective measures to ensure the survival of trees after repair activities. Given the location of this project in/adjacent to Jackson Park, participants discussed that a 15’ easement could result in undesirable impacts. “No build” restrictions could be considered as permanent impacts to the parkland. Permanent easements would be considered parkland impacts whereas access permits would not.

- Considering easement challenges, DWM will evaluate relocating the 36” water main in the Stony Island roadway south of 62nd Street to a location west of the current alignment. DWM noted that it will need to be verified that the proposed water main meets the 10-feet IEPA separation requirements from the Stony Island Interceptor sewer. CNECT will send DWM the preliminary line of lay CAD drawing that they have already created. DWM will send CDOT/CNECT the as built information for their recently installed 12” water main. CDOT requested, and DWM is targeting evaluation of the new location within 2 weeks. CPD stated that they prefer an option with the water main relocated into the roadway.

4. Storm Sewers/Easement Requirements/Agreements & Access Permits

- The proposed storm sewers are designed to be installed primarily within the City ROW. However, due to underpasses and other proposed and existing structures, there are some locations where existing and proposed storm sewer facilities will be located outside of the City ROW and within CPD property, as defined by back to back of roadway curbs.

- CPD asked that CDOT/CNECT and DWM consider potential SLFP projects such as the dog friendly area, maintenance facility and field house when locating facilities outside of the ROW to minimize restrictions that they could cause.

- At the proposed underpasses, proposed storm sewers are routed outside of the structures, paths and roadways because of grading constraints resulting from the underpasses. Participants discussed how to memorialize restrictions related to the storm sewers at these locations, potentially via access permit requirements/stipulations as part of the easement agreement.

- DWM noted that vacuum truck access should be accommodated via no-planting zones and slopes/grading/surfaces in the underpass drainage system designs. Additional manholes may be included in the design in order to facilitate future maintenance and minimize no-planting zones. Proposed sewers could be oversized to allow for relining as a future maintenance action. Ductile iron pipes could be utilized (especially in the underpass areas) in an attempt to minimize future maintenance issues.

- Participants agreed that the locations where sewers are installed in CPD property will require an easement. The easements will be developed based on a minimum offset from the sewer facility granting the City the right to have the facility within CPD property. The easements will not be developed based on areas required to access the sewers in the future. Access to the sewers would be granted by CPD via permit issuance for any future maintenance and repair work required. The language for this approach must be developed and approved by the Participants'
legal counsels. **DWM** will provide their minimum easement offset distance from sewer facilities to CDOT and CPD.

- For the new underpasses, CPD will be responsible for maintenance of the portion of the system outside the roadway (similar to a private connection) which includes the drainage overflow structures, pump stations, forcemain connections, and upstream gravity sewers. CDOT will be responsible for constructing the pump stations and future pump replacement. DWM is responsible for the system beyond the drainage overflow structures (downstream) to connection with the combined sewer. In general terms, CPD/CDOT responsible for the mechanical system and DWM is responsible for the system once it becomes gravity flow within the roadway right of way. The pump station ownership and maintenance responsibilities will require an update to the CPD-recently-drafted “Underpass Agreement” with CDOT by **CPD**.

- Participants discussed the MS4 Permit responsibility for the existing lagoon outlets. **CPD** and **DWM** will review their records for any existing information pertaining to MS4 reporting within Jackson Park. At the OPC site, a few existing outlets along Cornell and into the lagoon that currently have both site (CPD) and roadway (CDOT/DWM) drainage will be maintained, but the roadway drainage will no longer use the outlets. Participants discussed ownership and who would have MS4 reporting responsibility for such outlets. **CNECT/CDOT** will prepare an overview exhibit showing all the existing drainage outlets within the project limits and their tributary drainage areas, and will provide to CPD and DWM for review and future discussion.

- CPD stated that water quality within the lagoons is a priority and best management practices (BMP’s) should be considered for the proposed drainage system where practical. **CDOT/CNECT** will consider and evaluate the potential for incorporating BMP’s into the drainage design.
## Attendance Roster

**Re:** OPC Mobility Improvements – Coordination Meeting  
**Date:** Nov. 30, 2018  
**Location:** Chicago Park District – Conference Room 6A  
**Time:** 10:30 a.m.

### Attending:

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<td>brian.mcgahan@ctruстер.net</td>
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Good afternoon,

Based on a hydraulic analysis of the area around the stretch of Stony Island Ave that will be affected by planned mobility improvements, DWM has determined that it would be best to do the following sewer work (instead of simply replacing local sewers in place):

- **on S Stony Island Avenue**
  - from E 64th St to E 63rd St: upsize to a 30" diameter sewer (currently a 15" sewer)
  - from E 61st St to E 63rd St: upsize to 18" diameter sewer (currently a 12" sewer)
  - at 61st St: **add a 24" overflow** connection between the MWRD interceptor & the local sewer
  - from E 61st St to E 60th St: upsize to a 24" diameter sewer (currently a 12" sewer)

I am planning on reiterating this in my response to the OUC EFP covering this portion of the drainage plan (due this Friday), as the current plan does not yet reflect this new recommendation.

Best,

Dhara Patel
Civil Engineer III
Chicago Department of Water Management
(312)744-7014 :+ dhara.patel@cityofchicago.org
Good afternoon,

Just an update from the evaluation of sewer televising: we think it is necessary to replace all of the "local" sewers televised in Stony Island Ave between 60th & 63rd. Since some portions of that sewer also happen to have bad hydraulic capacity (particularly between 62nd to 60th), we are working with modelers to determine a sufficient size to upsize to, and to determine whether or not any changes to overflows may be beneficial in combination with upsizing. I will send a final determination once we have it.

Thanks,

Dhara Patel
Civil Engineer III
Chicago Department of Water Management
(312)744-7014 :+ dhara.patel@cityofchicago.org

Hi Nate,

I appreciate you touching base. We are hoping to meet internally about the sewer televising early this week and put a response together for you - apologies for the delay. We don't have any update from IDOT yet. I will review the documents you've attached and let you know as soon as I can if we think an in-person meeting would be productive.
From: Nathan Roseberry  
Sent: Friday, March 29, 2019 11:15:21 AM  
To: Dhara Patel; David Gleason; Thomas K. Liliensiek, P.E.; Duane Mahone; Kenneth Smorynski  
Cc: Adonna Murray; Anupam Verma; Brendan Schreiber; Sid Osakada; Bulent Agar  
Subject: RE: OPC - CDOT/DWM - Drainage Coordination

Dhara,

Thanks for update, we wanted to touch base again on status and provide a couple updates on our end. Please let me know if it’d be most productive to schedule an in person meeting next week.

1. Ok, thanks.
2. Do you have an update on the review of the sewer televising?
3. Understood, detailed plans will include requested restrictors. We are submitting for OUC EFP today, so you should see these plans soon.
4. Attached is an updated outfall exhibit addressing the comment below. Do you have an update on IDOT coordination? Let us know if you want any further updates to the attached MS4 Exhibit.

We also wanted to daylight the attached concept our design team has created hoping to address DWM easement requirements for storm sewers that will be located in Jackson Park, but not under roadway. We plan to include root barriers on either side of any new storm sewer pipes or around existing storm sewer pipes near proposed ground disturbance hopefully to address your concerns on root penetration into pipes. We are trying to balance both DWM and CPD requirements, hope this would satisfy your technical needs with storm sewer. Let me know if you have any questions or want to discuss.

Thanks again,

Nate

Nathan Roseberry, P.E.  
CDOT Division of Engineering  
Acting Assistant Chief Highway Engineer  
nathan.roseberry@cityofchicago.org  
(312) 744-5936
Good afternoon,

Regarding the exhibits you sent to DWM for review:

(1) - The revised proposed condition outfall exhibit notes ownership in a way that is consistent with past conversations. For more, see (4).

(2) - The summary overview of sewer televising was forwarded to our evaluation team the same day you sent it to us. We have received communication that they are almost finished reviewing it, and we hope to have a response to this early next week if not later this week.

(3) - The revised proposed drainage plan is acceptable. However, we will need a detailed plan of the connection for permit approval. It recommended that restrictors be placed in all four proposed catch basins upstream of this new connection, in order to restrict flow to the extent possible per our rate control BMPs.

(4) - Regarding MS4 permits - we’ve looked into our records and noted some discrepancies between our records and your mapping - please see the attached exhibit as well as annotated sewer atlases suggesting ownership based on drainage. Ownership must be clarified between CDWM, the Park District, and IDOT. We have reached out to IDOT but have not gotten a response yet. Once ownership is clarified, we should work to ensure all parties have up-to-date MS4 permits in the area.

Best,

Dhara Patel
Civil Engineer III
Chicago Department of Water Management
(312)744-7014 ☏️ dhara.patel@cityofchicago.org
Good Afternoon,

I wanted to touch base on the status of DWM review of the revised exhibits highlighted below. In addition, we would appreciate an update on the MS4 action item from the minutes (DWM to review MS4 permits to confirm whether CPD is excluded). We would appreciate any comments by 3/20/19, let us know if you’d like us to schedule a meeting to discuss.

Thanks,

Nate

Nathan Roseberry, P.E.
CDOT Division of Engineering
Acting Assistant Chief Highway Engineer
nathan.roseberry@cityofchicago.org
(312) 744-5936

From: David Gleason
Sent: Friday, March 01, 2019 3:56 PM
To: Thomas K. Liliensiek, P.E.; Duane Mahone; Kenneth Smorynski; Dhara Patel; Sid Osakada; Bulent Agar; Anupam Verma; Brendan Schreiber; Nathan Roseberry
Subject: Re: OPC - CDOT/DWM - Drainage Coordination

All,

As a follow-up to the OPC Mobility / DWM coordination meeting on February 8, the following items are linked below for DWM review:

https://civiltechftp.exavault.com/share/view/1f0ub-dxbccgwx

1. Revised Proposed Condition Outfall Exhibit. The exhibit was revised based on the discussions in our meeting (revising the outfalls designated as ‘IDOT’ to ‘DWM’)

2. Summary Overview of Sewer Televising. A summary of the existing sewer televising has been annotated onto the project Proposed Drainage Plan.

3. Revised Proposed Drainage Plan in the vicinity of the intersection Midway Plaisance and Stony Island Avenue. As discussed in the meeting the drainage design has been revised to redirect approximately 2.4 acres currently tributary to the lagoon to the existing combined sewer on Stony Island. The redirection will allow for the abandonment of the existing storm sewer and outlet tributary to the lagoon. Please consider this the request to discharge this area to the existing combined sewer on Stony Island.

4. For reference, the February 8, 2019 DWM coordination meeting minutes and action items are included (originally sent 2/19 via email).
Please let us know if you have any questions or need any additional information.

Thanks, and have a good weekend.

David

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David B. Gleason  
Traffic Engineer IV  
CDOT Division of Engineering  
30 N. LaSalle St.; Suite 400  
Chicago, IL 60602-2570  
312.744.3775  
david.gleason@cityofchicago.org

From: Thomas K. Liliensiek, P.E.  
Sent: Wednesday, February 6, 2019 12:26 PM  
To: Thomas K. Liliensiek, P.E.; John Sadler; David Gleason; Duane Mahone; Kenneth Smorynski; Dhara Patel; Sid Osakada; Bulent Agar; Anupam Verma; Brendan Schreiber  
Subject: OPC - CDOT/DWM - Drainage Coordination  
When: Friday, February 8, 2019 1:00 PM-2:00 PM.  
Where: Jardine Water Plant

Updated to include meeting agenda
The primary purpose of the meeting was to present the IDNR-OWR Lake Michigan Section the proposed Mobility Improvements to Support the South Lakefront Framework Plan (SLFP) and to discuss the anticipated permit requirements. The following is a summary of the meeting discussion:

**Project Overview**

- Lake Shore Drive from north of 57th Street to Hayes Drive would be widened to the west by 11 feet to provide a third southbound lane. The intersections of Lake Shore Drive at 57th Street would also be modified to accommodate the additional southbound lane. No widening is occurring to the east (i.e. towards Lake Michigan). Additionally, bridge modifications are required at the 63rd Street underpass, the 59th Street underpass, and the bridge over the 59th Street Harbor Inlet to accommodate the roadway widening.

- The scope of the inlet bridge widening includes removing existing architectural stone cladding and reinstalling to the new bridge structure on the west face. The abutments will be extended to the west and new wingwalls will be constructed on the west side. The construction includes both temporary and permanent impacts to waters of the US, but the areas are minimal totaling less than 0.04 acres for both.

- Stony Island Avenue from 59th Street to 64th Street would be widened to the east to provide an additional through lane in each direction.

- Modifications are required at the Lake Shore Drive/Coast Guard Drive, Richards Drive, and Cornell Drive/63rd Street intersections with Hayes Drive to accommodate the additional through lanes as well as the proposed closure of Cornell Drive north of 63rd Street.

- Phase 1 is still ongoing and the preparation of Phase 2 design plans is underway. The Federal Review is anticipated to be completed in the 4th Quarter of 2019. The first design bid package would go out shortly after the Federal approval is received.
Status of Project Federal Approval Process

- The project is being processed as a joint federal approval by Federal Highway Administration (FHWA) and the National Park Service (NPS). NPS is the lead federal agency for the NEPA Environmental Assessment (E.A.), FHWA is the lead federal agency for the NHPA Section 106 Review.

IDNR Permit

- The widening of the Lake Shore Drive Bridge spanning the 59th Street Inlet will result in permanent fill/impact to the Lake Michigan floodplain and will therefore require an IDNR permit. This is the only anticipated permanent impact to floodplain as a result of the Mobility Improvements. The City is also proposing repairs to the existing Hayes Drive Bridge spanning the inner harbor. Proposed repairs to the substructure may require temporary cofferdams and dewatering, but no permanent fill. IDNR will review, but this repair work may not require a separate permit.
- The IDNR review will be for compliance with the Part 3704 Regulation of Public Waters Rules which generally cover encroachment on a public body of water, and ensure the project will not be a hindrance to navigation.
- The submittal should include an existing and proposed plan view as well as profile view of the proposed structure and the drawings should be to scale. In general the submittal can follow what was provided to USACE for the 404 permit.
- The permit fee for the review is $2,690.
- IDNR will issue a 30-day public notice.
- As part of their permit process IDNR-OWR will send the project for clearance to the IDNR Division of Ecosystems and Environment (DEE) concurrent with their review. To help facilitate this review the EcoCAT consultation should be included with the permit application.
- IDNR noted that their review will be concurrent to the IEPA Lake Michigan Final Determination for Water Quality Section 39 review. Daren Gove with IEPA is typically the reviewer and IDNR cannot issue their permit until IEPA has issued the Section 39.
Meeting Minutes

Next Steps/Immediate Action Items

- Submit permit applications for IDNR and IEPA review.

By: Tom Liliensiek, P.E. (CNECT)

Date: June 10, 2019

Meeting Materials:

1. Attendance Roster
2. Agenda

https://tinyurl.com/JPImprovements
# Attendance Roster

**Re:** OPC Mobility Improvements – IDNR Pre-Application Meeting  
**Date:** June 10, 2019  
**Location:** IDNR Office – 160 N. LaSalle Suite S-703  
**Time:** 11:00 a.m.

**Attending:**

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</table>
OPC Mobility Improvements – IDNR-OWR Coordination Meeting
June 10, 2019, 11:00 AM
IDNR Office – 160 N. LaSalle, Suite S-703

The purpose of the meeting is to present to the IDNR Office of Water Resources (OWR) the proposed OPC Mobility Improvements and discuss the anticipated permit requirements.

1. Introductions

2. Project Overview
   - Overview of Proposed Improvements
   - Jurisdictions within the Project Limits
   - Project Status and Schedule

3. Status of Environmental Reviews
   - NPS / FHWA Co-Federal Leads
   - NEPA E.A. Status (NPS)
   - NHPA Section 106 Status (FHWA)

4. Floodplain Impacts
   - 59th Street Inlet Bridge Widening
   - Hayes Drive Bridge Repair Work

5. Submittal Requirements
   - Permit Application
   - Plan Sheets
   - Permit Fees
Mobility Improvements to Support the SLFP
Location Drainage Study Appendix D – Supporting Documents
Table of Contents

1. South Lake Shore Drive As-Builts  
   a. 2001 Plans (Project No. B-0-242)  
      i. Storm Sewer Profile Sheets  
      ii. Storm Sewer Plan Sheets  
      iii. Control Structure Detail Sheets  
   b. 2002 Plans (Project No. B-1-440)  
      i. Vol 1  
         1. Storm Sewer Profile Sheets  
         2. Storm Sewer Plan Sheets  
         3. Control Structure Detail Sheets  
      ii. Vol 2  
         1. Control Structure Detail Sheets  

2. Chicago Sewer Atlas  
   a. Atlas Pages 15-20, and 22  

3. Lake Michigan Water Level Data  
4. Department of Water Management Details  
5. Additional Impervious Area Summary  
6. Inlet Spacing Analysis  
7. Jackson Park SWMM Analysis  
   a. SWMM Model Structure Locations  
   b. SWMM HGL Profiles  
8. Outfall Hydrograph Calculations  
9. Underpass Pump Station Analysis  
10. Estimated Floodplain Fill Calculations  
11. East and West Lagoon Hydrology Memorandum  
12. 59th Street Bridge Scour  
13. Sewer Televising Summary  
14. 59th Street Drainage Investigation
South Lake Shore Drive As-Builts
STATE OF ILLINOIS
CITY OF CHICAGO
RICHARD M. DALEY, MAYOR
DEPARTMENT OF TRANSPORTATION
MIGUEL d'ESCOTO, COMMISSIONER
BUREAU OF HIGHWAYS
BRUCE H. WORTHINGTON, CHIEF HIGHWAY ENGINEER

CONTRACT PLANS
FOR
SOUTH LAKE SHORE DRIVE RECONSTRUCTION
JACKSON PARK SECTION
FROM 55TH STREET TO 67TH STREET

CONTRACT 1 – ADVANCE WORK
C.D.O.T PROJECT NO.: B-0-242
CITY SECTION NO.: 80-0241-02-PV
STATE JOB NO.: C-58-013-01

GROSS LENGTH 1641.839 M (1.641 KM)
NET LENGTH 1402.645 M (1.402 KM)

TRAFFIC DATA
JEFFERY BOULEVARD (57TH TO MARQUETTE DR.)
POSTED SPEED: 50 km/h (31 mph)
DESIGN DESIGNATION: TRS-4

COAST GUARD DRIVE (MARQUETTE DR. TO HAYES DR.)
POSTED SPEED: 60 km/h (37 mph)
DESIGN DESIGNATION: TRS-4 & 8

LAKE SHORE DRIVE (HAYES DR. TO 57TH DR.)
POSTED SPEED: 60 km/h (37 mph)
DESIGN DESIGNATION: TRS-4 & 8

METRIC RATIOS

FULL-SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

DEPARTMENT OF PROCUREMENT SERVICES
DAVID E. MALONE, CHIEF PROCUREMENT OFFICER

C T E, ENGINEERS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
PRESIDENT
APPROVED

PROJECT LOCATIONS

STATE BOARD OF ENGINEERS
PRESIDENT
APPROVED
MH *BH1, TYPE "A"
1200mm DIA.
RIM ELEV=178.728
INV ELEV=174.368

MH *BH12, TYPE "A"
1200mm DIA.
RIM ELEV=178.738
INV ELEV=174.368

97.8m-900mm S.S.
RCP @ 0.15%

CB *BH1

97.8m-900mm S.S.
RCP @ 0.15%

CB *BH3

CB *BH1-A

CB *BH6

MH *BH9, TYPE "B" 1200mm DIA.
RIM ELEV=178.728
INV ELEV=175.048

MH *BH10, TYPE "B"
1200mm DIA.
RIM ELEV=178.728
INV ELEV=175.048

JC *BH8, ORIFICE, 1200mm DIA.
RIM ELEV=178.728
INV ELEV=175.048

CB *BH2

CB *BH5A

CB *BH5B
**STRUCTURAL NOTES:**

1. **All sections, details, and notes are intended to be typical.** Unless otherwise indicated, shop drawings shall be prepared by the Contractor showing the application of typical sections and details for similar situations.

2. **Exposed corners shall have a 4" x 4" flat fillet unless otherwise noted.**

3. **Concrete surfaces exposed to flow of water must be smooth.**

4. **Concrete surfaces are to be prepared as per the manufacturer’s printed instructions.**

5. **Board on apparently joint sealants which conforms to either ASTM 593 or ASTM D 3496 with type I builder red as per ASTM 534.**

6. **All lift plans are to be included with each bid.**

7. **All elevations noted for invert, grade top of bottom concrete structures are in feet & metric units unless otherwise noted.**

8. **Proper exterior surface of window & doors which is exposed to either.**

9. **For all cut-ends, concrete must be cut to a 45° corner.**

10. **All drawings are to be labeled with the appropriate date.**

11. **Reinforcement bars shall be in accordance with the AASHTO code of practice.**

12. **Reinforcement bars shall be in accordance with the AASHTO code of practice.**

---

**TYPICAL DETAILS OF KEYWAY AT CONSTRUCTION JOINTS**

**SCALE:** 1" = 1'-0"

**WATERSTOP IS NOT SHOWN FOR CLARITY SEE NOTES.**

**WATERSTOP**

---

**CITY OF CHICAGO**
**DEPARTMENT OF TRANSPORTATION**
**BUREAU OF HIGHWAYS**

**SOUTH LAKE SHORE DRIVE**
**JACKSON PARK SECTION**

**DRAINAGE STRUCTURE NOTES**

**CONTRACT NO.:** 00-S-00-00-00-PV
**DRAWING NO.:** DS - 1
**PROJECT NO.:** 00-2-222

**DESIGN: M.L.**
**INCHES: 1/8**
**SCALE: 1/4" = 1'-0"**

**NO. DET. KEY PLAN DESCRIPTION**

---

**DEVELOPMENT LENGTH**

**SPlice LENGTH KLAS Klass B**

**Hoop BAR**

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<th>Other Bars</th>
<th>Top Bars</th>
<th>Other Bars</th>
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**A. Top bars are defined as horizontal bars spacing 12" or more of fresh concrete placed therein.**

**B. All laps are tension splice class B unless noted on the drawings.**

**C. For rebars spaced at 12" OC, the spacing of rebar is not shown on drawings.**

---

**Delta Engineers, Inc.**
**Consulting Engineers & Surveyors**

**100 East Washington Street**
**Chicago, IL 60602**

---

**NOTE:**

- All cut-ends, concrete must be cut to a 45° corner.
- All reinforcement bars shall have a development and lap splice length as follows:**

---

**Delta Engineers, Inc.**
**Consulting Engineers & Surveyors**

**100 East Washington Street**
**Chicago, IL 60602**

---

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CITY OF CHICAGO  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF HIGHWAYS  

SOUTH LAKE SHORE DRIVE  
JACKSON PARK SECTION  

JUNCTION STRUCTURE = HTB  
STATION 25 + 209.855

NOTES:
UNLESS OTHERWISE NOTED, ALL WORK SHOWN IS PART OF ITEM HTB
FOR GENERAL NOTES SEE SHEET NO. C-1
FOR REINFORCEMENT DETAILS SEE SHEET NO. DS-9
COORDINATE CIVIL DRAWINGS FOR LOCATION EXISTING UTILITIES
AND TOPOGRAPHY.
COORDINATE KEY DETAILS FOR PIPE AND MANHOLE RING WITH
SUPPLIERS AND OR MANUFACTURERS.

SCALE 1/16" = 1'-0"

DATE: 1/25/21
SCALE: 1/16" = 1'-0"
FILE: 16409.0090

DESIGN: N.L.  
DRAWN: S.L.  
CHECKED: S.L.  
APPROVED: S.L.  
PROJECT NO: B-0-242

CONTRACT NO:  
DRAWING NO: DS-2

REVISIONS

16409.0090
NOTES:
UNLESS OTHERWISE NOTED, ALL WORK SHOWN IS PART OF ITEM B88
FOR GENERAL NOTES SEE SHEET NO. C-1
FOR REINFORCEMENT DETAILS SEE SHEET NO. DS-15
COORDINATE CIVIL DRAWINGS FOR LOCATION EXISTING UTILITIES
AND TOPOGRAPHY.
COORDINATE KEY DETAILS FOR PIPE AND MANHOLE RING WITH
SUPPLIER AND OR MANUFACTURER.

CITY OF CHICAGO
DEPARTMENT OF
TRANSPORTATION
BUREAU OF HIGHWAYS

SOUTH LAKE SHORE DRIVE
JACKSON PARK SECTION

JUNCTION STRUCTURE - B88

DESIGN N.R.
CHECKED S.R.
APPROVED S.R.
DRAWN
PRINTED
REVISION

164090099
STATE OF ILLINOIS
CITY OF CHICAGO
RICHARD M. DALEY, MAYOR
DEPARTMENT OF TRANSPORTATION
MIGUEL D'ESCOTO, COMMISSIONER
BUREAU OF HIGHWAYS
BRUCE H. WORTHINGTON, CHIEF HIGHWAY ENGINEER

CONTRACT PLANS
FOR
SOUTH LAKE SHORE DRIVE RECONSTRUCTION
JACKSON PARK SECTION
FROM 56TH STREET TO 67TH STREET

MAINLINE RECONSTRUCTION
C.D.O.T PROJECT NO.: B-1-440
CITY SECTION NO.: 00-80241-06-PV
STATE JOB NO.: C-88-025-01

GROSS LENGTH 3700.787 M (3.700 KM)
NET LENGTH 3589.221 M (3.589 KM)

EXCEPT AS MAY BE OTHERWISE STATED OR MODIFIED IN THE CONTRACT DOCUMENTS, THE WORK MUST CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ADOPTED JANUARY 1, 1997

4-16-02

DEPARTMENT OF PROCUREMENT SERVICES
DAVID E. MALONE, CHIEF PROCUREMENT OFFICER
CITY OF CHICAGO

DEPARTMENT OF TRANSPORTATION

BUREAU OF HIGHWAYS

SOUTH LAKE SHORE DRIVE

JACKSON PARK SECTION

MAJOR RECONSTRUCTION

DRAINAGE AND UTILITY PLAN

LAKE SHORE DRIVE
ORIFICE DETAIL

LOCATION

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ORIFICE STRUCTURE DIMENSIONS

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<tr>
<td>W3</td>
<td>089+10</td>
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RELAYED HYDRANT

EXISTING HYDRANT BASE: 2-1/2" D.R.

NEW VALVE BOX

CONC. PAD AND CORR. BLOCK: 30" C.E. GROSS MIN. THICKNESS

CONCRETE BLOCK 8" IDG2

TANK

ORIFICE DETAIL

LOCATION

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<tr>
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NEW VALVE BOX

CONC. PAD AND CORR. BLOCK: 30" C.E. GROSS MIN. THICKNESS

CONCRETE BLOCK 8" IDG2

TANK

SEQUENCE OF CONSTRUCTION:

1. CLOSE EXISTING VALVE.
2. REMOVE EXISTING VALVE.
3. INSTALL HYDRANT, EXTENSION AND NEW VALVE.
4. RELAY EXISTING HYDRANT.
5. OPEN EXISTING VALVE, REMOVE BOX.
6. TEST COMPLETED.

FIRE HYDRANT TO BE RELOCATED

CITY OF CHICAGO
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

SOUTH LAKE SHORE DRIVE
JACKSON PARK SECTION
MAINLINE RECONSTRUCTION

MISCELLANEOUS DETAILS

C-113

PROJECT NO. B-1494

CONTRACT NO. 05-82541-08-FV

ONE POSTING SCALE: 1"=10' ON PLANS

SCALE: 1/4"=1'-0"
STATE OF ILLINOIS
CITY OF CHICAGO
RICHARD M. DALEY, MAYOR
DEPARTMENT OF TRANSPORTATION
MIGUEL d'ESCOTO, COMMISSIONER
BUREAU OF HIGHWAYS
BRUCE H. WORTHINGTON, CHIEF HIGHWAY ENGINEER

CONTRACT PLANS
FOR
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STATE JOB NO. C-88-025-01

GROSS LENGTH 3709.787 M (3,700 KM)
NET LENGTH 2899.221 M (3,589 KM)

4-16-02

EXCEPT AS MAY BE OTHERWISE STATED OR MODIFIED IN THE CONTRACT DOCUMENTS,
THE WORK MUST CONFORM TO THE REQUIREMENTS OF THE STANDARD
SPECIFICATIONS FOR ROAD AND BRIDGE
CONSTRUCTION, ADOPTED JANUARY 1, 1997.

M. W. D. CONSTRUCTION
CONTRACTOR:

DEPARTMENT OF PROCUREMENT SERVICES
DAVID L. MALONE, CHIEF PROCUREMENT OFFICER

FULL SIZE PLANS ARE BEING PREPARED USING STANDARD
PERIODIC (S.P.P.) SCALES. REDUCED SIZED PLANS WILL NOT
CONFORM - STANDARD SCALES. IN MAKING MEASUREMENTS
ON REDUCED PLANS, THE ABOVE SCALES MAY NOT BE USED.

ISSUED FOR CONSTRUCTION
NOTES:
1. UNLESS OTHERWISE NOTED, ALL WORK SHOWN IS PART OF ITEM CGSA
2. FOR GENERAL NOTES SEE SHEET NO. DS-1
3. FOR REINFORCEMENT DETAILS SEE SHEET NO. DS-17
4. COORDINATE WITH CIVIL DRAWINGS FOR LOCATION EXISTING UTILITIES AND TOPOGRAPHY.
5. COORDINATE KEY DETAILS FOR PIPE AND MANHOLE RING WITH SUPPLIER AND OR MANUFACTURER.
NOTES:
1. UNLESS OTHERWISE NOTED, ALL WORK SHOWN IS PART OF ITEM C385.
2. FOR GENERAL NOTES SEE SHEET NO. DS-25.
3. FOR REINFORCEMENT DETAILS SEE SHEET NO. DS-25.
4. COORDINATE WITH CIVIL, DRAINAGE FOR LOCATION, EXISTING UTILITIES AND TOPOGRAPHY.
5. COORDINATE KEY DETAILS FOR PIPE AND MANHOLE RING WITH SUPPLIER AND MANUFACTURER.
LEGEND

- CENTER LINE
- PIPE TURNING UP
- PIPE TURNING DOWN
- DIRECTION OF FLOW
- CHECK VALVE
- DIAMETER

ABBREVIATION LIST

- PUMP
- CML M/SEC CUBIC METER PER SECOND
- CFS CUBIC FEET PER SECOND
- AFF ABOVE FINISHED FLOOR
- LPS LITERS PER SECOND
- EL ELEVATION
- CONC CONCRETE
- DIA DIAMETER
- EA EACH
- INV INVERT
- TYP TYPICAL
- WH WALL
- MM MILLIMETERS
- M METERS
- DISC DISCHARGE
- WH COVER WALL COVER
- INV. EL INVERT ELEVATION
- L.P.D INSIDE PIPE DIAMETER
- O.P.D OUTSIDE PIPE DIAMETER
- MIN MINIMUM
- Dwg DRAWING
- DLG DUCTILE IRON PIPE
- ACH ACCESS HATCH

GENERAL NOTES

1. PRIOR TO SUBMITTING BID, THE CONTRACTOR MUST VISIT THE PROJECT SITE AND THROUGHLY EVALUATE EXISTING CONDITIONS AND DETERMINE HOW THEY AFFECT WORK. CONTRACTOR MUST INCLUDE IN BID ANY ALTERATIONS, RELOCATING, REQUIRING, ETC. OF PIPING, AND EQUIPMENT REQUIRED FOR INSTALLATION OF WORK.

2. THE CONTRACTOR MUST SUBMIT COMPLETE, COORDINATED SHOP DRAWINGS INCLUDING ALL WORK AND MATERIALS, PIPE, LOCATIONS AND ELEVATIONS, CORES THROUGH SLAB AND OR BEAMS, ETC., WHICH MUST BE APPROVED BY THE ENGINEER PRIOR TO STARTING WORK.

3. ALL WORK AND MATERIALS MUST BE IN ACCORDANCE WITH SPECIFICATIONS. ALL WORK MUST MEET ALL APPLICABLE LOCAL AND STATE CODES AND ORDINANCES. CONTRACTOR MUST SUBMIT ALL WORK AND MATERIALS, WHICH MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

4. PROTECT STRUCTURE FROM ANY DAMAGE WHICH MAY OCCUR DURING INSTALLATION OF MECHANICAL WORK. ANY DAMAGE TO FACILITIES MUST BE REPAIRED, REPLACED OR RESTORED TO THE ORIGINAL CONDITION AND SATISFACTION OF THE ENGINEER.

5. CUTTING AND PATCHING OF STRUCTURES MUST BE COORDINATED THROUGHOUT, WITH WRITTEN APPROVAL BY THE ENGINEER.

6. PROVIDE DUCTILE IRON SLEEVES FOR PIPING THROUGH WALLS.

7. THE GENERAL RUN AND LOCATION OF THE PIPES AND EQUIPMENTS IS SHOWN ON THE DRAWING. HOWEVER, IT MUST BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SIZES, DIMENSIONS, CLEARANCES, ETC. OF A DIFFERENT ARRANGEMENT THAN THAT SHOWN IS PROPOSED, IT MUST BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE AND INSTALL SUCH WORK AS MAY BE REQUIRED WITHOUT ADDITIONAL CHARGE TO THE OWNER.

8. DRAWINGS ARE INTENDED TO SHOW THE PROPER SIZE AND GENERAL LOCATION OF THE EQUIPMENT, PIPING, ETC. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND FIELD CONNECTIONS.

9. CONTRACTOR TO COORDINATE WITH ALL TRADES BEFORE INSTALLING ANY PIPING, EQUIPMENT, ETC.

10. THE CONTRACTOR MUST VERIFY CLEARANCES AND STRUCTURAL CONDITIONS PRIOR TO PIPING INSTALLATION AND ROUTING.
**PUMP SCHEDULE**

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<th>TAG</th>
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<th>DISQ SIZE 1000</th>
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* PROVIDE DUAL RAIL SYSTEM WITH DUAL RAIL GUIDE SUPPORT BRACKETS, SUPPORT FOR BASE ELBOW OF PUMPS AND W/C-FLUSH VALVE SYSTEM AS MANUFACTURED BY FLIGHT MODEL 4901 AND ALSO PROVIDE MTSPC TRIPLEX PUMP CONTROLLER WITH MULTIHOE LIQUID LEVEL CONTROL.

**VENTILATION SCHEDULE**

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<th>ROOM SIZE</th>
<th>NATURAL LIGHT &amp; VENTILATION</th>
<th>MECHANICAL VENTILATION</th>
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<td>CODE</td>
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<tr>
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<td>AIR- EXH LPS</td>
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**ACCESS HATCH / MANHOLE COVERS SIZES & TYPES**

<table>
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<th>TAG</th>
<th>LOCATION</th>
<th>CLEAR OPENING SIZE</th>
<th>NO. OF COVERS</th>
<th>TYPE OF COVER</th>
<th>MATERIAL</th>
<th>STYLE</th>
<th>MAKE</th>
<th>MODEL</th>
<th>REMARKS</th>
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</thead>
<tbody>
<tr>
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<td>SYRACUSE CASTINGS</td>
<td>FOUNT-HO</td>
<td>34664BD</td>
<td>MANHOLE COVER NOTES BELOW</td>
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<tr>
<td>DISCHARGE</td>
<td>600 0SA</td>
<td>1</td>
<td>ORATED</td>
<td>GRAY IRON</td>
<td>NEVADA A-2556</td>
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</tbody>
</table>

**ACCESS HATCH / MANHOLE COVER NOTES**

1. MANHOLE COVERS MUST BE BOLTED TO FRAMES WITH STAINLESS STEEL CAP SCREWS.
2. SOLID COVERS MUST BE PROVIDED WITH RING HANDLES.
3. OPENING SIZES & COVER SIZES ARE IN mm.
4. VERIFY IN FIELD MANHOLE COVER SIZES AS PER THE MODEL SELECTED, MATCHING THE CORRESPONDING CLEAR OPENINGS.
5. FOR SPECIFICATIONS SEE STRUCTURAL WORK SECTION.

**MECHANICAL NOTES**

1. INSTALL PUMPS AS PER LOCATIONS SHOWN ON DRAWINGS WITH ALL ACCESSORIES.
2. PROVIDE AND INSTALL DUAL RAILS ON PUMPS AS SHOWN ON Dwg. MATERIAL FOR DUAL RAIL MUST BE 304 STAINLESS STEEL.
3. INSTALL DUAL RAIL UPPER SUPPORT GUIDE BAR BRACKET AS SHOWN ON Dwg. PM-2.
4. INSTALL DUAL RAIL INTERMEDIATE SUPPORT GUIDE BAR BRACKET AT EVERY 3050 (10') AS SHOWN ON Dwg. PM-3.
5. INSTALL W/C-FLUSH VALVE SYSTEM ON ALL PUMPS, AS PER MANUFACTURER'S INSTRUCTION.
6. INSTALL HIGH WATER WARNING ALARM THROUGH AUTO-DISCHARGE SYSTEM TO EITHER DEPT. OF STREET AND SANITATION'S RADIO OR 311 AS DECIDED BY BOC. FOR CONTROL SCHEMATIC DIAGRAM SEE Dwg. PE-3A.
7. INSTALL 100 1/4" VENT PIPE
8. FOR NOTE LEGEND AND ABBREVIATIONS, REFER Dwg. PM-1
9. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
10. INSTALL PROBE LIQUID CONTROL SYSTEM AS SHOWN ON Dwg. PM-2 AS PER MANUFACTURER'S INSTRUCTION.

**TABLE FOR DETAIL 4**

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**SEQUENCE OF OPERATIONS**

1. AT ANY TIME ANY ONE PUMP OR TWO PUMPS WILL BE WORKING DEPENDING UPON THE LEVEL OF WATER, THE THIRD PUMP WILL BE STAND-BY.
3. THE OPERATION SEQUENCE AS PER Dwg. PM-2.
   - LEVEL 1: PUMP WILL STOP
   - LEVEL 2: FIRST PUMP WILL START
   - LEVEL 3: SECOND PUMPS WILL START AND WILL STOP AT LEVEL 2. ALARM ON

**PUMPS SCHEMATIC DIAGRAM**

**PUMP SCHEDULE NOTES, PUMPING SCHEMATIC AND SEQUENCE PUMP STATION - 63RD STREET**

**CITY OF CHICAGO**

**DEPARTMENT OF TRANSPORTATION**

**BUREAU OF HIGHWAYS**

**SOUTH LAKE SHORE DRIVE JACKSON PARK SECTION MAINLINE RECONSTRUCTION**

**CONTRACT NO. 06-BTBU-04-05**

**DESIGN NO. PM-3**

**PROJECT NO. B-7-040**
**PUMP SCHEDULE**

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<th>TAG</th>
<th>SERVICE</th>
<th>TYPE</th>
<th>CW/SEC (GPH)</th>
<th>HEAD M (FT)</th>
<th>RPM</th>
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<th>MANUFACTURER &amp; MODEL</th>
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<td>6.1 12.0</td>
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<td>208</td>
<td>3</td>
<td>60</td>
<td>FLYGT PUMPS</td>
<td>PC-327-LT</td>
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* PROVIDE DUAL RAIL SYSTEM WITH DUAL RAIL GUIDE SUPPORT BRACKETS, SUPPORT FOR BASE ELBOW OF PUMPS AND MIX-FLUSH VALVE SYSTEM AS MANUFACTURED BY FLYGT MODEL 4901 AND ALSO PROVIDE WTPC TRIPLEX PUMP CONTROLLER WITH MULTI-RODE LIQUID LEVEL CONTROL.

**VENTILATION SCHEDULE**

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<th>ROOM SGN</th>
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**ACCESS HATCH / MANHOLE COVERS SIZES & TYPES**

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<th>LOCATION</th>
<th>CLEAR OPENING SIZE</th>
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<th>TYPE OF COVER</th>
<th>NO. OF COVERS</th>
<th>MATERIAL</th>
<th>STYLE</th>
<th>MAKE</th>
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<td>GRAY IRON</td>
<td>R-2065</td>
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**MANHOLE COVER NOTES**

1. MANHOLE COVERS MUST BE BOLTED TO FRAMES WITH STAINLESS STEEL CAP SCREWS.
2. SOLID COVERS MUST BE PROVIDED WITH RING HANDLES.
3. OPENING SIZES & COVER SIZES ARE MIN.
4. VERIFY IN FIELD MANHOLE COVER SIZES AS PER THE MODEL SELECTED.
5. WATCHING THE CORRESPONDING CLEAR OPENINGS.
6. FOR SPECIFICATIONS SEE STRUCTURAL WORK SECTION.

**MECHANICAL NOTES**

1. INSTALL PUMPS AS PER LOCATIONS SHOWN ON DRAWING'S WITH ALL ACCESSORIES.
2. PROVIDE AND INSTALL DUAL RAILS ON PUMPS AS SHOWN ON Dwg. MATERIAL FOR DUAL RAIL MUST BE 304 STAINLESS STEEL.
3. INSTALL DUAL RAIL UPPER SUPPORT GUIDE BAR BRACKET AS SHOWN ON DRAWING PM-4.
4. INSTALL DUAL RAIL INTERMEDIATE SUPPORT GUIDE BAR BRACKET AT EVERY 3000 TID AS SHOWN ON DRAWING PM-4.
5. INSTALL MIX-FLUSH VALVE SYSTEM ON ALL PUMPS, AS PER MANUFACTURER'S INSTRUCTIONS.
6. INSTALL HIGH WATER WARNING ALARM THROUGH AUTO-DIALER SYSTEM TO EITHER DEPT. STREET AND SANITATION'S RADIO OR SIII AS DECIDED BY B.O.E. FOR CONTROLLER SCHEMATIC DIAGRAM SEE Dwg. PM-3A.
7. INSTALL 100 (4") VENT PIPE.
8. FOR NOTES, LEGEND AND ABBREVIATIONS, REFER DRAWING PM-1.
9. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
10. INSTALL PROBE LIQUID CONTROL SYSTEM AS SHOWN ON Dwg. PM-2 AS PER MANUFACTURER'S INSTRUCTION.

**PUMPS SCHEMATIC DIAGRAM**

**SEQUENCE OF OPERATIONS**

1. AT ANY TIME ANY ONE PUMP OR TWO PUMPS WILL BE WORKING DEPENDING UPON THE LEVEL OF WATER, THE THIRD PUMP WILL BE STAND-BY.
3. THE FEATURE ON WTPC TRIPLEX PUMP CONTROLLERS, "MAX PUMP OFF TIME" WILL BE USED TO PREVENT WELLS FROM BECOMING DROPPED, IF NO PUMP HAS ACTIVATED WITHIN THE SET-TIME WHEN WATER IS BELOW LEVEL 2, THE DUTY PUMP WILL REACH MAXIMUM PUMP OFF TIME CAN BE SET BETWEEN 15 MIN AND 10 HOURS.

**OPERATIONAL SEQUENCE AS FOLLOWS FOR DWG. PM-2**

- LEVEL 1: PUMP WILL STOP
- LEVEL 2: FIRST PUMP WILL START
- LEVEL 3: SECOND PUMP WILL START AND WILL STOP AT LEVEL 2.
- LEVEL 4: ALARM ON

<table>
<thead>
<tr>
<th>NO.</th>
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**TABLE FOR DETAIL 4**
GENERAL NOTES

DESIGN CRITERIA

1. Structure designed in accordance with the City of Chicago building code.

2. Superimposed service loads
   Roof live load .................................................. 0.2 kPa (0.5 PSF)
   Floor live load ............................................... 0.2 kPa (0.5 PSF)

STRUCTURAL CAST-IN-PLACE CONCRETE

1. Designed in accordance with building code requirements for reinforced concrete by American Institute of Concrete Institute ACI 318 - latest edition.

2. Construction must be performed in accordance with ACI 305 - Specifications for Structural Concrete for Buildings, 2010 edition.

3. All details, sections, and notes shown on the drawings are intended to be typical and apply to similar situations elsewhere unless otherwise indicated.

4. All cast-in-place concrete must be of the types and having minimum (except concrete work): P = 28 Mpa 140 ksd at 28 days.

5. All construction joints must be shown on the drawings or as approved by the engineer. Keys must be provided at all construction joints except where noted. Keys detailing will be shown in typical wall sections. Keys detail, unless shown on the drawing, provide water stops at all joints and where pipe intersects with concrete structure. Water stop must be provided per specifications.

6. All embedded steel, anchors, drain outlets, embedded metal; etc. must be in place before concrete is placed, except as noted.

7. All dimensions noted for invert, grade top or bottom of concrete structure are in millimeters (mm) except as noted.

8. All reinforcing bars must be new billet steel conforming to the standards of ASTM A615, 60 ksi. All concrete reinforcement must be detailed, fabricated, labeled, supported, spaced in forms and secured in place in accordance with the procedures and requirements outlined in the latest edition of the "Building Code Requirements for Reinforcing Concrete" ACI 318 and the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" ACI 318.

9. Unless otherwise shown, the clear cover for reinforcing steel must be as follows:
   A. Slabs and walls exposed to earth, water, or weather .......................... 51 (2")
   B. Exterior surface where concrete is deposited against the ground ........ 76 (3")

10. All reinforcing bars must be epoxy coated.

11. All vertical dowels must match the vertical reinforcement unless noted otherwise.

12. Minimum reinforcement horizontal and vertical on each face must be 0.05 @ 305 outer to center unless noted otherwise.

13. Miscellaneous details shown on the drawings are typical.

14. Reinforcement bars must have development and lap splice length conforming to building code requirements of ACI 318 - latest edition.

STRUCTURAL PRE-CAST CONCRETE

1. All pre-cast concrete must be of the types and having minimum (except concrete work): P = 28 Mpa 140 ksd at 28 days.

2. All embedded steel, anchors, pipe sleeves, drain outlets, embedded metal; etc. must be provided in pre-cast panels as and where required.

3. All reinforcing bars must be epoxy coated new billet steel conforming to the standards of ASTM A615, 60 ksi. All concrete reinforcement must be detailed, fabricated, labeled, supported, spaced in forms and secured in place in accordance with the procedures and requirements outlined in the latest edition of the "Building Code Requirements for Reinforced Concrete" ACI 318 and the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" ACI 318.

4. Pre-cast pump station and discharge pit sections must have minimum reinforcement as specified in ASTM C 476.

5. Unless otherwise shown, the clear cover for reinforcing steel must be as follows:
   A. Pre-cast walls exposed to earth, water, or weather .................................. 25 (1")
   B. Pre-cast slabs exposed to earth, water, or weather .................................. 38 (1.5")
   C. Pre-cast slabs not exposed to earth, water, or weather ................... 25 (1")

6. Contractor to submit design calculations and shop drawings signed and stamped by structural engineer registered in the state of Illinois.

COORDINATION

1. All dimensions shown on the structural drawings must be verified at site by the general contractor before construction and ordering any material and any discrepancy must be reported to the commissioner immediately.

2. Do not scale drawings, plans, details, sections, etc.

3. The information contained on the drawings is in itself complete and void unless used in conjunction with all of the other contract documents, all specifications, trade practices, applicable standards, codes, etc. incorporated therein by reference.

4. The use of the plans must be restricted to the original site for which they were prepared. Any reproduction or distribution is limited to such use. Any disclosure, reuse or disclosure by any other method in whole or in part or for any purpose other than that as contract document is prohibited.

5. For all embedment, pipe sleeves in pre-cast pump stations, coordinate with the mechanical and electrical drawings.

6. For soil boring logs, see drawings A-1 thru B-25.

7. For soil boring logs, see drawings A-1 thru B-25.

8. For soil boring logs, see drawings A-1 thru B-25.

9. For soil boring logs, see drawings A-1 thru B-25.
GENERAL NOTES

1. THE ELECTRICAL WORK IS TO BE EXECUTED IN ACCORDANCE WITH THE CURRENTLY APPLICABLE NATIONAL ELECTRIC CODES, STATE AND CITY OF CHICAGO CODES AND THE ATTACHED SPECIFICATIONS. ANY MODIFICATIONS AND/OR ELECTRICAL ADDITIONS TO THESE PLANS REQUIRED FOR PROPER COMPLIANCE TO ANY APPLICABLE CODES MUST BE THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE INCLUDED IN HIS ORIGINAL BID.

2. CONTRACTOR MUST PROVIDE LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THE ELECTRICAL SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS.

3. CONTRACTOR MUST FURNISH AND INSTALL ALL SECONDARY SERVICE CONDUCTORS IN CONFORMITY WITH THE REQUIREMENTS OF THE CONTRACTOR TO PROVIDE ALL SUPPORTS FOR ALL CONDUCTORS. ALL LUMPS MUST BE HEAVY GAUGE STEEL.

4. MATERIALS AND EQUIPMENT MUST BE LISTED AND/OR LABELLED BY UL, ETL, CSA OR ANOTHER RECOGNIZED TESTING LAB.

5. ALL MATERIALS, AND EQUIPMENT MUST BE ELECTRICALLY INSTALLED, TESTED, CONDITIONED, AND PLACED IN SERVICE IN ACCORDANCE WITH THE MANUFACTURER’S INSTRUCTIONS AND SPECIFICATIONS.

6. ALL CUTTING, DRILLING AND PATCHING OF MASONRY, STEEL, OR IRON WORK BELONGING TO THE FACILITIES, MUST BE DONE BY THE CONTRACTOR IN SUCH A MANNER THAT HIS WORK MAY BE PROPERLY INSTALLED BUT UNDER NO CIRCUMSTANCES MAY STRUCTURAL WORK BE CUT, EXCEPT AT THE DIRECTION OF ENGINEER OR HIS REPRESENTATIVE.

7. VERIFY CLEARANCES FOR ALL ELECTRICAL WORK BEFORE PROCEEDING WITH CONSTRUCTION COORDINATE USAGE OF AVAILABLE SPACE WITH ALL TRADES. IN THE EVENT OF CONFLICTS, NOTIFY ENGINEER BEFORE PROCEEDING WITH THE WORK.

8. ONE-LINE DIAGRAM SHOWS CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUCTOR TYPE WITHIN STRUCTURES. ONE-LINE DIAGRAM IS INCLUDED AS A GENERAL DESIGN OF STRUCTURES.

9. SITE POWER PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUIT AND CABLES.

10. ALL POWER CONDUIT ALONG WALLS AND CEILING TO BE EXPOSED.

LEGEND & SYMBOLS

- TRANSFORMER WITH PRIMARY AND SECONDARY VOLTAGE AND KVA RATINGS AS NOTED ON PLANS
- PROPOSED TRANSFORMER
- DUPLEX GFI RECEPCTACLE
- "WP" WEATHER PROOF
- PARK DISTRICT MACHINE
- STRIP HEATER
- MAGNETIC MOTOR STARTER
- SIZE AS SPECIFIED ON PLAN
- CORRUGATED METER
- VOLTMETER
- AMMETER
- CONDUIT EXPOSED
- UNDERGROUND DUCT BANK
- CONDUIT UNDERGROUND
- CONDUIT TURNING UP, CONDUIT TURNING DOWN
- GROUND BUS
- GROUND Rod
- JUNCTION BOX
- PULL BOX
- PUMP CONTROLLER
- HEAVY DUTY MACHINERY PROPOSED
- CITY ELECTRICAL MACHINERY EXISTING
- AMERITECH SELECTOR SWITCH
- HIGH VOLTAGE FUSES
- CITY OF CHICAGO
- DEPARTMENT OF TRANSPORTATION
- BUREAU OF HIGHWAYS

SOUTH LAKE SHORE DRIVE
JACKSON PARK SECTION
MAINLINE RECONSTRUCTION

PUMP STATIONS - 57TH & 63RD STREETS

GENERAL NOTES, LEGEND
SYMBOLS AND ABBREVIATIONS

ABBREVIATIONS

A = AMPERE, ALARM
AC = ALTERNATING CURRENT
AS = AIR CIRCUIT BREAKER
AR = AMMETER
AR = ALARM relay
AV = AMERICAN WIRE GAUGE
C = CLOSE, CONDUIT OR CONTACTOR
CB = CIRCUIT BREAKER
CD = CIRCUIT
CF = CONTROL PANEL
CR = CURRENT OR CONTROL RELAY
CS = CONTROL STATION
DS = DISCONNECT SWITCH
EC = EMPTY CONDUIT
EM = ELECTRICAL MACHINERY
ER = ELECTRIC RELAY
ES = EXISTING
FS = FLOW SWITCH
G = GROUND OR GROUND FAULT INTERRUPTER
GR = GROUND
HG = HANDEL
HD = HAND-OFF-AUTO
HR = HAND-OFF-REMOTE
HP = HORSEPOWER
JB = JUNCTION BOX
KV = KILOWATT
KY = KILOWATT AMPERE
KW = KILOWATT
KHW = KILOWATT HOUR
LH = LOAD RELAY
LR = LIMIT OR LEVEL SWITCH
M = MAGNETIC METER STARTER
MA = MILLIAMPERE
MC = MAIN CIRCUIT BREAKER
MD = MOTOR CONTROL CENTER
MI = MANUFACTURER
MK = MALE OR MOUNTING HEIGHT
ML = MILLIAMPERE
MDV = MOTOR OPERATED VALVE
MS = MANUAL MOTOR STARTER
MV = MILLIVOLT
N = NEUTRAL
NC = NORMALLY CLOSED
NO = NORMALLY OPEN OR FIELD
P = OVERLOAD
PB = PRIMARY
PC = PUSH OR PULL BOX
PD = PROGRAMMABLE CONTROLLER
PH = PHASE
PJ = SINGLE PHASE/SINGLE POLE
PI = THREE PHASE/THREE POLE
SH = SPACE HEATER
SS = SELECTOR SWITCH
T = THERMOSTAT, TIMER, TRANSFORMER
TB = TERMINAL BLOCK
TEMP = TEMPERATURE
TTC = TELEPHONE TERMINAL CABINET
UG = UNDERGROUND
V = VOLTS
VA = VOLT AMPERE
VLS = VALVE LIMIT SWITCH
VM = VOLTMETER
W = WATTS
WP = WEATHER PROOF
UPH = TRANSFORMER
NOTE:
1. FOR LOCATIONS OF MANHOLE AND DUCT BANK SEE DWG. E-9.
2. SEE NOTES ON DWG. PE-3A,

SECTION A-A
REVISIONS

CITY OF CHICAGO
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

SOUTH LAKE SHORE DRIVE
JACKSON PARK SECTION
MAINLINE RECONSTRUCTION

SITE POWER PLAN
PUMP STATION - 63RD STREET

CITY MANHOLE
SEE DWG. E-9 FOR DETAILS

PUMP STATION
63RD STREET

CONCRETE PAD
FOR DETAILS SEE DWGS. PS-3 & PC-3A

CONCRETE POWER & CONTROL CABLES FOR CONDUIT & CABLE SIZES REFER TO DWG. PE-4

2-100MM SOD. BD
CONCRETE UNDERGROUND DUCT BANK, SEE NOTE-G

PUMP STATION
WET WELLS

1"PULL STRING
2-1800MM TELEPHONE DUCT BANK SEE NOTE-M1 DNL. PE-3A

PROPOSED LOCATION OF TELEPHONE MANHOLE

GROUND ROD

DISCHARGE PIT

AWP TECHEX BARRING TAPE
BACKFILL WITH TYPE FA-2

GRADE

SCHEDULE NO.

PROJECT NO.

CONTRACT NO.

DRAWING NO.

BOOK NO.

DATE

SCALE

DESCRIPTION

REVIEWS
Chicago Sewer Atlas
Lake Michigan Water Level Data
PHASE I

REVISED REPORT ON GREAT LAKES OPEN-COAST FLOOD LEVELS

Prepared by the U.S. Army Corps of Engineers for the Federal Emergency Management Agency

Detroit, Michigan
April 1988
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Approximate Project Location

Lake Michigan Table

Elevations shown for the indicated reaches represent the expected water levels along the open-coast that will be equalled or exceeded once per indicated time period (10-, 50-, 100-, and 500-years), on the average. These levels are based on an analysis of the maximum instantaneous levels recorded each year for the period of record adjusted to present diversion and outlet conditions at federal government water level gaging stations in Canada and the United States. The water levels along shorelines situated behind islands and in bays and estuaries may vary considerably from the open-coast levels.

PLATE 2
Department of Water Management Details
EXAMPLE TYPICAL CONNECTION DETAIL

EXAMPLE TYPICAL BRICK SEWER CONNECTION FOR CONNECTING PIPE SIZES GREATER THAN 12" DIA.

CONCRETE COLLAR NOTES:
1. ALL TAPS AND ADAPTORS SHALL COMPLY WITH THE LATEST RECOMMENDED SPECIFICATIONS, UNLESS OTHERWISE NOTED IN SUPPLEMENTAL SPECIFICATIONS FOR THE SPECIFIC PROJECT SEWER CONSTRUCTION.
2. ALL CONCRETE COLLARS SHALL CONFORM TO AASHTO D 692 CLASS 2 CONCRETE SPECIFICATIONS.
3. ALL COLLARS SHALL BE CAST IN PLACE AND PLACED AT THE LOCATION OF THE CONNECTING PIPE.
4. ALL COLLARS SHALL BE SUPPORTED AND PROTECTED FROM DAMAGE AND EXTERNAL LOADS.
5. ALL COLLARS SHALL BE DETACHABLE FOR MAINTENANCE AND REPAIR.

CONCRETE COLLAR REINFORCEMENT - SECTION

EXAMPLE CONCRETE COLLAR REINFORCEMENT - SECTION

NOT TO SCALE

PLAN

SECTION

EXAMPLE CONCRETE COLLAR REINFORCEMENT - SECTION

NOT TO SCALE

PIPE TO PIPE

REINFORCED CONCRETE COLLAR DETAIL

SCHEDULE A:

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<th>T</th>
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NOTE: OPENS TO USE WITHOUT REBAR

STANDARD REVISIONS

DATE  DESCRIPTION

REVIEW SHEET  DATE  CITY OF CHICAGO

CONCRETE COLLAR / CONNECTION DETAILS

A.17

PN
Additional Impervious Area Summary
## Summary of Proposed Additional Impervious Area

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<th>Added Impervious Area Tributary to Lagoons (ac)</th>
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Inlet Spacing Analysis
Drainage Area
Secondary
Main
(If Sag)
1a
1b
2b
2c
3a
3b
4b
5
6b
7a
7b
7c

Lake Shore Drive
South Bound

9a
9b
10b
10c
11a
11b
11c
11d
13a
13b
14b
15a
15b
15c
16b
16c
16d
16e
17a
17b
17c
17d
17e
17f
17g
17h
18b
18c
18d

2a

4a

6a

8

10a

12

14a

16a

18a

Notes

Station

CREST
U
SAG
D
D
CREST
U
SAG
D
CREST
SAG
D
CREST
U
U
SAG
CREST
U
SAG
D
D
CREST
U
U
U
SAG
CREST
U
SAG
D
CREST
U
U
SAG
D
D
D
D
CREST
U
U
U
U
U
U
U
SAG
D
D
D
CREST

9902+34
9903+80
9906+69
9906+75
9906+87
9908+49
9909+60
9911+72
9911+73
9913+41
9914+94
9915+02
9916+62
9918+17
9918+29
9918+34
9919+84
9921+36
9921+52
9921+54
9922+29
9923+22
9924+02
9924+70
9924+86
9924+92
9926+54
9929+80
9930+22
9931+38
9933+39
9935+72
9937+17
9938+41
9939+04
9939+16
9940+19
9940+87
9940+87
9942+71
9943+53
9944+73
9946+82
9947+71
9948+92
9949+93
9950+47
9951+68
9952+60
9954+14
9956+19

Drainage Area Characteristics
Pavement
Distance from
Drainage Width ‐
Upstream (ft)
Measured (ft)

Actual Flow to Structure
Drainage Area
(Acre)

Tc (min)

i (in/hr)

C Value ‐
Measured

Q (cfs)

Upstream
Bypass (cfs)

145.68
295.49
11.55
162.80

35.0
42.0
49.0
49.0

0.117
0.285
0.013
0.183

5.00
5.00
5.00
5.00

6.48
6.48
6.48
6.48

0.90
0.90
0.90
0.90

0.68
1.66
0.08
1.07

0.000
0.192
0.314
0.000

110.76
212.64
168.31

49.0
51.0
53.0

0.125
0.249
0.205

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5.00
5.00

6.48
6.48
6.48

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0.81
0.76

0.69
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1.01

0.000
0.728
0.000

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160.49

43.5
43.0

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0.158

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5.00

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0.83

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155.20

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5.00

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6.48

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0.84

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49.0

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38.0

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0.90

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1.02

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1.110
0.000

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120.49
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92.32
153.46
205.85

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0.476
0.326
0.312
0.538
0.318
0.285
0.643
0.678
0.689
0.000

c:\pw_working\civiltech_production\msa\dms38444\Inlet Spacing_LSD.xlsm

Inlet Spacing 6/13/2019

Actual spread and depth on pavement

Total Flow (cfs)

Solve for Total Flow
by finding dp

Actual Depth on
Pavement, dp (ft)

0.00
0.68
1.85
0.39
1.07
0.00
0.69
2.04
1.01
0.00
1.12
0.83
0.00
0.87
0.29
0.85
0.00
0.95
0.44
0.50
0.52
0.00
0.42
0.41
0.13
0.87
0.00
1.66
1.91
1.02
0.00
1.18
0.92
1.05
0.17
0.58
0.34
0.00
0.00
0.94
0.89
0.94
1.38
0.99
0.93
0.80
1.61
1.23
1.61
1.24
0.00

0.00
0.68
1.85
0.39
1.07
0.00
0.69
2.04
1.01
0.00
1.12
0.83
0.00
0.87
0.29
0.85
0.00
0.95
0.44
0.50
0.52
0.00
0.42
0.41
0.14
0.87
0.00
1.66
1.91
1.02
0.00
1.18
0.92
1.05
0.17
0.58
0.34
0.13
0.00
0.94
0.89
0.94
1.38
0.99
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0.00

0.000
0.084
0.168
0.051
0.119
0.000
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0.000
0.116
0.110
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0.108
0.000
0.114
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0.069
0.000
0.056
0.056
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0.107
0.000
0.110
0.138
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0.000
0.000
0.074
0.093
0.102
0.135
0.110
0.106
0.095
0.150
0.121
0.138
0.082
0.000

Actual Spread on
Pavement (T) (ft)
3.516
5.612
1.689
3.976
19.195
8.672
5.721
5.777
5.492
3.408
1.182
3.375
3.802
1.921
2.133
2.574
2.169
1.992
0.000
3.560
15.704
11.471
2.615
2.215
1.493
1.726
0.377
2.807
3.831
0.000
14.729
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6.576
16.405

1 of 4


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<th>Secondary (If Sag)</th>
<th>Notes</th>
<th>Station</th>
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<th>Actual Gutter Flow (cfs)</th>
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**Notes**
- Drainage Area: Main, Secondary (If Sag)
- Secondary (If Sag): Notes
- Station: Actuarial Gutter Depth dge (ft), Actual Gutter Flow (cfs)
- Actual Gutter Depth & Depth: Spread on Pavement less than or equal to Maximum Spread
- Pavement Characteristics: n, Long Slope (ft/ft), Cross Slope (ft/ft), Z Table (8-202)
- Max. Shoulder flow: Maximum depth at pavement, dp
- Maximum Pavement Flow, fp:

**Lake Shore Drive Trends**

**Actual Gutter Flow & Depth**
- Maximum Spread: n, Long Slope (ft/ft), Cross Slope (ft/ft), Z Table (8-202)
- Actual Gutter Flow: cfs
- Actual Gutter Depth: dge (ft)
- Spread on Pavement: less than or equal to Maximum Spread

**Lake Shore Drive Profile**
- CREST 9902+84
- CREST 9908+49
- CREST 9913+41
- CREST 9916+62
- CREST 9919+84
- CREST 9923+22
- CREST 9926+54
- CREST 9933+49
- CREST 9940+87

**Lake Shore Drive Pavement**
- Lake Shore Drive Pavement Characteristics
- Flow (cfs), Depth (ft), Pavement Characteristics
- Maximum Gutter Flow, cfs

**Notes**
- Drainage Area: Main, Secondary (If Sag)
- Secondary (If Sag): Notes
- Station: Actuarial Gutter Depth dge (ft), Actual Gutter Flow (cfs)
- Spread on Pavement less than or equal to Maximum Spread

**Lake Shore Drive Pavement Flow**
- Maximum Gutter Flow: cfs
- Maximum Gutter Depth: dge (ft)
- Pavement Characteristics: n, Long Slope (ft/ft), Cross Slope (ft/ft), Z Table (8-202)
- Maximum Shoulder flow: Maximum depth at pavement, dp
- Maximum Pavement Flow, fp:
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**Actual spread and depth on pavement**

Solve for Total Flow by finding dp

Actual Depth on Pavement, dp (ft)

Actual Spread on Pavement (T) (ft)

**Drainage Area Characteristics**

- C Value - Measured
- Drainage Area (Acre)
- Pavement Drainage Width - Measured (ft)
- Distance from Upstream (ft)
- Drainage Area (Acre)
- Tc (min)
- Q (in/hr)

**Drainage Area**

- Main
- Secondary (If Sag)

**Notes**

- Station

**Distance from Upstream**

- C Value - Measured

**Secondary (If Sag)**

- Drainage Area (Acre)

**Distance from Upstream**

- C Value - Measured

**Pavement Drainage Width - Measured (ft)**

- C Value - Measured

**Drainage Area (Acre)**

- C Value - Measured

**Tc (min)**

- C Value - Measured

**Q (in/hr)**

- C Value - Measured

**Notes**

- Station

**Distance from Upstream**

- C Value - Measured

**Drainage Area Characteristics**

- C Value - Measured

**Drainage Area**

- Main

**Secondary (If Sag)**

- Drainage Area (Acre)

**Distance from Upstream**

- C Value - Measured

**Pavement Drainage Width - Measured (ft)**

- C Value - Measured

**Drainage Area (Acre)**

- C Value - Measured

**Tc (min)**

- C Value - Measured

**Q (in/hr)**

- C Value - Measured
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**Notes**
- Actual Gutter Flow: Calculation of actual gutter flow (Qp) using the formula provided.
- Actual Gutter Depth: Measurement of actual gutter depth (dg+x) at specific stations.
- Pavement Characteristics: Specification of pavement characteristics such as maximum spread at pavement (dp) and maximum spread Pavement Flow (fp).
- Max. Shoulder flow: Calculation of maximum shoulder flow based on the spread on pavement less than or equal to the maximum spread.
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**Stony Island Avenue South Bound**

Inlet Spacing 6/13/2019
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**Notes:** Drainage Area, CREST: 224+00. Actual Gutter Flow & Depth: Actual Gutter Depth dg+x (ft), Actual Gutter Flow (cfs). Spread on Pavement less than or equal to Maximum Spread: FALSE, TRUE. Max. Shoulder flow: Maximum depth at pavement, 4p, Max spread Pavement Flow, Qp.
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**Stony Island Avenue North Bound**
Jackson Park SWMM Analysis
SWMM Structure Overview

Existing Condition
The "2002 As-Built" referenced in Section seven. The work is in the B2000 South Lake Shore Drive纬度 - 保留位置同步结构。
Notes:
1. All storm sewer on Lake Shore Drive is IDOT Jurisdiction.
2. Sewers that drain Jackson Park are Chicago Park District Jurisdiction.
3. The "As-Built" referenced on storm sewer line work is the 2002 South Lake Shore Drive Mainline Reconstruction As-Built.
Notes:
1. All storm sewer on Lake Shore Drive and 57th Drive is DOT jurisdiction.
2. All combined sewers on this sheet are City of Chicago jurisdiction.
3. "Tributary area" of Outlet II includes storm sewer overflow areas from Outlets 11-10 and 11-20.
4. "As-Built" referenced on storm sewer line work is the 2002 South Lake Shore Drive Mainline Reconstruction As-Built.
SWMM Structure Overview

Proposed Condition
1. All storm sewer on Lake Shore Drive is CDOT jurisdiction.
2. All sewers on Hayes Drive are City of Chicago jurisdiction.
3. The "2001 As-Built" referenced on plans over the work is the Mainline Reconstruction As-Built.
4. The "2002 As-Built" referenced on plans over the work is the Mainline Reconstruction As-Built.
5. All existing storm sewers and drainage structures to be cleaned of debris and repaired if needed.
6. All proposed storm sewers are Class A RCP unless otherwise noted.

Notes:
- All existing storm sewers and drainage structures to be cleaned of debris and repaired if needed.
- Class A RCP unless otherwise noted.

Scale: 1" = 50'
**NOTICE**

1. All combined sewers are City of Chicago jurisdiction.
2. Storm sewer on Stony Island Avenue north of 65th Place and on Cornell Drive south of 65th Place will remain.
3. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
4. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
5. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.

**Notes:**

1. All existing storm sewers and drainage structures are to be utilized under the proposed conditions for televising and cleaned of debris and repaired or replaced if needed.
2. All proposed storm sewers are Class A RCP unless otherwise noted.
3. All proposed storm sewers are Class A RCP unless otherwise noted.
4. All proposed storm sewers are Class A RCP unless otherwise noted.
5. All proposed storm sewers are Class A RCP unless otherwise noted.

**PROPOSED DRAINAGE PLAN**

**OPC MOBILITY IMPROVEMENTS**

**CHICAGO DEPARTMENT OF TRANSPORTATION**

**CONTRACT NO. B-7-203**

**SCALE: 1" = 50'**

**KEY MAP**

**PROPOSED DRAINAGE PLAN**

**DATE: SEP 2019**

**SCALE: 1" = 50'**

**NOTICE**

1. All combined sewers are City of Chicago jurisdiction.
2. Storm sewer on Stony Island Avenue north of 65th Place and on Cornell Drive south of 65th Place will remain.
3. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
4. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
5. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.

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2. All proposed storm sewers are Class A RCP unless otherwise noted.
3. All proposed storm sewers are Class A RCP unless otherwise noted.
4. All proposed storm sewers are Class A RCP unless otherwise noted.
5. All proposed storm sewers are Class A RCP unless otherwise noted.

**PROPOSED DRAINAGE PLAN**

**OPC MOBILITY IMPROVEMENTS**

**CHICAGO DEPARTMENT OF TRANSPORTATION**

**CONTRACT NO. B-7-203**

**SCALE: 1" = 50'**

**KEY MAP**

**PROPOSED DRAINAGE PLAN**

**DATE: SEP 2019**

**SCALE: 1" = 50'**

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4. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
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**Notes:**

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2. All proposed storm sewers are Class A RCP unless otherwise noted.
3. All proposed storm sewers are Class A RCP unless otherwise noted.
4. All proposed storm sewers are Class A RCP unless otherwise noted.
5. All proposed storm sewers are Class A RCP unless otherwise noted.

**PROPOSED DRAINAGE PLAN**

**OPC MOBILITY IMPROVEMENTS**

**CHICAGO DEPARTMENT OF TRANSPORTATION**

**CONTRACT NO. B-7-203**

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**KEY MAP**

**PROPOSED DRAINAGE PLAN**

**DATE: SEP 2019**

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5. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.

**Notes:**

1. All existing storm sewers and drainage structures are to be utilized under the proposed conditions for televising and cleaned of debris and repaired or replaced if needed.
2. All proposed storm sewers are Class A RCP unless otherwise noted.
3. All proposed storm sewers are Class A RCP unless otherwise noted.
4. All proposed storm sewers are Class A RCP unless otherwise noted.
5. All proposed storm sewers are Class A RCP unless otherwise noted.

**PROPOSED DRAINAGE PLAN**

**OPC MOBILITY IMPROVEMENTS**

**CHICAGO DEPARTMENT OF TRANSPORTATION**

**CONTRACT NO. B-7-203**

**SCALE: 1" = 50'**

**KEY MAP**

**PROPOSED DRAINAGE PLAN**

**DATE: SEP 2019**

**SCALE: 1" = 50'**

**NOTICE**

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2. Storm sewer on Stony Island Avenue north of 65th Place and on Cornell Drive south of 65th Place will remain.
3. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
4. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
5. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.

**Notes:**

1. All existing storm sewers and drainage structures are to be utilized under the proposed conditions for televising and cleaned of debris and repaired or replaced if needed.
2. All proposed storm sewers are Class A RCP unless otherwise noted.
3. All proposed storm sewers are Class A RCP unless otherwise noted.
4. All proposed storm sewers are Class A RCP unless otherwise noted.
5. All proposed storm sewers are Class A RCP unless otherwise noted.

**PROPOSED DRAINAGE PLAN**

**OPC MOBILITY IMPROVEMENTS**

**CHICAGO DEPARTMENT OF TRANSPORTATION**

**CONTRACT NO. B-7-203**

**SCALE: 1" = 50'**

**KEY MAP**

**PROPOSED DRAINAGE PLAN**

**DATE: SEP 2019**

**SCALE: 1" = 50'**

**NOTICE**

1. All combined sewers are City of Chicago jurisdiction.
2. Storm sewer on Stony Island Avenue north of 65th Place and on Cornell Drive south of 65th Place will remain.
3. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
4. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.
5. Storm sewer on Stony Island Avenue north of 65th Place and Cornell Drive south of 65th Place will remain.

**Notes:**

1. All existing storm sewers and drainage structures are to be utilized under the proposed conditions for televising and cleaned of debris and repaired or replaced if needed.
2. All proposed storm sewers are Class A RCP unless otherwise noted.
3. All proposed storm sewers are Class A RCP unless otherwise noted.
4. All proposed storm sewers are Class A RCP unless otherwise noted.
5. All proposed storm sewers are Class A RCP unless otherwise noted.
OPC MOBILITY IMPROVEMENTS
PROPOSED DRAINAGE PLAN

1. All existing sewer lines are City of Chicago jurisdiction.
2. Storm sewer on Cornell Drive is IDOT jurisdiction.
3. Existing Cornell Drive north of West Lagoon is IDOT jurisdiction.
4. All existing storm sewers and drain structures to be maintained in existing condition. All new items to be constructed to allow removal of debris and required EKG readings.
5. All proposed sewer work is Class A RCP unless otherwise noted.

Notes:

- Existing Cornell Drive north of West Lagoon is IDOT jurisdiction.
- Storm sewer on Cornell Drive is IDOT jurisdiction.
- Connect drainage structures to maintain existing drainage pattern.
- Maintain existing storm sewer.
- Connect drainage structures to maintain existing drainage pattern.
- Maintain existing storm sewer.

SCALE IN FEET

-10 -5 0 5 10

1. All existing storm sewers are City of Chicago jurisdiction.
2. Storm sewer on Cornell Drive is IDOT jurisdiction.
3. Existing Cornell Drive north of West Lagoon is IDOT jurisdiction.
4. All existing storm sewers and drain structures to be maintained in existing condition. All new items to be constructed to allow removal of debris and required EKG readings.
5. All proposed sewer work is Class A RCP unless otherwise noted.
Notes:
1. All storm sewer on Lake Shore Drive is CDOT Jurisdiction.
2. Storm drain Jackson Park, Chicago Park District Jurisdiction.
3. All existing storm sewers and drainage structures to be utilized unless otherwise noted.
4. All proposed storm sewers are Class A RP unless otherwise noted.

Existing 36" sewer lines
Existing 36" storm sewer lines
Proposed 50 Year HGL
Proposed 100 Year HGL
Existing ground profile

Scale: 1" = 50' Sheet 17 of 22 Sheets STA. 10 STA.
1. All storm sewers on Lake Shore Drive are DOT jurisdiction.
2. Storm sewers that drain Jackson Park are Chicago Park District jurisdiction.
3. All existing storm sewers and drainage structures to be utilized under the proposed drainage plan will be maintained and repaired if needed.
4. All proposed storm sewers are shown on ISD unless otherwise noted.
Notes:

1. All storm sewer on Lake Shore Drive is IDOT Jurisdiction.
2. Sewers that drain Jackson Park are Chicago Park District Jurisdiction.
3. The "As-Built" referenced on storm sewer line work is the 2002 South Lake Shore Drive Mainline Reconstruction As-Built.
4. All existing storm sewers and drainage structures to be utilized under the proposed condition to be televised and cleaned of debris and repaired if needed.
5. All proposed storm sewers are Class A RCP unless otherwise noted.
Notes:
1. All storm sewer on Lake Shore Drive and 57th Drive is IDOT jurisdiction.
2. All combined sewers on this sheet are City of Chicago jurisdiction.
3. "Tributary Area" of Outlet 11 includes storm sewer overflow areas from Outlets 11-10 and 11-20.
4. The "As-Built" referenced on storm sewer line work is the 2002 South Lake Shore Drive Mainline Reconstruction As-Built.
5. All existing storm sewers and drainage structures to be utilized under the proposed condition to be televised and cleaned of debris and repaired if needed.
6. All proposed storm sewers are Class A RCP unless otherwise noted.
Jackson Park Storm Sewer System
Existing Condition - 10 Year Storm

Water Elevation Profile: Node 35 - Outlet_7

Elevation (ft)

08/29/2018 11:45:00

Distance (ft)

- Existing 15° Restrictor
- Outlet Weir Elevation (3.61)
- Hayes Drive
  (Structure 15 - 43)
- Existing 27° Restrictor and Outfall to South Lagoon
- Lake Shore Drive
  (Structure 35 - 30)
- Outlet Weir Elevation (3.61)
- Outlet to Stony Island Avenue Combined Sewer

Outlet Weir Elevation (3.61)
Jackson Park Storm Sewer System
Proposed Condition - 10 Year Storm
Water Elevation Profile: Node 1 - Outlet_11

Jackson Park Storm Sewer System
Existing Condition - 10 Year Storm

10/01/2018 15:30:00

Distance (ft)

2,500 2,400 2,300 2,200 2,100 2,000 1,900 1,800 1,700 1,600 1,500 1,400 1,300 1,200 1,100 1,000 900 800 700 600 500 400 300 200 100 0

Elevation (ft)

Lake Shore Drive
(Structure 6 - 19)

Existing Pedestrian Underpass Pump Station

Outlet Weir Elevation (3.61)

Outlet to 56th Street Combined Sewer
Underpass Pump Station Analysis
**Storage Summary (Below -2, Low Pavement Elev.)**

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<th>Description</th>
<th>Volume (ft³)</th>
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<td>Wet Well</td>
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<td>Manhole</td>
<td>144</td>
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<tr>
<td>Storm Sewer 169' of 18&quot;</td>
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<td>Storm Drain</td>
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<td>TOTAL STORAGE</td>
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**Pump Summary**

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<th>Flow Rate (cfs)</th>
<th>ON Elevation</th>
<th>OFF Elevation</th>
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<td>0.50</td>
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**Hydrology Summary**

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**Key Elevations**

- Low Water Elevation: -6.13
- Low Underpass Pavement Elevation: -2.00
- Pump Discharge Elevation: 4.59

**South Shore Drive Underpass Pump Station**
SUBAREA 13-2
AREA = 0.39 AC
IMP = 0.04 AC

SUBAREA 13-1
AREA = 0.51 AC
IMP = 0.07 AC

South Shore Drive Underpass Tributary Area
## Critical Duration Analysis for Proposed Conditions

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<th>10 Year Storm Storage Needed (ft³)</th>
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Inflow Hydrograph for 10 Year - 30 Minute Event
South Shore Drive Underpass
Inflow Mass Curve for 10 Year - 30 Minute Event
South Shore Drive Underpass
Mass Routing Curve for 10 Year - 30 Minute Event
South Shore Drive Underpass

Storage 577.47 ft³

Inflow

Pump Flow
# Mass Routing Table for 10 Year - 30 Minute Event

**South Shore Drive Underpass**

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<th>Time (min)</th>
<th>Inflow (ft³)</th>
<th>Pump Outflows (ft³)</th>
<th>Total Outflow (ft³)</th>
<th>Required Storage (ft³)</th>
<th>On-Off Counters</th>
<th>Time (hr)</th>
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<tbody>
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<td></td>
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Stage Storage Curve for Proposed Condition

- Wet Well Storage
- Inlet Pipe Storage
- Underpass Storage
- Total Storage

Elevation (ft) vs. Storage (ft³)
Inflow Hydrograph for 10 Year - 2 Hour Event
Inflow Mass Curve for 10 Year - 2 Hour Event
Mass Routing Curve for 10 Year - 2 Hour Event

- Inflow
- Storage 1625.27 ft³
- Pump Flow
### Mass Routing Table for 10 Year - 2 Hour Event

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## Mass Routing Table for 10 Year - 2 Hour Event

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Storage Summary (Below -5, Low Pavement Elev.)

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Pump Summary

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Key Elevations

- Low Water Elevation: -10.14
- Low Underpass Pavement Elevation: -5.00
- Pump Discharge Elevation: 5.46

Hayes and Lake Shore Drive Underpass Pump Station
Hayes Drive and Lake Shore Drive Underpass Tributary Area
Stage Storage Curve for Proposed Condition

- Wet Well Storage
- Inlet Pipe Storage
- Total Storage
- Underpass Storage
Inflow Hydrograph for 10 Year - 30 Minute Event
Mass Routing Curve for 10 Year - 30 Minute Event

Inflow

Storage 814.76 ft³

Pump Flow

Cumulative Flow (ft³)

Time (hr)
# Mass Routing Table for 10 Year - 30 Minute Event

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Storage Summary (Below 2, Low Pavement Elev.)

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<th>Description</th>
<th>Volume (ft³)</th>
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<td>Wet Well</td>
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<td>Manhole</td>
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<td>TOTAL STORAGE</td>
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Key Elevations

- Low Water Elevation: -1.96
- Low Underpass Pavement Elevation: 2.00
- Pump Discharge Elevation: 5.77

Pump Summary

<table>
<thead>
<tr>
<th>Pump</th>
<th>Flow Rate (cfs)</th>
<th>ON Elev.</th>
<th>OFF Elev.</th>
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Hydrology Summary

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<td>TOTAL AREA TRIBUTARY TO PUMP STATION</td>
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59th Street Underpass Pump Station
SUBAREA 11-D
AREA = 0.50 AC
IMP. AREA = 0.16 AC

SUBAREA 11-C
AREA = 0.60 AC
IMP. AREA = 0.23 AC

Outlet 11-2o

59th Street Underpass Tributary Area
## Critical Duration Analysis for Proposed Conditions

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<th>Storm Duration (hr)</th>
<th>10 Year Storm Storage Needed (ft³)</th>
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Stage Storage Curve for Proposed Condition

- Wet Well Storage
- Inlet Pipe Storage
- Underpass Storage
- Total Storage

Elevation (ft)

Storage (ft³)
Inflow Mass Curve for 10 Year - 30 Minute Event
59th St. Underpass

Cumulative Flow (ft³)

Time (hr)
Mass Routing Curve for 10 Year - 30 Minute Event
59th St. Underpass

Inflow

Storage 391.13 ft³

Pump Flow
# Mass Routing Table for 10 Year - 30 Minute Event

## 59th Street Underpass

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Inflow (ft³)</th>
<th>Pump Outflows (ft³)</th>
<th>Total Outflow (ft³)</th>
<th>Required Storage (ft³)</th>
<th>On-Off Counters (1=On / 0=Off)</th>
<th>Time (hr)</th>
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Estimated Floodplain Fill Calculations
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<th>Storm Frequency (yr)</th>
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<th>Flood Elevation (CCD)</th>
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NOTE: This drawing is for preliminary study purposes only. It is not intended to be used as a construction document. The specifications and plans for the final design will be based on a comprehensive engineering study and analysis.

The proposed structure is located at Station 50+00.00, with a length of 22'-0". The structure will consist of two permanent impact areas, each measuring 0.02 acres.

The plan shows the layout of the proposed structure, including the location of the north and south permanent impact areas. The drawing also includes a location sketch and a legend for the permanent wetland impact area.

Legend:
- Permanent Wetland Impact Area

The structure is located in Cook County, Illinois, with a Federal Aid Project No. of 2873 - Sec. 80-E-418-00-BR. The structure number is 016-6195, and the project is for the proposed rehabilitation of the S. Lake Shore Drive over 59th St Lagoon Inlet.

Chicago, Illinois 60601
205 North Michigan Avenue, Suite 2400
Alfred Benesch & Company

Job No. 10641.00
East and West Lagoon Hydrology Memorandum
Memorandum

Date: July 11, 2018
To: Nate Roseberry
Re: Mobility Improvements to Support the South Lakefront Framework Plan
   Jackson Park, Chicago, Illinois
   Section No. 17-B7203-00-ES
   Jackson Park – East and West Lagoon Hydrology

Purpose
The purpose of this memorandum is to summarize the hydrologic analysis completed to evaluate any potential impacts to the water levels in the Jackson Park East and West Lagoons as a result of the proposed OPC Mobility Improvements. Demonstrating minimal change to the water levels in the lagoons will therefore demonstrate no indirect impacts to the Lagoon bank plantings that we installed as part of the GLFER project.

Existing Conditions
Lake Michigan generally controls ground water elevations at Jackson Park. However the water levels in the East and West Lagoons are generally maintained by a concrete weir control structure located in the northeast corner of the East Lagoon. When Lake Michigan is low the concrete weir control structure maintains the water level in the East and West Lagoons at approximately elevation 1.3. There is also a sluice gate structure that prevents backflow from Lake Michigan when the Lake level is high.

Under existing conditions there are also areas from Jackson Park that drain directly into the lagoons. (See attached Exhibit for the Tributary Drainage Areas). There is overland flow from the surrounding parkland as well as existing storm sewer discharges. Cornell Drive, north of Hayes discharges directly to the West Lagoon via an existing storm sewer. The roadway right of way on South Lake Shore Drive south of 59th Street as well as Hayes Drive discharges to the existing combined sewer on Stoney Island. However the system is designed to take the 1-year flow (first flush) with the storm sewer overflow that exceeds the 1-year storm going to the Lagoons.
Proposed Improvements

Within the drainage area tributary to the East and West Lagoons the proposed roadway improvements will include adding an additional traffic lane to Southbound Lake Shore Drive, the realignment of Hayes Drive, and the removal of Cornell Drive between Hayes Drive and Midway Plaisance. The improvements on South Lake Shore Drive will add approximately 0.68 acres of additional pavement area. However the removal of Cornell Drive will reduce the impervious area by 8.40 acres. Therefore there will be a net reduction of 7.72 acres of impervious area tributary to the East and West Lagoons.

The proposed improvements will also include new pedestrian underpasses under Hayes near the intersection with Lake Shore Drive, as well as on Hayes near the Cornell Drive intersection. The underpasses will require reconfiguring the existing storm sewer systems around these areas. In general the intent of the OPC Mobility Improvements is to maintain the existing drainage patterns as closely as possible.

Hydrologic Analysis

In order to analyze the impacts of the change in pavement area and drainage area to the East and West Lagoons a hydrologic analysis using HEC-HMS software was completed. A runoff curve number of 87.0 and 84.3 was used for the existing and proposed conditions respectively to represent the change in impervious area. The initial water elevation for the East and West Lagoons was set to 1.3 feet, based on the top of the outlet weir which controls the minimum water elevation in the East and West Lagoons.

The analysis was performed for the existing and proposed conditions using the 1, 2, and 10 year storm events for a 24 hour duration. The following table shows a summary of the peak East and West Lagoon water surface elevations for the existing and proposed conditions.
Memorandum

<table>
<thead>
<tr>
<th>Storm Event</th>
<th>Existing Peak Elevation in the Lagoons</th>
<th>Proposed Peak Elevation in the Lagoons</th>
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<td>2-Year</td>
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<td>10-Year</td>
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<td>500-Year</td>
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</tr>
</tbody>
</table>

Conclusions

There is minimal ‘bounce’ in the lagoon water levels as a result of the runoff from the surrounding drainage area tributary to the lagoon. For the one year storm the lagoon elevation rises from 1.3 to 1.67 feet, an increase of only 0.37 feet. The reduction in impervious area tributary to the lagoon will only lower the peak lagoon level by 0.04 feet. For the 10-year event the lagoon elevation rises from 1.3 to 2.07 feet, an increase of only 0.77 feet. The reduction in impervious area tributary to the lagoon will only lower the peak lagoon level by 0.06 feet. It is important to also note that the peak levels occur over a very short period of time and the overall fluctuation in water levels remains largely unchanged (see attached HEC-HMS analysis outputs)

The proposed improvements will reduce the existing impervious area as well as the total tributary drainage area to the East and West Lagoons. However as demonstrated by hydrologic analysis the reduction in pavement and drainage areas will have a negligible impact on water levels within the Lagoons since they are generally controlled by existing concrete weir structure.

Attachments

OPC Mobility Improvement Overview

Tributary Drainage Area

HEC-HMS Analysis Outputs
Jackson Park East and West Lagoon - Water Surface Elevation

1 Year 24 Hour Event

<table>
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<th>Elevation (Feet)</th>
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Existing

Proposed
Jackson Park East and West Lagoon - Water Surface Elevation

100 Year 24 Hour Event

Elevation (Feet)

Time (Days)

Existing

Proposed

59th Street Bridge Scour Analysis
Flow Estimation

The US 41, 59th Street bridge connects the Lake Michigan (the lake) to the Jackson Park (the park) boat docking area. The docking area receives storm runoff from the lagoons located west of the docking area. There is about 130 acers upstream tributary area of overland flow to the lagoons. However, the lagoons have control structures to restrict flow to the docking area to maintain certain water level in the lagoons. Additionally, the docking area is open to the lake; its water elevation fluctuates with the lake water elevation. As such, any effect of upstream flow from the lagoons to the docking area is inconsequential to this study.

Water level in the lake fluctuates due to storm surge, wind, and barometric pressure. Lake Michigan is non-tidal, meaning the tidal affect is insignificant relative to the effects from other sources described above. The approach proposed in HEC 20 and HEC 25 for tidal waterway is used for wave current or storm surge for scour analysis in this project.

USACE websites provide daily record of the lake climatology data. This record includes current velocity and significant wave height among other data. An example of such a record is attached. Daily significant wave height of 1 to 2 feet is typical for the lake in Chicago area. Typical current velocity in the lake is less than 1 foot per second. A wave height of over 7’ to 10’ was recorded in North Avenue Beach in Chicago on September 8, 2018. This was a possibly 2-year storm frequency. Under heavier storm intensities, wave heights of over 15’ are good possibilities.

Under a combination of storm surge of 10-year and higher intensities and wave heights of over 15 feet, the flow from the lake through the bridge toward the docking area will be restricted. In accordance with HEC 18 (e.g., 9.3.2) orifice equation may be used to estimate the maximum discharge and velocity through the bridge. Considering the roadway overtopping elevation of about 16.6’ CCD (PDP plan sheet 18 of 22), a maximum upstream water elevation 16.6’ CCD may be assumed in the orifice equation. The lake normal water elevation is assumed at 3’ CCD.

Subsurface Soil Condition

Two soil borings were performed near the 59th Street bridge in 2018. The boring logs indicate that subsurface soil consists of poorly graded sand classified as “SP” down to the approximate elevation of -13’ CCD. Underlying the sand layer is silty clay layer, with increasing strength with depth from medium stiff to hard clay. The borings extended to Elevations of -46.66’ CCD and -35.99’ CCD.

The presence of highly permeable sand layer at the top of the borings indicates that the docking area is also hydraulically connected to the lake through groundwater. The sand layer extends down to two feet below the streambed elevation. The sand layer is highly susceptible to erosion and scouring.

The unconfined compressive strength of the silty clay layer is provided in the boring logs. This parameter ranges from 0.5 tons per square foot (tsf) at the top of the boring to 8 tsf at the bottom of the boring (Elevation -46.66 CCD). This parameter is needed to estimate the critical shear stress for scour analysis in cohesive soils.
**Bridge Foundation**

The reinforced concrete bridge abutment walls are built over reinforced concrete footing slabs supported by H piles. The piles extend to elevation of -45.5' CCD. The channel connecting lake to the docking area is restricted by sheet pile retaining walls on both sides of the channel. The sheet piles horizontally extend to the bridge abutment wall.

**Scour Calculations**

FHWA suggests a three-level analysis approach like HEC-20 for the analyses of bridges crossing of tidal waterways. This approach is used for this bridge.

Level 1 analysis includes a qualitative evaluation of the stability of the bridge. This level includes estimating the magnitude of storm surge and determining whether the hydraulic analyses depend on the storm surge and wind from the lake or from the riverine flow to the bay area and or both. Level 2 analysis includes engineering analysis to obtain velocity, depth, and discharges due to storm surge, wave, etc. to estimate the scour depth. Levels 1 and 2 analyses are feasible, and performed, for this project. Level 3 requires detailed analysis using computer modeling that is beyond the scope of this project.

As described above, the effect of upstream flow to the bridge is inconsequential for this bridge. So, in this study, the effect of storm surge on the scour is estimated.

Because of the configuration of the retaining walls along the channel connecting the lake to the docking area, there is no abutment scour as well as conventional contraction scour. However, because of storm surge and the flow restriction through the bridge opening (orifice effect), contraction scour is estimated for this bridge in accordance with HEC-20.

The stream bed at the bridge is at Elevation -11' CCD. Because the top 2’ (from Elevation -11’ to -13’ CCD) of sand is highly susceptible to scour, the scour depth is conservatively calculated from Elevation -13 CCD, top of the silty clay layer.

HEC 18, Section 6.7 provides methodology for estimating the contraction scour in cohesive materials. Equation 6.6 calculates the ultimate scour. Parameters needed in the equation include initial shear stress, critical shear stress, and average velocity in the contracted section.

HEC 18 Equation 6.6 references to a document entitled “Ultimate Pier and Contraction Scour…”, the cover page is attached. Figure 2 in this document provides correlation between unconfined compressive strength and critical shear stress. Section 4.2.1 provides equation to calculate critical shear stress and initial shear stress. The critical shear stress and initial shear stress are needed to calculate the ultimate scour. Contraction scour occurs if the initial shear stress is higher than the critical shear stress.

The maximum scour occurs when velocity would be the greatest. This condition occurs when storm surge enters the loading docking area. See the attached spread sheet for contraction scour calculation.

The scour calculation is conservative because the wave action is cyclical not steady state and the subsurface soil unconfined compressive strength increases with depth which was not considered in the calculation.
**Underwater Inspection Report:**

An underwater investigation for the bridge footing was conducted by Collins Engineers, Inc. (Collins) for the Chicago Department of Transportation on November 21, 2017. The report is attached. According to the underwater inspection report, the top 3’ to 4’ of the H piles were exposed due to scour. This corresponded to scour elevation of approximately -9.00’ CCD. Based on the soil boring logs, the scour depth is limited to the top poorly graded sand material. This material is highly susceptible to scouring. The underlying silty clay layer remains intact. It should be noted that the underwater inspection was not performed during storm events. The scour depth during storm events should be higher.

**Conclusion and Recommendation:**

Based on the analytical modeling, the scour depth under all storm events is conservatively estimated at 21.88’, corresponding to elevation -34.88’ CCD. Considering the bottom of H pile at -45.5’ CCD, the analytical maximum scour depth is about 10.62’ (45.5’-34.88’=10.62’) above the bottom of the H pile footing.

There is significant discrepancy between the underwater inspection and analytical scour depth. One main factor is that the analytical analysis is very conservative due to:

- The storm surge is cyclical, and the velocity direction switch back and forth with the wave flow direction.
- The silty clay layer, due to its cohesiveness, may withstand the cyclical flow associated with storm surge with no measurable scour.

Based this finding a scour rating of 5 is suggested for the bridge.

As discussed in the bridge under water inspection report, the exposure of the steel H-piles results in accelerated corrosion of pile elements. It is therefore recommended that the gaps between the tops of the encasements and the underside of the footing be filled by hand packing with an epoxy polymer concrete, comprised of a mix designed for underwater applications. It is also recommended that that the H piles, especially non-encasement H piles, be protected by some type of corrosion control system.
## US 41, 59th Street Bridge Contraction Ultimate Scour

<table>
<thead>
<tr>
<th>Storm Frequency</th>
<th>Velocity in Contracted Section (v), Orifice Equation (ft/s)</th>
<th>Orifice Equation, Delta H (ft)</th>
<th>Initial Flow Depth (ft)</th>
<th>Y1(ft)</th>
<th>Critical Shear Stress, psf</th>
<th>Initial Shear Stress, psf</th>
<th>Ku for cohesive</th>
<th>Manning, n</th>
<th>Water density, slug/cuft</th>
<th>g, ft/square sec</th>
<th>Ys, ft, HEC 18, Eq. 6.6</th>
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<td>1.938</td>
<td>32.2</td>
<td>21.88</td>
</tr>
</tbody>
</table>

Notes:
  - The streambed elevation at the bridge crossing is -11.00 CCD.
  - The Critical Shear Strength was calculated based on the unconfined compressive strength of soil samples from borings performed in 2018.
  - It was based on linear equation provided in Chapter 3 of reference.
  - The roadway overtopping elevation of 16.6' CCD is conservatively used as the height of the storm for all storm frequencies. This correlates to wave height of about 13.6' (16.6' - 3' = 13.6').
  - Top of the cohesive layer is at -13.00' CCD.
  - Y1 is calculated using the elevation difference between the overtopping elevation and streambed elevation (16.6' - 11') = 27.6'.
  - Bottom of H pile foundation is at Elevation -45.5' CCD.
  - Equation 6.6 of HEC 18 is used for the calculation of the ultimate scour depth. Orifice equation is used to calculate flow velocity. "n" is estimated based on smooth surface silty clay layer. Delta H is calculated by subtracting overtopping elevation from the lowest arc elevation bottom of the bridge (16.6' - 11.6' = 5').
Underwater Inspection Report

59th Street Lagoon Inlet Bridge
(South Lake Shore Drive)
SN 016-6195
over the
Jackson Park Lagoon

Chicago, Illinois

Prepared for:
Chicago Department of Transportation

Inspected:
November 21, 2017
UNDERWATER INSPECTION SUMMARY

GENERAL:
Inspection Date: November 21, 2017
Firm: Collins Engineers, Inc.
Insp. Team Leader/Diver: Brian Dilworth, P.E., ADCI
Engineer-Divers: Brad Syler, S.E., P.E., ADCI; Jacob Green, ADCI; Breanne Stromberg, E.I.T.
Inspection Method: Commercial Surface-Supplied Air Diving

BRIDGE INFORMATION:
Superstructure Type: Steel Multi-Beam Bridge
Substructure Type: Reinforced Concrete Abutment Walls founded on Timber Piles with a Steel Pile Supported Footing
SSUs Inspected: North and South Abutments

GENERAL CONDITIONS:
Water Visibility: 3 Foot  Water Velocity: < 1 ft/s
Water Temperature: 41 °F  Weather: Clear, 40 °F
Waterline Elevation: +0.7 CCD
Waterline Reference: Top of the Sidewalk at the West Fascia (mid-span): +16.0 CCD
Maximum Depth at SSU: 12.5 feet – Mid-Point of the North Abutment
Shoreline Conditions: No Erosion
Channel Conditions: No Significant Degradation

SUBSTRUCTURE CONDITIONS: (See Appendix A for detailed notes.)
North Abutment: Satisfactory Condition – Footing exposed and undermined, voids in the steel pile concrete encasement, section loss
South Abutment: Satisfactory Condition – Footing exposed and undermined, voids in the steel pile concrete encasement, section loss

MAINTENANCE/REPAIR RECOMMENDATIONS:
Re-inspect underwater in 60 months.

UNDERWATER INSPECTION NBI CODING RECOMMENDATIONS:

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</table>

*Codings are recommendations based on observed conditions during the underwater inspection only. Final NBI codings are to be determined by bridge owner.
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## APPENDICES

- **APPENDIX A - FIGURES**
- **APPENDIX B – PHOTOGRAPHS**
- **APPENDIX C – RATING FORM**
1.0 INTRODUCTION

1.1 Purpose and Scope

This report consists of the results of a detailed underwater investigation of Structure No. 016-6195 in Chicago, Illinois. Collins Engineers, Inc. (Collins) conducted the underwater investigation for the Chicago Department of Transportation on November 21, 2017. The purpose of the investigation was as follows:

- Determine the condition of the substructure elements located in the waterway at the time of the inspection from the waterline to the channel bottom.
- Determine the condition of the submerged substructure elements above the waterline within the areas that may be submerged or inaccessible during routine above water inspections.
- Obtain channel bottom depth measurements along the bridge fascias, upstream and downstream of the bridge.
- Determine the condition of the shorelines in the vicinity of the structure.
- Obtain photographs of the bridge and any significant defects.

The following report includes a description of the structure, the method of investigation, description of existing conditions, an evaluation and recommendations based on the conditions, inspection figures, and photographs.

1.2 General Description of the Structure

Structure No. 016-6195 is a steel multi-girder bridge that carries South Lake Shore Drive over the Jackson Park Lagoon in Chicago, Illinois. Refer to Figure 1 in Appendix A for a location map. The orientation of the longitudinal axis of the bridge is north to south. The substructure units along the river are labeled as the North and South Abutments. The original reinforced concrete shafts are founded on 3 rows of timber piles, while the reinforced concrete footings are supported by concrete encased steel H-piles. The above water portions of
the abutments have a stone masonry façade. Refer to Photograph 1 in Appendix B for an overall view of the structure.

1.3 Method of Investigation

A team consisting of a licensed Structural Engineer, a licensed Professional Engineer-Diver, an Engineer-Diver, and a Technician-Diver conducted the underwater investigation. Dive team members are certified through the Association of Diving Contractors International (ADCI). The inspection was conducted using commercial surface-supplied air diving equipment. During the inspection, the diver entered the water from a boat while an engineer on the boat recorded the inspection notes.

The underwater inspection consisted of a visual and tactile examination of the accessible surfaces of the submerged substructure units from the waterline to the channel bottom with particular attention given to any areas of deterioration or apparent distress. The type of channel bottom material, presence and extent of scour, presence and extent of riprap, presence and extent of debris, and the location of any structural defects were noted. In addition, the conditions of the shorelines in the vicinity of the structure were noted. Photographs were taken to document general conditions and observed deficiencies.

The channel bottom elevations were obtained using a continuous running digital fathometer and an incremental sounding rod. The channel bottom depths were recorded along the upstream and downstream bridge fascias, 100 feet upstream and downstream of the bridge, and along each submerged substructure unit. The waterline at the time of water depth recording was referenced to a known elevation on the structure.
2.0 EXISTING CONDITIONS

2.1 Waterway Conditions

At the time of inspection, the waterline was located approximately 15.3 feet below the top of the sidewalk at the mid-span of the west bridge fascia. This corresponds to a waterline elevation of +0.7 feet Chicago City Datum (CCD). The water was moving ebb and flood, east and west, of the lagoon at less than 1 foot per second. The visibility below water was approximately 3 foot. Refer to Figure 2 in Appendix A for the bridge configuration, sounding plan, and a channel cross-section.

2.2 Shoreline Conditions

The north and south shorelines east and west of the structure were constructed of steel sheet pile retaining walls, which appeared to be in stable condition.

2.3 Substructure Conditions

The North Abutment was generally in satisfactory condition below water with moderate defects observed. The concrete and masonry of the abutment was sound, above and below the waterline. The footing was exposed and undermined along most of the length of the abutment, with horizontal penetrations up to 4 feet, at which point the vertical face of the original abutment was encountered. The 2 foot diameter concrete encased steel H-piles were exposed under the footing, with a maximum vertical exposure of 4 feet near the center of the abutment. Four piles were misaligned/offset toward the channel such that 2 to 3 inches of the top of the concrete encasement was not under the footing. Voids were typically located in the top 6 inches of the pile encasement at the interface of the underside of the footing with typical penetrations of 1 to 2 inches. Voids resulted in the exposure of the reinforcing steel and steel H-piles exhibiting minor surface corrosion. Sections of steel sheet piles from the temporary cofferdam, used during the bridge reconstruction, were located in line with the abutment footing at several locations. Sheeting extended from the top of footing to the channel bottom. The bottom of the footing was observed to be very irregular with random areas of concrete construction over-pour which
extended from the bottom of the footing to the channel bottom. The excess concrete appeared to be the result of poor forming during construction. Refer to Figure 3 in Appendix A for the detailed inspection notes for the North Abutment and Photographs 2 and 3 in Appendix B for views of the North Abutment.

The South Abutment was generally in satisfactory condition below water with moderate defects observed. The concrete and masonry of the abutment was sound, above and below the waterline. The footing was exposed and undermined along most of the length of the abutment, with penetrations of approximately 3 to 4 feet, at which point the vertical face of the original abutment was encountered. The 2 foot diameter concrete encased steel H-piles were exposed under the footing, with a maximum vertical exposure of 4 feet near the center of the abutment. The bottom of the footing was observed to be very irregular with random areas of concrete construction over-pour which extended from the bottom of the footing to the channel bottom. The excess concrete appeared to be the result of poor forming during construction. Sections of steel sheet piles from the temporary cofferdam, used during the bridge reconstruction, were located in line with the abutment footing at several locations. Sheeting extended from the top of footing to the channel bottom. Steel protection piles measuring 2 feet in diameter, were in good condition above and below water exhibiting minor surface corrosion. An area of section loss was located 1.5 feet above the top of the concrete footing near the east corner of the abutment. The area measured 1 foot in diameter with up to 1.5 inches of penetration. Refer to Figure 4 in Appendix A for the detailed inspection notes for the South Abutment and Photograph 4 in Appendix B for a view of the South Abutment.

3.0 EVALUATION AND RECOMMENDATIONS

Overall, the submerged substructure units of Structure No. 016-6195 were in satisfactory condition below water. A comparison of the soundings recorded during the previous inspection in December 2012 and the soundings taken during this inspection revealed no significant change in the channel bottom profile in the vicinity of the structure. The footing exposure at the North and South Abutments are not concerns at this time given that the footings were designed to be exposed and they are pile supported. The channel bottom configuration
should continue to be monitored during future underwater inspections to verify that localized scour or overall channel degradation is not occurring and that all footings remain adequately embedded in the channel bottom.

The amount of pile exposure and undermining of the footing, at the North and South Abutments, was not found to be excessive, given the overall length of the H-piles. The design plans indicate that the H-piles were encased in concrete for a length of 10.5 feet, suggesting that pile exposure was anticipated and indicating that a minimum of 6.5 feet of the encasement is still embedded in the channel bottom at each of the abutments. The noted misalignment and gaps between the top of the concrete encasements and the underside of the footing at the North Abutment is not structurally significant at this time. With regard to the misalignment, all of the load bearing H-piles themselves are entirely below the footing, so there is no reduction in foundation support. However, the exposure of the reinforcing steel and steel H-piles could result in accelerated corrosion of those elements. It is therefore recommended that the gaps between the tops of the encasements and the underside of the footing be filled by hand packing with an epoxy polymer concrete, comprised of a mix designed for underwater applications. This will insure adequate corrosion protection to the exposed steel, in accordance with the original design plans.
In accordance with the National Bridge Inspection Standards, it is recommended the subsequent underwater inspection of Structure No. 016-6195 be performed within 60 months.

Respectfully submitted,
COLLINS ENGINEERS, INC.

Jason Schneider, S.E., P.E.
Illinois Licensed Structural Engineer

Inspection Team Leader
Brian P. Dilworth, P.E.

Originated by:
Michael Spencer, P.E.
APPENDIX A

FIGURES
At the time of the inspection on November 21, 2017 the waterline was located approximately 16.3 feet below the top of the sidewalk at mid-span of the West Fascia. This corresponds to a waterline elevation of +0.7 feet C.C.D.

Soundings across the channel were taken at the quarter points of the span and are measured in feet.

This figure was developed from drawings provided by the City of Chicago and field notes.

For Inspection Notes refer to Figures 3 & 4.
**NORTH ABUTMENT INSPECTION NOTES**

1. The channel bottom material in the vicinity of the abutment consisted of gravel with scattered riprap and concrete rubble with 1 inch of probe rod penetration.

2. The concrete and masonry of the abutment was in satisfactory condition above and below the waterline.

3. The footing was exposed and undermined along most of the length of the abutment, with horizontal penetrations up to 4 feet, at which point the vertical face of the original abutment was encountered. The 2 foot diameter concrete encased steel H-piles were exposed under the footing, with a maximum vertical exposure of 4 feet near the center of the abutment.

4. Four piles were misaligned/offset toward the channel such that 2 to 3 inches of the top of the concrete encasement was not under the footing.

5. Voids were typically located in the top 6 inches of the pile encasement of the interface of the underside of the footing with typical penetrations of 1 to 2 inches. Voids resulted in the exposure of the reinforcing steel and steel H-piles exhibiting minor surface corrosion.

6. Sections of steel sheet piles from the temporary cofferdam, used during the bridge reconstruction, were located in line with the abutment footing at several locations. Sheeting extending from the top of footing to the channel bottom.

7. The bottom of the footing was observed to be very irregular with random areas of concrete construction over-pour which extended from the bottom of the footing to the channel bottom. The excess concrete appeared to be the result of poor forming during construction.

8. Three submarine cables extended from the northwest embankment. One cable was cut off at the west nose of the abutment, one cable was cut off at the steel sheet piling perpendicular to the face of the abutment and one cable extended into the channel bottom 10 feet east of the sheet piling.

9. Steel protection piles measuring 2 feet in diameter, were in good condition above and below water exhibiting minor surface corrosion.

For General Notes and Legend see Figure 2.
INSPECTION NOTES:

1. The footing was exposed and undermined along most of the length of the abutment, with penetrations of approximately 3 to 4 feet, at which point the vertical face of the original abutment was encountered. H-piles were exposed under the footing, with a maximum vertical exposure of 4 feet near the center of the abutment.

2. Sections of sheet pile walls from the temporary cofferdam, used during the bridge reconstruction, were located in line with the abutment footing at several locations. The excess concrete appeared to be the result of poor forming during construction.

3. An area of section loss was located 1.5 feet above the top of the concrete footing near the east corner of the abutment. The area measured 1 foot in diameter with up to 1.5 inches of penetration.

4. The footing was observed to be very irregular with random areas of concrete construction over-pour which extended from the bottom of the footing to the channel bottom. The excess concrete appeared to be the result of poor forming during construction.

5. An abandoned 2 foot diameter concrete pile, located 2 feet north of the west quarter-point of the abutment footing, extended from the channel bottom up 2 feet.

6. Steel protection piles measuring 2 feet in diameter, were in good condition above and below water exhibiting minor surface corrosion.

7. The bottom of the footing was observed to be very irregular with random areas of concrete construction over-pour which extended from the bottom of the footing to the channel bottom. The excess concrete appeared to be the result of poor forming during construction.

8. Sections of steel sheet piles from the temporary cofferdam, used during the bridge reconstruction, were located in line with the abutment footing at several locations. The excess concrete appeared to be the result of poor forming during construction.

For General Notes and Legend see Figure 2.
APPENDIX B
PHOTOGRAPHS
Photographs 1: Overall View of Structure No. 016-6195, Looking West.

Photographs 2: View of the North River Pier, Looking Northwest.
Photographs 3: View of the Typical Masonry Condition at the Waterline of the North River Pier, Looking North.

Photographs 4: View of the South River Pier, Looking Southwest.
APPENDIX C
RATING FORM
EXPOSURE OF ENCASED PILES AND UNDERMINING OF THE FOOTING AT EACH ABUTMENT WITH UP TO 4 FEET OF PENETRATION AND 4 FEET OF VERTICAL EXPOSURE. FOUR CONCRETE PILE ENCASEMENTS ARE MISALIGNED AT THE NORTH ABUTMENT WITH 2 INCHES OF THE ENCASEMENT NOT UNDER THE FOOTING. ABANDONED STEEL SHEET PILES FROM TEMP COFFERDAMS WERE ENCOUNTERED AT THE EAST END, WEST.

THE FOOTING WAS EXPOSED AND UNDERMINED FOR THE FULL LENGTH OF BOTH ABUTMENTS WITH UP TO 4 FEET OF VERTICAL AND HORIZONTAL UNDERMINING BENEATH THE FOOTINGS WHICH EXPOSED SEVERAL PILES.

FOUR PILES WERE MISALIGNED AT THE NORTH ABUTMENT WITH UP TO 2 INCHES OF THE CONCRETE ENCASEMENT NOT BELOW THE FOOTING.

THE TOP 6 INCHES OF THE CONCRETE PILE ENCASEMENTS EXHIBITED SECTION LOSS, EXPOSING THE UNDERLYING STEEL H-PILES.
Sewer Televising Summary
MEMORANDUM

TO: DUANE MAHONE
FROM: KARL DAVIS
SUBJECT: CHICAGO PARK DISTRICT STORM SEWER TELEVISING
DATE: OCTOBER 17, 2018
CC: AMA ADDAI

On the night of Tuesday October 9, National Power Rodding televised the accessible portions of (approximately 1000 ft.) of CPD storm sewer potentially impacted by the proposed Lake Shore Drive widening. The sewers televised are shown in the attached sketch.

**Recommendations**

1. The vitreous clay sewers south of MH 6 are in good condition and can be left in place.
2. The manhole and catch basin structures should be equipped with new frames and lids at a minimum and the top two ft. of the conical sections of the brick structures should be reconstructed.
3. Given the limited areas contributing surface runoff into the catch basins, and the amount of dirt washed into the structures at those locations, consideration should be given to replacing the open grates with closed MH lids.
4. The 24” brick sewer north of MH 6 should be lined from MH 6 to the outfall.
5. MH 1 and MH 2 are 22.5 ft. and 18.5 ft., respectively, west of the existing curb and therefore outside the area of lane widening. The replacement of the frames and lids on these two structures is not necessary, but may be desired.

**MH2 – MH3 -179 ft.**

1. 15” VCP in good condition w/ 5’ of 24” brick w/collar south of MH 3.
2. MH 2 cone and frame in fair condition, structure is good.
3. MH 3 cone and frame in fair condition, structure is good.
4. Sewer was jetted for access.

**MH 3 – MH 4 - 89 ft.**

1. 15” VCP in good condition.
2. MH 4 cone and frame in fair condition, structure is good.
3. Debris at structures due to open lids.

**MH 4 – MH 5**

1. A bulkhead was found at MH 4 on the north sewer.
2. A 12”-15” sewer enters the west side of MH 4.
3. The visible VCP pipe is in good condition.
MH 4 - MH 5 (cont.)

4. An 18” VCP sewer leads south out of MH 5, with a 45° bend located 5’ south of MH 5. (See attached sketch.)
5. The 18” pipe then leads southwest for a distance of 55 ft. At that point there is a 90° bend in the pipe and it turns south.
6. A 12” VCP pipe connects to MH 5 from the east. A bulkhead was not visible in the pipe.
7. MH 5 cone and frame in fair condition, structure is good.

MH 5 - MH 5B - 175 ft.

1. A new MH was found 175 ft. north of MH 5, noted as MH 5B.
2. 15” VCP in good condition.
3. A 12” VCP pipe connects to MH 5B from the east. A bulkhead was not visible in the pipe.
4. Structure/frame of MH 5B buried under 4” of topsoil.
5. Cone of MH 5B in fair condition, frame in poor condition, structure in good condition.

MH 5B - MH 6

1. 12” VCP extends north 7 ft from MH 5B to a 45° bend west. The bend was not traversable, but a second 45° bend was visible that shifted the 12” sewer alignment back north.
2. Visible pipe was in good condition.
3. A bulkhead was found at MH 6 on the south sewer.

MH 6 - MH 7 - 177 ft.

1. 24” brick sewer - 177 ft.
2. Sewer in fair condition.
3. Water was at 50% level at MH 6.
4. Water was at 80% level at MH 7, too deep to continue.
5. Cone and frame of MH 6 in fair condition, structure in fair condition.
6. Cone of MH 7 in fair condition, frame in fair condition, structure in fair condition.
| SHEET NO. | ROUTE | CONTRACT NO. | SCALE | USER NAME | PLOT SCALE | PLOT DATE | DESIGNED | CHECKED | DRAWN | REVISED | REVISED | REVISED | REVISED | F.A. OF SHEETS STA. TO STA. |
|-----------|-------|--------------|-------|-----------|------------|-----------|-----------|----------|--------|--------|---------|---------|---------|---------|-----------------------------|
|           |       | B-7-203      |       |           |            |           |           |          |        |        |         |         |         |                   |

**SCALE:** 1" = 50'

**FILE NAME:** Utility Base Map 50 Scale Existing Gray Scale

**MODEL NAME:**

1. TELEVISION EQUIPMENT COULD NOT PASS MOST BEND CONNECTIONS.

**NOTE:**

- TELEVISION EQUIPMENT COULD NOT PASS MOST BEND CONNECTIONS.

**EXISTING UTILITY PLAN W/ PROPOSED IMPROVEMENTS**

- TELEVISION EQUIPMENT COULD NOT PASS MOST BEND CONNECTIONS.
NOTE: TELEVISION EQUIPMENT COULD NOT PASS MOST BEND CONNECTIONS.
59th Street Drainage Investigation
EXISTING CONDITIONS

INLET APPROX 2.5
DEEP, NO SUMP

BACKFLOW PREVENTER APPEARS TO BE FUNCTIONING

LINE SEALED OFF

6" UNDER DRAIN?

FLOW OBSERVED

EST. 3 GPM

FLOW OBSERVED

6" UNDER DRAIN?

PROPOSED CUTOFF WALL
SEE S. STRUCTURAL DRAWINGS
FOR DETAILS

6" DIP

INLET APPROX 2.5
DEEP, NO SUMP

CONNECT TO EXISTING S.S.
VERIFY LOCATION AND INVERTS
PRIOR TO CONSTRUCTION

MANNHOF, TYPE B
STA. 10+825.634
4,648 RT
RIV 18L26E
INV ON 177.712
INV (SM) 177.792

MANNHOF, TYPE A
STA. 10+898.064
6,399 RT
RIV 180.561
INV (SM) 177.318
INV (SE) 177.117

VERIFIED LOCATIONS AND
INVERTS OF EXISTING
WATER & S.S. PRIOR TO CONSTRUCTION

ED IMPROVEMENTS

AGO

OF

WAYS

CONCESSIONS ENGINEERING ING., INC.

SOUTH LAKE SHORE DRIVE
JACKSON PARK SECTION
MAINLINE RECONSTRUCTION

DRAINAGE AND UTILITY PLAN
LAKE SHORE DRIVE