Master Drainage Study (SL) Comprehensive Study of Airport Drainage Patterns and Improvements

PE Project No. 20220845.00 | Illinois Project No. PWK-5060

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Submitted to:

CHICAGO EXECUTIVE AIRPORT

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EXECUTIVE SUMMARY

This report contains an update of Chicago Executive Airport's Master Drainage Plan to assess the Airport's existing stormwater management system under the current infrastructure conditions, as well as to provide an updated stormwater management plan to meet future developmental needs of the Airport as laid out in their Airport Layout Plan (ALP) and other projects identified by the Airport management.

As a public airport jointly owned by the Village of Wheeling and the City of Prospect Heights, the airport influences the surrounding community. Chicago Executive Airport's plan to develop new facilities would have a positive impact on the local economy. However, new developments would require updated stormwater management with current regulations to mitigate the increase to impervious areas that generate additional runoff, such as new development for new paved areas, hangars, taxiways, aprons, stormwater management facilities, and other accessory buildings. In addition to stormwater regulations governed by the local municipalities, other agencies such as the Metropolitan Water Reclamation District (MWRD), the United States Army Corps of Engineers (USACE), and the Illinois Department of Natural Resources (IDNR) – Office of Water Resources (OWR) could all have jurisdiction and require permits for new projects.

Chicago Executive Airport resides within the Des Plaines River watershed. During high volume rain events, Chicago Executive Airport can experience flooding backing up from the Des Plaines River, which may impact airfield runways, taxiways, and other accessory buildings within the airport.

The Airport's latest Master Drainage Plan was updated in 2010 with the original plan developed in 1995 for the relocation of the Wheeling Drainage Ditch, and subsequent update in 2003 for the Letter of Map Revision (LOMR) for the implemented improvements. The latest update was coordinated with MWRD to create a legacy permit system to account for stormwater development at the Airport to today's infrastructure. However, in recent years, MWRD has updated their stormwater management regulations and notified the airport to update their stormwater analysis to the current regulations. This Master Drainage Plan looks to analyze the Airport's existing infrastructure with the latest MWRD regulations, and to identify future stormwater options based on the current approved ALP and other identified developmental areas. In addition, improvements must comply with current stormwater requirements, local developmental regulations, and the latest FAA safety standards. The Airport has onboarded a drainage consulting team, consisting of Primera Engineers, Manard Consulting, and CERA Solutions, to create an updated Master Drainage Plan.

An initial assessment of the existing drainage conditions at the airport was conducted by reviewing available as-builts, GIS contour information, and supplemental site surveys. Using the latest stormwater regulations set by MWRD, a drainage model was created and analyzed using various rain events. The airport's current drainage infrastructure includes a system of underground storm sewers and above ground stormwater storage areas located within infields adjacent to aircraft pavements. The stormwater drainage then exits the airport at two controlled outlets. The current storm sewer system was determined to function within expected engineering parameters and no critical remedial measures were necessary at this time. In

addition, stormwater storage meets current requirements set by MWRD which include detention, compensatory storage, and volume control.

For future proposed conditions, a new conceptual topography map was developed based off the approved ALP and other preliminary development areas identified by the Airport. After creating a new topography layout, preliminary contour grading and storm sewer systems were developed and analyzed using the current stormwater management regulations modeled to various storm events. With the proposed future development, it was identified the Airport could continue to meet stormwater requirements through continued development of excavated storage areas within the airfield along with additional storm sewer pipes. This alternative would maintain a higher area of developmental land while meeting stormwater requirements at efficient costs. As an alternative option, the Airport could utilize underground storage areas at a higher cost should the Airport require additional stormwater storage or if the proposed infields outlined in this study are not feasible in the future.

This Master Drainage Plan is anticipated to be used as a guide to identify potential stormwater management solutions when preparing stormwater improvements for each individual development. It is the responsibility of the design engineer or developer to design and meet stormwater regulations, as well as to obtain required permits for each project.

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1 Introduction

1.1 Project Location and Description

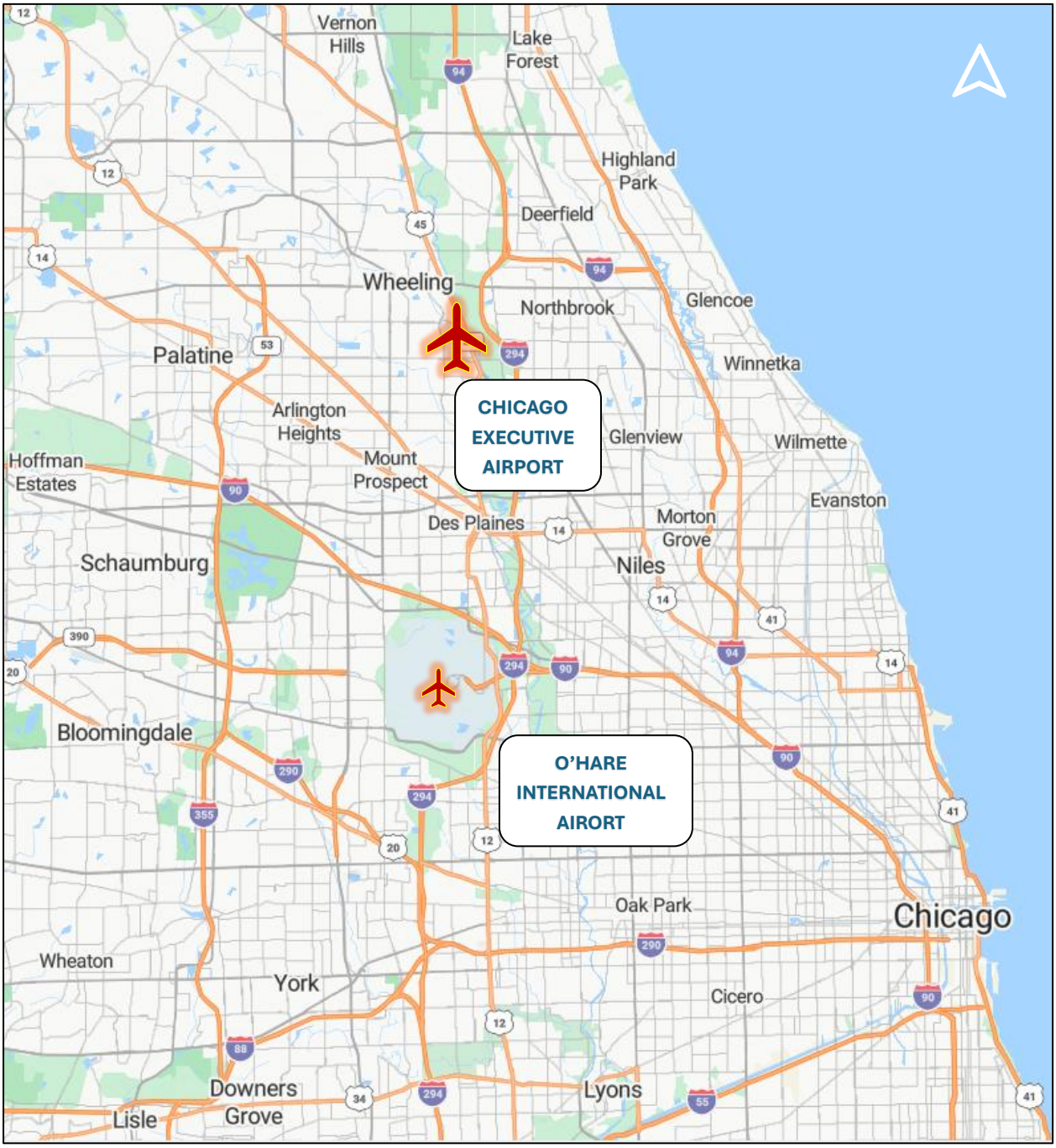
Chicago Executive Airport (FAA LID: PWK), formerly known as Palwaukee Municipal Airport, is a public use facility located 18 miles northwest of downtown Chicago, Illinois. It is owned by and co-located within the boundaries of the Village of Wheeling and City of Prospect Heights in Cook County, Illinois. The airport is bounded by Milwaukee Avenue (IL Route 21 / US Route 45) to the east, Palatine Road/Willow Road to the south, Hintz Road to the north, and Wolf Road to the west.

PWK is located seven (7) miles north of Chicago's O'Hare International Airport (ORD) and is home base to approximately 325 aircraft, including 63 corporate jets. PWK is in the top five busiest airports in Illinois averaging about 100,000 annual operations. The airport is situated on 417 acres of land and currently has three (3) active runways:

- Runway 16/34: 5001' x 150'
- Runway 12/30: 4415' x 75'
- Runway 6/24: 3677' x 50'

A layout of the airport and surrounding facilities is shown on ***Exhibit 1-1, Project Location Map***. The FAA's latest Airport Diagram for PWK is shown as ***Exhibit 1-2, FAA Airport Diagram***.

EXHIBIT 1-1
PROJECT LOCATION MAP



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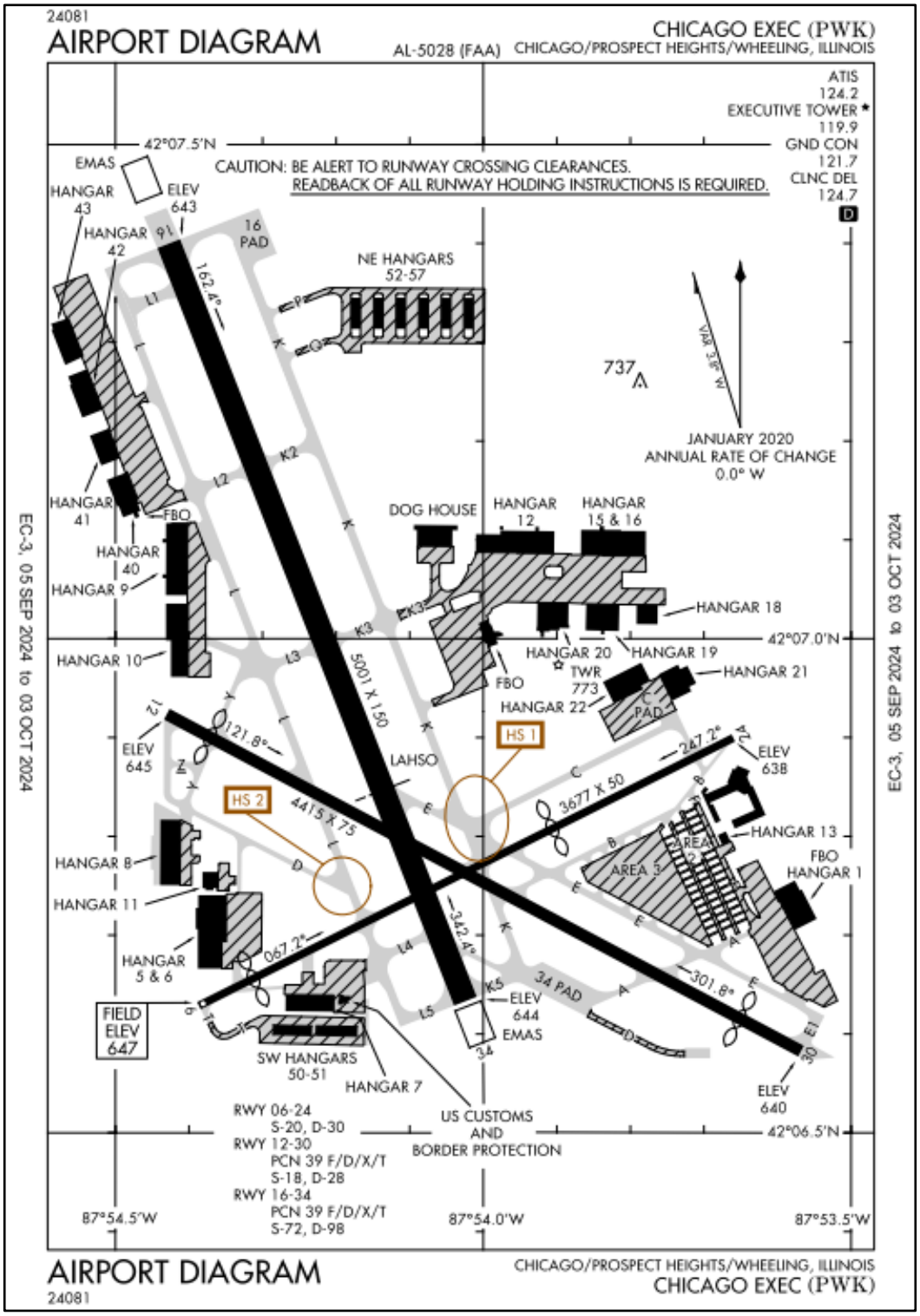


1.2 Study Purpose

The purpose of this report is to provide an updated Master Drainage Study for the Airport's current and future infrastructure needs. The study addresses the existing stormwater system performance and compliance with the latest design standards in accordance with the Federal Aviation Authority (FAA), local municipal codes, and the governing stormwater agency, Metropolitan Water District of Greater Chicago (MWRD). This study also aims to identify and provide a stormwater management plan of future facilities as laid out in the latest Airport Layout Plan (ALP), published in 2022, and other areas of development as identified in coordination with the Airport. The proposed airport layout from the ALP is shown in ***Appendix A*, Future Airport Layout Plan (2022).**

1.3 Study Authority

The Master Drainage Study (State/Local) is being funded by the Illinois Department of Transportation's Airport Improvement Program and by Chicago Executive Airport, as project PWK-5060. The project kick-off meeting was held on April 18, 2023, with airport staff and IDOT/Bureau of Aeronautics personnel to coincide with the official Notice to Proceed. The completed Master Drainage Study may be used as an official document for capital improvement needs at the Airport as it relates to stormwater management.

1.4 Chronology of Previous Airport Drainage Studies and Key Permits

The airport was jointly purchased by the Village of Wheeling and City of Prospect Heights on December 26, 1986, from Priester Aviation and transitioned from a private to a public use airport. At the time of purchase, the Wheeling Drainage Ditch (a tributary of the Des Plaines River) ran through the middle of the airport which flooded of its own accord and allowed tail water from the adjacent Des Plaines River to back up and flood large portions of the airport.

A previous Master Drainage Plan (1995) facilitated the relocation of the Wheeling Drainage Ditch through the northeast quadrant of the airport. That relocation coupled with the relocation of the Wolf, Hintz and Milwaukee Avenue Bridges significantly reduced the impact of flooding on the airport and upstream properties. At the time, the previous Master Drainage Study also addressed a plan for stormwater management as it related to future development. The plan included a combination of storm sewer and open detention areas within the airport infields to minimize flooding during a major storm event, while also controlling flooding from the adjacent Des Plaines River. Any flooding that did occur was designed to be confined to areas (runway/taxiway infields) that would create safe operation on aircraft pavements during major storm events.

In March 1996, PWK was issued a Conditional Letter of Map Revision (CLOMR) from FEMA to move forward with the relocation of the Wheeling Drainage Ditch. The proposed improvements were undertaken over several years.

In 2003 the airport submitted a Master Drainage Study Update and a request for a Letter of Map Revision (LOMR). As part of the subsequent project work, grading and drainage improvements were undertaken to support the previous ALP that depicted stormwater

detention and compensatory storage infrastructure that facilitated proposed airport development projects.

In 2004, the airport received a conditional permit from the Metropolitan Water Reclamation District of Greater Chicago, MWRD (permit no. 03-246) which outlined a plan for the Airport to meet its detention, storm sewer infrastructure, and floodplain management requirements for future projects. The MWRD permit 03-246 has served as a legacy baseline permit, allowing the Airport to keep track of each construction development through an active tabulation that tracked the usage of stormwater storage requirements up to an agreed stormwater storage volume.

In May 2014, MWRD provided an updated Watershed Management Ordinance (WMO), which revised requirements for stormwater management and permitting. Since 2014, the WMO has been actively updated with the latest amendment in January 2025.

A historical timeline of drainage studies and submissions are summarized in **Table 1-1**.

TABLE 1-1 – HISTORICAL AIRPORT DRAINAGE STUDIES	
DATE	DESCRIPTION
1995	Hydrological and Analysis for the Relocation of the Wheeling Ditch
1996	Conditional Letter of Map Revision (CLOMR) from FEMA for the Relocation of Wheeling Ditch
2003	Airport Master Drainage Study Update
2004	Issuance of MWRD Permit 03-246
2010-2024	Individual Project Stormwater Management submittals to MWRD legacy in Permit 03-246

A copy of MWRD Permit 03-246 and a spreadsheet of the Airport's current stormwater accounting is included in **Appendix B – Previous Airport Stormwater Management System.**

With the update to the MWRD WMO, the Airport's method of stormwater management under the MWRD Legacy Permit is out of date and needs to comply with the latest MWRD WMO standards. In the past couple of years, MWRD has reviewed individual projects at the Airport and has commented to start phasing out the old legacy permit to meet updated standards.

1.5 Project Scope

The goal of the Master Drainage Study is to provide a plan for stormwater management at the Airport for future development. This study includes evaluating the current infrastructure and providing drainage options for anticipated future conditions that will be in compliance with current stormwater regulations.

To assess the existing and proposed conditions, they key tasks of this Master Drainage Study are to:

- Review and provide a drainage database of the airport's existing conditions through record as-builts, provided GIS / CAD files, and supplemental surveys.
- Provide a GIS inventory of existing storm sewer pipe networks and structures.
- Determine the effectiveness of the existing airport drainage facilities in conformity with FAA, State, regional, and local regulations.
- Identify deficiencies in the existing system and recommend prioritized remedial action(s), if necessary.
- Identify a preliminary airport layout to accommodate future development in alignment with the proposed Airport Layout Plan (ALP) and other potential developments as coordinated with the Airport.
- Create and model future stormwater systems including pipe networks and stormwater storage that comply with the current MWRD regulations.
- Recommend phased construction options to implement the required stormwater management needs for the ALP and other development.
- Provide a preliminary cost estimate for proposed improvements.

2 Existing Conditions

2.1 Introduction

To understand the existing drainage system at the Airport, the Master Drainage Team reviewed available resources to determine the current existing drainage conditions at the Airport (as of December 2024). In general, the following tasks were performed:

- Gathered and reviewed record drawings for historical airport improvement projects within and adjacent to the Airport.
- Obtained and updated site topographic contours (1-foot intervals) from Cook County GIS.
- Conducted additional field surveys to verify key record drawing infrastructure, key drainage structure sizes and elevations, and to obtain missing/updated site information and elevations.
- Obtained and reviewed historical airport drainage and project development permits.
- Obtained and reviewed existing drainage related studies and analyses.
- Obtained, reviewed, and updated existing airport drainage facility GIS or CAD base maps.

This data collection information was compiled into a usable Computer-Aided Design (CAD) file used to model and study the existing drainage system. The information includes the latest topographic survey using 1-foot elevation contours and the existing storm drainage system. A copy of the latest CAD files have been provided to the Airport for their use to aid as a resource when the future development projects are in the design phase. A compilation of existing conditions related information is presented in ***Appendix C, Existing Conditions Modeling*.**

2.2 Topographic and Contour Mapping

To develop and update the topographic map for the airport property and its surroundings, the project team obtained the latest available CAD topography from the Airport, which represented the existing airport layout as shown in the 2022 ALP. To update the CAD model up to the current year (2024), the team used record as-builts from recent developments to update the model topographic geometry. The latest existing conditions layout is shown in **Exhibit 2-1, Existing Development Map.**

In addition to topographic mapping, elevation contour mapping was included. At the time of our data collection, GIS mapping (1-foot contour intervals) from 2017 was available at the time from Cook County. While the 2017 contour mapping was used for the Master Drainage Study for drainage calculations, an updated 2022 contour mapping was later released by Cook County. CAD files of both the 2017 and 2022 contour files is included in the electronic submittal to the Airport for reference. The contour mapping from Cook County uses the NAVD 88 vertical datum, and this was used for the Master Drainage Study. Historical as-builts at the Airport show that the NGVD 29 vertical datum

were used, and this vertical datum was converted to the NAVD 88 for this study. See **Exhibit 2-2, Existing Contour Mapping**.

For recent improvements and drainage systems that could be visually identified but were missing from record drawing or GIS/CAD resources, or for obvious gaps were noticed, the project team sent surveyors to conduct additional field investigations to acquire the missing data.

From the result of the resource and modeling efforts for the existing conditions, a current electronic topographic layout drawing and contour (1-foot) elevations was developed (using Horizontal Control: NAV83, Vertical Control: NAVD88). This model served as the foundational base mapping for the CEA Master Drainage Study Update. The detailed existing contour grading plans are found in ***Appendix C, Existing Conditions Modeling.***

EXHIBIT 2-1
EXISTING DEVELOPMENT MAP

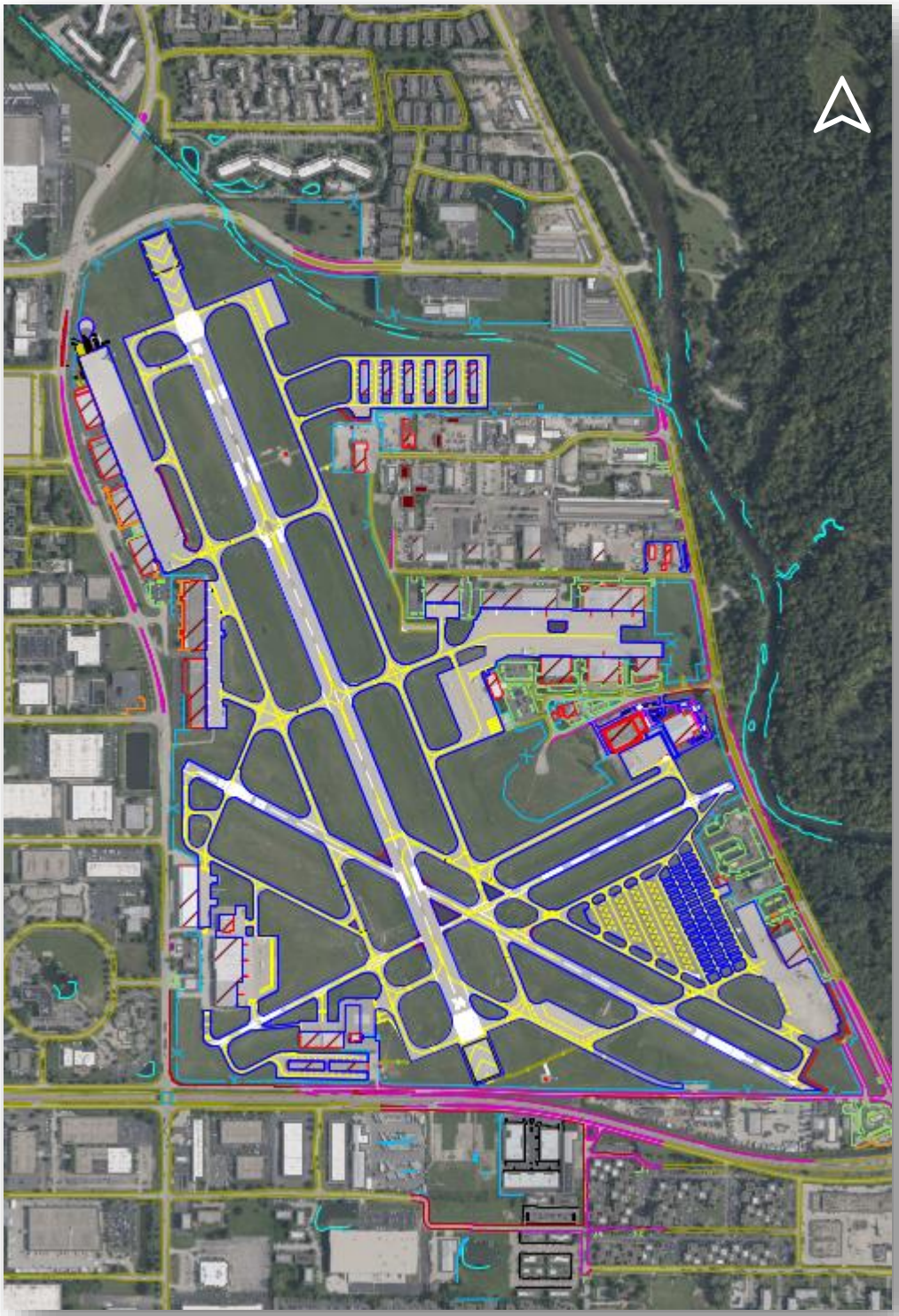
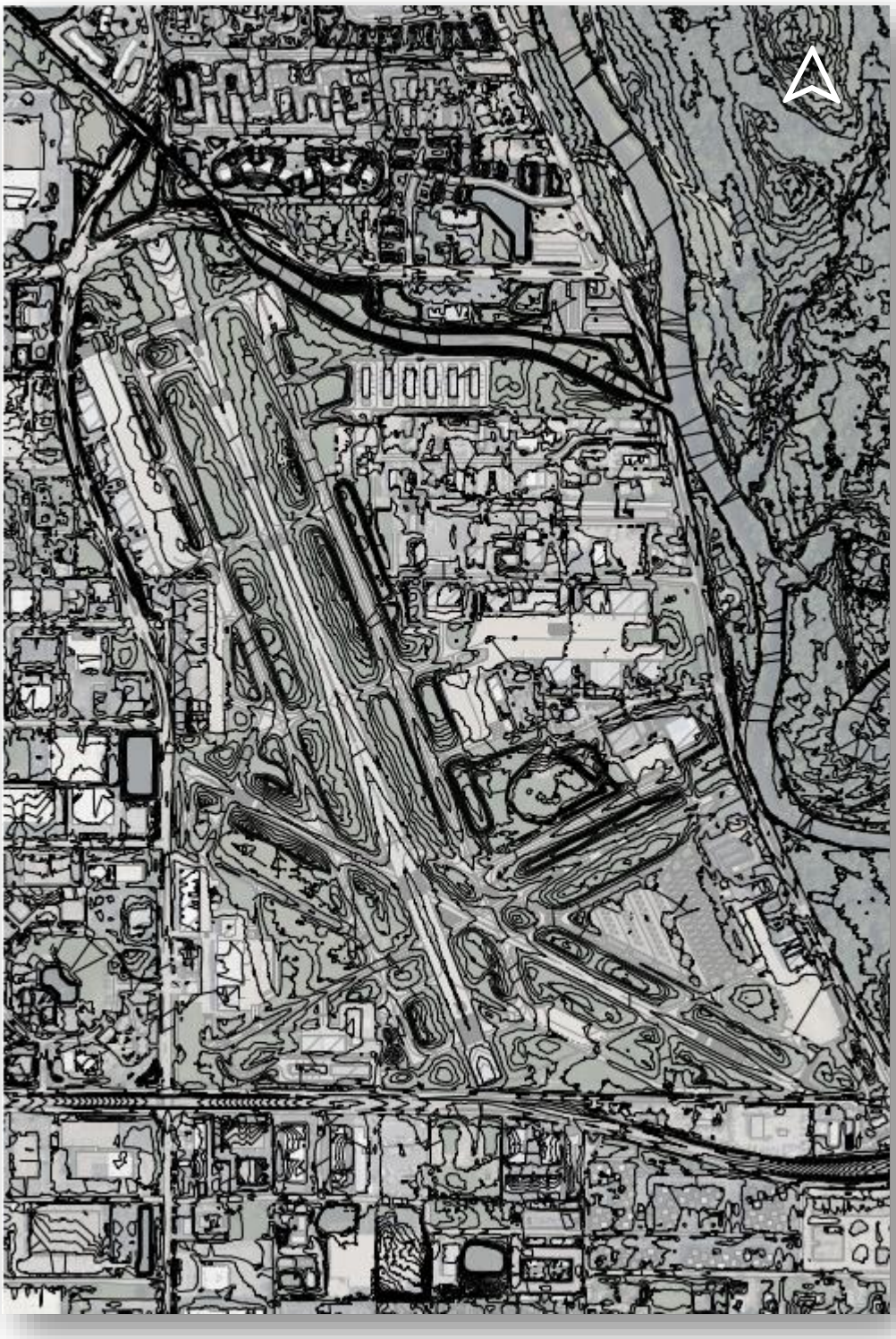


EXHIBIT 2-2
EXISTING CONTOUR MAPPING

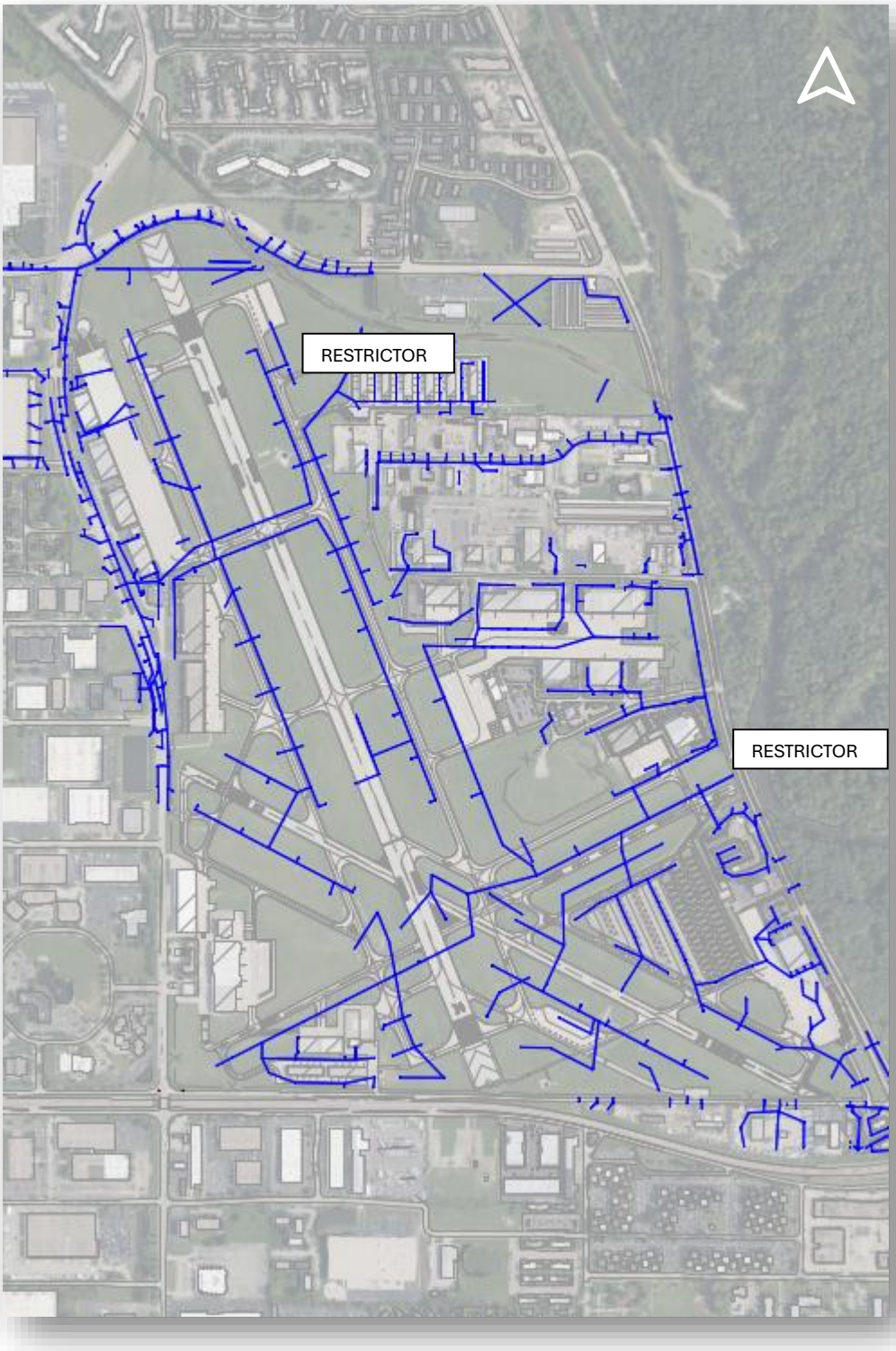


2.3 Existing Drainage Infrastructure

An extensive collection of record information was used to identify the existing drainage infrastructure at the airport. The current stormwater management systems within the airfield include a network of storm sewer pipes, above-ground stormwater detention/compensatory storage areas within the airfield infields (grass areas between taxiway and runway pavements), and volume control facilities typically found below-ground such as infiltration trenches. The airport's drainage system is split into two overall basins, one discharging to the north into the relocated Wheeling Drainage Ditch, and the other discharging to the east into the Des Plaines River under Milwaukee Avenue near the vicinity of where the old Wheeling Drainage Ditch discharged into the Des Plaines River, before it was relocated. These drainage basins have been maintained as the airport has been developed and are in place as part of the MWRD Legacy Permit 03-246.

The existing storm sewer system generally consists of a network of reinforced concrete pipes (RCP) connected to various drainage structures throughout the airfield and its airport facilities. The storm sewer system discharges much of the stormwater collected within the airfield to two separate outfalls located at the north and east quadrants of the airport. Two drainage structures outletting the storm sewer system off Airport property include galvanized restrictor plates on the upstream side to manage and control the flow rate of the stormwater exiting and backflowing the system to prevent overloading the drainage system. The updated layout of the airport's current storm sewer system is shown on ***Exhibit 2-3, Existing Storm Sewer System***.

EXHIBIT 2-3
EXISTING STORM SEWER SYSTEM



The detailed storm sewer network can be found in **Appendix C.**

2.4 Watershed

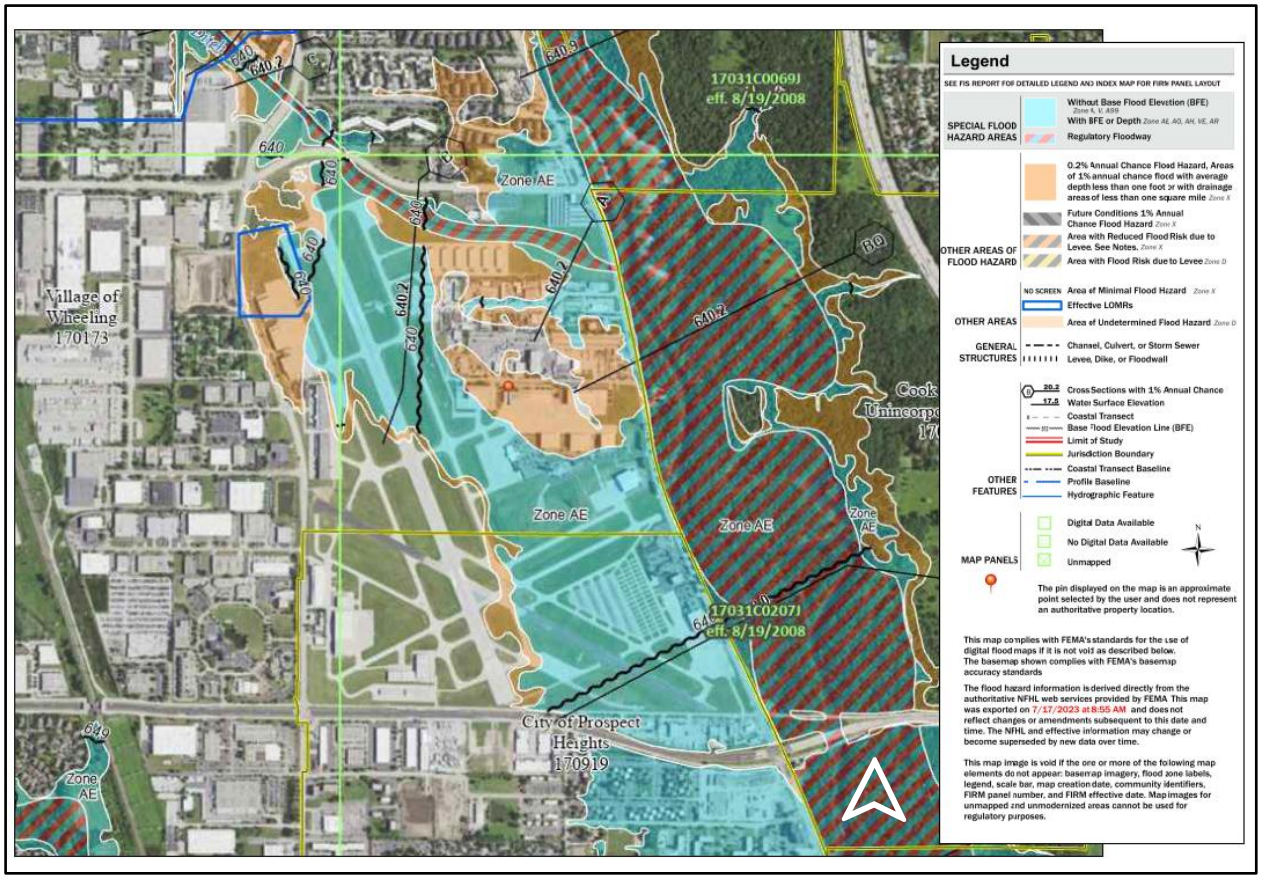
Chicago Executive Airport is located within the Des Plaines River Watershed, which covers 1455 square miles (931,489 acres) in northeastern Illinois and southeastern Wisconsin. More specifically, the airport is located just south of the confluence of the Wheeling Drainage Ditch and the west bank of the Des Plaines River in Cook County, Illinois. The airport has a total area of 417 acres, which represents 0.045% of the total watershed.

By virtue of the airport's location and relatively low elevation, the Chicago Executive Airport is adversely impacted by the floodwaters associated with both waterways.

2.5 Existing Floodplains / Floodways

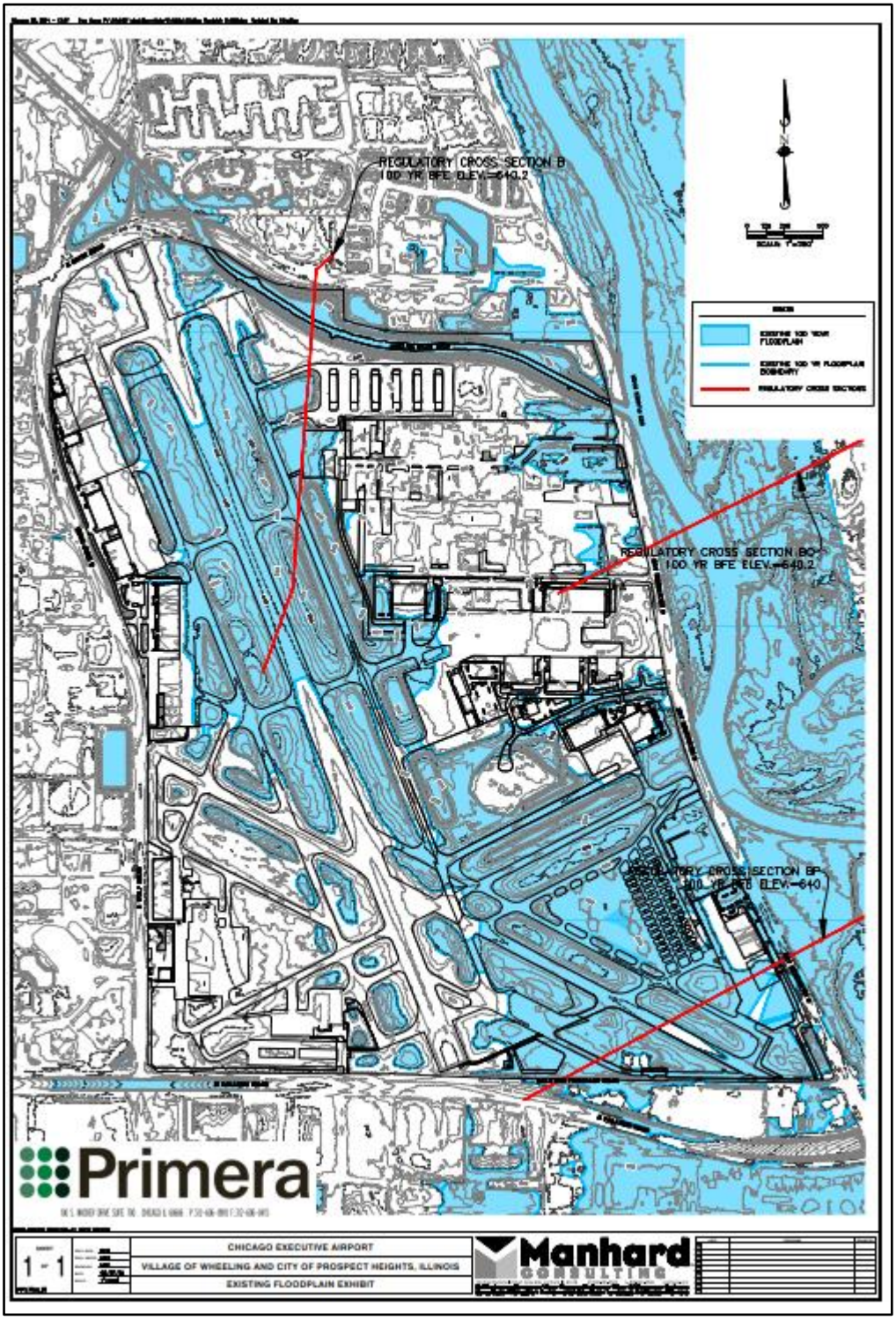
PWK Airport is located west of and adjacent to the Des Plaines River which flows southward for 133 miles through southern Wisconsin and northern Illinois. Approximately 60% of PWK is located within the 100-year floodplain of the Des Plaines River and associated Wheeling Drainage Ditch. A general mapping of the floodplain published by FEMA is shown on **Exhibit 2-4, Existing FEMA Floodplain Map.** To accurately depict the floodplain conditions at the Airport, a modified map is depicted on **Exhibit 2-5, Existing Modified Floodplain Map**. This exhibit modifies the regulatory floodplain map shown in Exhibit 2-4 by using the FEMA regulatory floodplain elevations overlaid onto the Airport's more detailed topography contours. In this respect, this map is more accurate than the FEMA regulatory map and should be considered the best available information. The 100-year floodplain elevation at the southeast corner of the airport is 640.0 MSL and increases to 640.2 MSL in the northern portions of the airport and along the Wheeling Drainage Ditch.

EXHIBIT 2-4
EXISTING FEMA FLOODPLAIN MAP



The full exhibit can be found in **Appendix C**

EXHIBIT 2-5
EXISTING MODIFIED FLOODPLAIN MAP



The scaled-detail exhibit can be found in **Appendix C.**

Some key elevations of airport facilities include the following:

East End Runway 6/24	637.9
Low Point on Runway 6/24 Centerline	637.1
Low Point on Runway 12/30 Centerline	640.04
Low Point on Runway 16/34 Centerline	640.86

Historical flood levels at PWK have reached elevation 639.0 which is just under the 50-year flood elevation of 639.4. The photos below depict flooding at the airport in 1996 before the Wheeling Drainage Ditch was relocated and Runways 16/34 and 12/30 were reconstructed to raise them out of the 100-year floodplain, and in April 2013 when the east end of Runway 6/24, its parallel taxiways, and adjoining facilities were covered with about 2' of floodwater.



1996 PWK Flooding (Looking Northwest)
Prior to Wheeling Drainage Ditch Relocation and Runway 16/34 Overlay



April 20, 2013, PWK Flooding (Looking West)
Note East End Runway 6/24

2.6 Existing Detention

To accommodate stormwater storage requirements in the original MWRD permit, the Airport planned for numerous areas within the airfield to be used for detention and floodplain compensatory storage. Much of the infields between the airfield pavements provide stormwater storage prior to discharge to the storm sewer system. In addition, the detention basins are also used for flood control storage as water backs up from the Des Plaines River. A layout of existing stormwater storage areas within the airfield shown on ***Exhibit 2-6, Existing Stormwater Storage Basins.***

Stormwater detention facilities at PWK primarily consist of dry-bottom detention ponds which are predominantly located in the Runway 12/30, 6/24 and south end of Runway 16/34 runway/taxiway infields**.** These areas are not otherwise developable due to their proximity to various runway and taxiway safety areas. Per MWRD Permit No. 03-246, these areas were designed and constructed to provide detention storage for proposed airport development improvements. FAA design criteria call for a maximum 48-hour detention period for the Detention ponds that should remain dry between rainfalls to help minimize standing water and its potential to attract wildlife to the airfield.

Some of the proposed new developments shown on the ALP will require filling in some of these existing detention areas. As such, replacement of detention areas will be required. Facilitating replacement detention and providing additional detention for new development and increased rainfall events is an additional focus area of the Drainage Master Plan analysis.

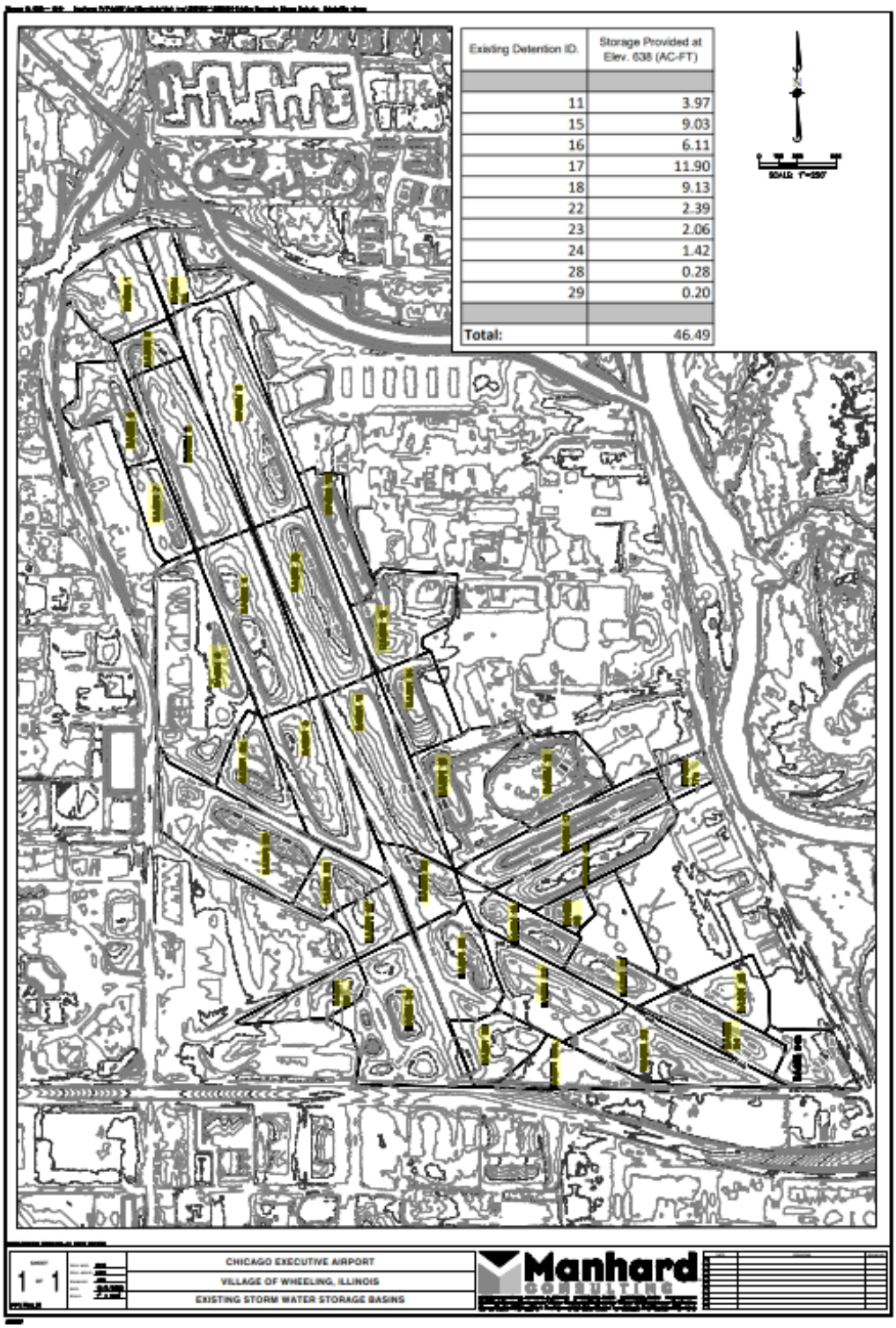
2.7 Existing Compensatory Storage

When floods occur on the adjacent Des Plaines River, water backs up into the airport and floods the various detention ponds, in some cases flooding persists for several days depending on the severity of the flood event.

The 1986 Airport Master Plan / Airport Layout Plan (ALP) called for various landside improvements (aprons, parking lots, hangars, offices, etc.) at PWK within the Des Plaines River and Wheeling Drainage Ditch floodplains. To accommodate that development, the airport was required to provide compensatory flood storage to meet regional and local regulatory requirements for flood control mitigation. The flood storage was primarily provided in the Runway 16/34 and Runway 12/30 runway/taxiway infields and a widened / relocated Wheeling Drainage Ditch. The storage areas were shared between stormwater storage and flood control for compensatory storage.

The breakdown of permitted detention and compensatory storage within the airport infields is found in ***Appendix B, Previous Airport Stormwater Management System, MWRD Permitted Storage (1995) Exhibit.***

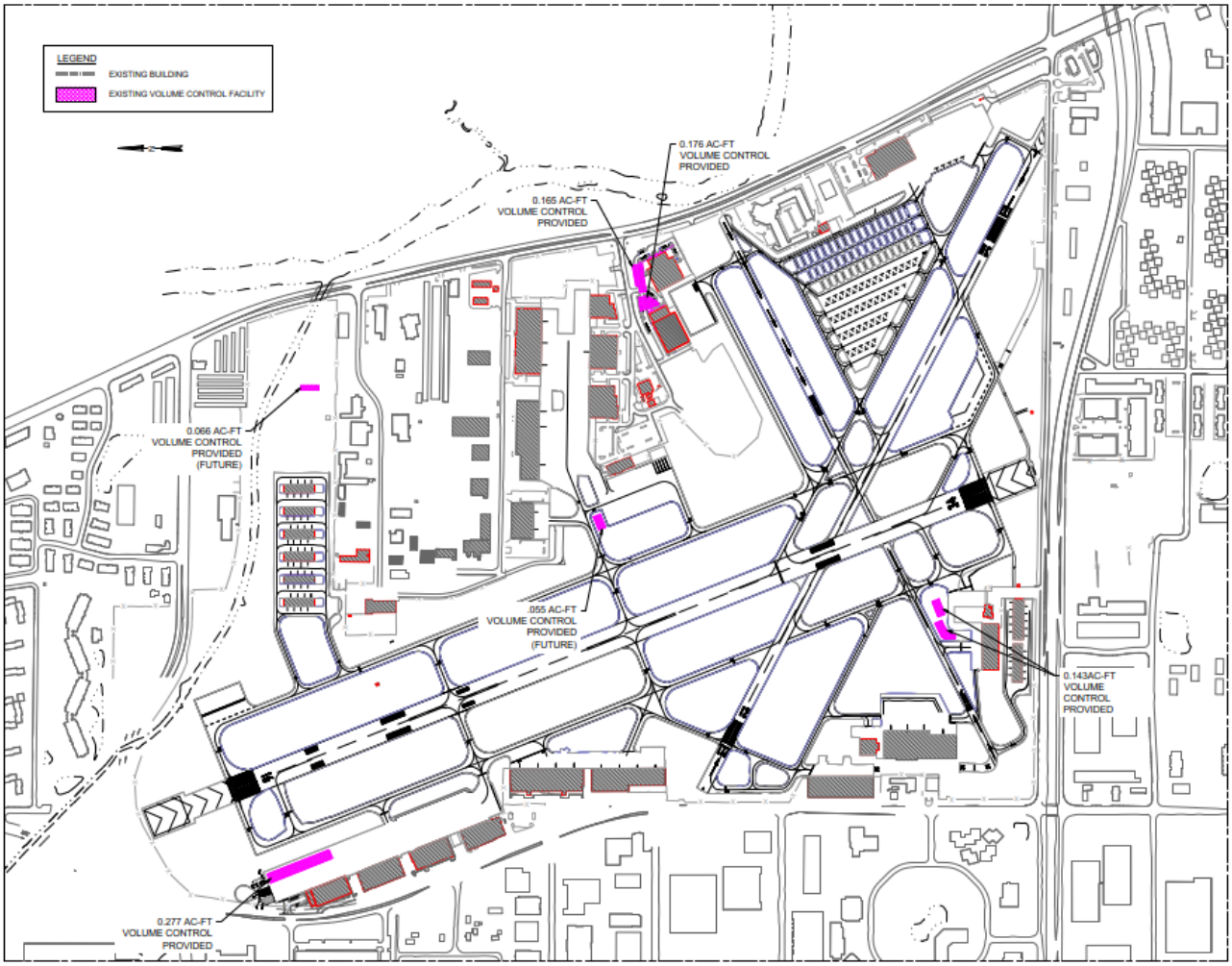
EXHIBIT 2-6
EXISTING STORMWATER STORAGE BASINS



2.8 Existing Volume Control

The final drainage infrastructure found within the airfield is existing volume control facilities, which have been installed in recent projects due to recent MWRD WMO regulations to improve storm water quality and reduce stormwater volume leaving the airport systems. Volume Control facilities at the airport generally include underground infiltration trenches found beneath turf or landside pavements near the airfield hangar pavements to mitigate wildlife attractants. A layout of known volume control facilities is included in ***Exhibit 2-7, Existing Volume Control Facilities.***

EXHIBIT 2-8
EXISTING VOLUME CONTROL FACILITIES



Full scale exhibit shown in Appendix C,
Existing Volume Control Facilities Exhibit

2.9 Current Airport Stormwater Management Plan

In June 2004, the Airport was granted an MWRD Permit (03-246) which allowed the Airport to develop and maintain an internal stormwater management system for accounting stormwater storage detention and floodway compensatory storage for each development constructed at the Airport to a required storage capacity. For each development through the subsequent years, the Airport provided an update to MWRD on their internal accounting of stormwater storage. This permit has served as a Legacy Permit between the Airport and MWRD.

Since MWRD has updated their requirements under the Watershed Management Ordinance (WMO) requirements, such as updates for methods to stormwater calculations need to follow the most current regulations. Based off recent projects from November 2024, MWRD has allowed the Airport to continue keeping a recordkeeping method of available stormwater storage by transitioning away from the older MWRD legacy permit calculations and incorporating the current MWRD WMO standards.

The original MWRD Permit (03-246) and the Airport's current summary of stormwater detention accounting system is included in ***Appendix B, Previous Airport Stormwater Management Plan***

3 Drainage Standards

Chicago Executive Airport must comply with various federal and local agencies regarding their stormwater drainage design. This provides the airport with updated operational safety but also helps meet the latest local agency requirements for stormwater and floodway management for the surrounding environment. The standards below list the critical design criteria the Airport shall comply with.

3.1 FAA Standards

FAA Airport Drainage Design guidance is contained in FAA Advisory Circular AC 150/5320-5D *Airport Drainage Design* dated 8/15/2013. Key drainage design guidance as it applies to PWK includes:

- A 5-year storm event should be utilized for airfield drainage design with no encroachment on runway or taxiway pavements, including paved shoulders.
- Ponding will be limited around apron inlets to 4-inches.
- For developed areas of the airport (landside), the design storm will normally be based on rainfall of the 10-year frequency.
- Storm drainage facilities to accommodate surface runoff from storms which exceed the design storm shall be designed such that the center 50% of runways, center 50% of taxiways, and helipad surfaces shall be free from ponding resulting from storms of a 10-year frequency and intensity determined by geographic location.
- Storm drains should be designed to maintain full-flow pipe velocities of 3 feet per second or greater. This criterion results in a minimum flow velocity of 2 ft/sec at a flow depth equal to 25 percent of the pipe diameter.
- The maximum highwater / Hydraulic Grade Line (HWL) should not interfere with the intended functioning of an inlet opening or reach an access hole (manhole top) cover.
- When detention facilities are utilized, an auxiliary outlet must be provided to allow overflow that may result from excessive inflow or clogging of the main outlet.
- Water is typically allowed to be stored for up to 48 hours following the storm event (5-year airfield and 10-year landside).
- Storm sewer capacities shall be determined using the rational formula. The intensity (I factor) used shall be a return frequency of not less than five (5) years for lateral mains, and ten (10) years for trunk mains. The runoff coefficient (C factor) shall be determined by the character of the land to be drained and shall conform to accepted standard engineering practices.

3.2 Metropolitan Water Reclamation District of Greater Chicago (MWRD)

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) is responsible for managing stormwater in Cook County, Illinois, which includes stormwater management (detention), flood control (compensatory storage), and water quality

protection (volume control). The components are regulated under MWRD's Watershed Management Ordinance (WMO) and with design guidance from the Technical Guidance Manual (TGM).

The latest MWRD WMO (as amended on January 2025) and TGM can be found on their website:

https://mwrd.org/doing-business/watershed-management-ordinance-and-infiltrationinflow/watershed-management-ordinance-wmo-and-technical-guidance-manual-tgm

With the latest updates to the MWRD WMO and TGM, the Airport's previous method of determining stormwater management under the MWRD Legacy Permit shall be updated to the most current standards. For the most recent projects up to date, MWRD has commented on the Airport to submit updated stormwater calculations per the latest MWRD requirements and to transition away from the previous legacy permit. However, MWRD has shown support in maintaining a stormwater storage accounting calculation as with the previous permit, but it shall meet the current MWRD standards.

For each new development project at the Airport, an MWRD permit will need to be submitted in compliance with the latest WMO and TGM. This report provides a roadmap to the known existing conditions in accordance with the WMO and will provide the Airport with base calculations and information as a new stormwater management plan is in effect for MWRD permitting. As new development at the airport is brought into the design phase, it is the responsibility of the developers/designers to calculate and meet MWRD regulations per their final conditions.

Detention

Updates to the detention requirements have been revised to conform with Illinois State Water Survey's Bulletin 75 precipitation. The WMO uses watershed specific release rates to determine allowable detention basin release rates for new development. Within the Des Plaines River watershed, the release rate is 0.2 cubic feet per second (cfs) per acre of tributary area. Further complicating detention volumes is the necessity to consider backwater effects by the Des Plaines River. The Base Flood Elevation (BFE) of the Des Plaines River and Wheeling Drainage Ditch, which are the two primary outlets for PWK, needs to be considered. These elevations vary between 640.0 and 640.2. Therefore, a reduction of available head on the outlet restrictor is necessary, effectively reducing the allowable release rate of detention basins to zero (zero release).

The WMO allows for calculations of required detention to be performed using various hydrologic methodologies and require proposed pervious and impervious development. These areas were identified per the latest ALP and other developments identified with the Airport. The areas were used to calculate conservative detention computations using the MWRD-developed hydrologic calculator using the nomograph methodology.

Detention can be provided either as open-air basins or as underground storage in pipes and/or vaults. Open-air basins are the most cost-effective to construct while

underground storage provides a greater developable area. Both scenarios were explored as explained in the proposed conditions later in this study.

Floodplain, Floodway, and Compensatory Storage

MWRD coordinates with several federal, state, and local agencies to set the provisions in the WMO for floodplain management. MWRD regulations meet or exceed standards set by federal and state agencies and issue permits for projects impacting flood storage capacity and impacts to the floodplain. Local municipalities may have requirements more stringent than MWRD's but must meet MWRD's WMO requirements as a minimum.

PWK is located within the Des Plaines River Watershed just south of the confluence with the Wheeling Drainage Ditch. As such, the airport is affected by the floodplains and floodways of both waterways.

A floodplain is defined as an area that floods due to a 100-year storm. A floodway is defined in Illinois as that portion of a floodplain that, if it were encroached upon, would cause an increase in the Base Flood Elevation (BFE) greater than 0.1 feet or changes velocities by more than 10%. In addition, a floodway contains 90% of total floodplain storage volume and 90% of the total floodplain conveyance.

The Federal Emergency Management Agency (FEMA) keeps a repository of floodplain and floodway maps for creeks and streams that meet a certain threshold of tributary area and flow. Once these thresholds are met, FEMA maintains development standards that must be met for any mapped floodplain. Both the Wheeling Drainage Ditch and the Des Plaines River meet these thresholds, and as such have mapped regulatory floodplains and floodways. In general, the FEMA requirements include:

- Any work or fill in a regulatory floodplain cannot increase the BFE off-site of the property where the work is being completed.
- Any work or fill in the regulatory floodplain cannot reduce the amount of flood storage that is provided in it. In other words, for any fill placed in the floodplain, excavation must take place in a hydraulically connected location to compensate for the loss of storage. This is referred to as Compensatory Storage. Compensatory excavation storage must be provided at a 1.5:1 ratio.

Floodways in Illinois are subject to additional regulations, which fall under the jurisdiction of the Illinois Department of Natural Resources – Office of Water Resources (IDNR-OWR). In general, IDNR-OWR follows the same guidelines as FEMA, but they regulate only the floodway. Further, they limit the uses of the floodway to appropriate uses. For example, a home or other habitable structure such as an airport hangar with bathroom facilities and office space is not considered an appropriate use of a floodway and IDNR-OWR regulations prohibit their construction within the floodway. Roadways, bridges, and airports in general are considered appropriate use.

Historically, the Wheeling Drainage Ditch ran directly through the entire airport. The ditch was narrow and relatively shallow and was highly prone to flooding along its banks which directly affected the airport's main runway. To minimize flooding impacts on the

airport, and to allow for the construction of the then proposed ALP improvements, the Wheeling Drainage Ditch was relocated in 1996 to flow away from the main runway and along the airport's northern boundary. A new bridge was constructed on Milwaukee Avenue to allow the relocated ditch to connect directly into the Des Plaines River.

A revised regulatory floodplain and floodway were delineated at that time. The regulatory floodways were removed from the middle of the airport, and the floodplains were limited to areas within the runway/taxiway infields to allow the airport to be developed in accordance with the 1986 Airport Layout Plan. The infields were providing both detention and compensatory storage to compensate for the loss of flood storage caused by the relocation of the Wheeling Drainage Ditch and filling of the previous floodway and floodplain areas to facilitate airport development.

Subsequent to the ditch relocation, FEMA prepared a revised floodplain and floodway delineation on the Des Plaines River which increased Base Flood Elevations (BFE's) throughout the airport. The latest floodplain maps depicted by FEMA are shown on **Exhibit 2-4, Existing FEMA Floodplain Map**.

As a result of the BFE increase, significantly more floodplain is currently shown on airport property. Fortunately, most of the floodways are delineated in such a way that it is unlikely that any of the new proposed developments in the ALP or airport identified projects will encroach on the floodway. However, portions of the newly proposed ALP development area encroach into the new floodplain areas. As such, additional compensatory storage will be required.

It is noteworthy to mention that the current regulatory floodplain and floodway delineation and the resulting BFE's throughout the airport were developed using Illinois State Water Survey (ISWS) Bulletin 70 (1989) Rainfall data which has been superseded with more up-to-date Bulletin 75 (2020) Rainfall data. As of the date of this report, it does not appear that FEMA intends to update this delineation with the new rainfall data. However, it is possible they will update the data at some point in the future. An update would likely cause the floodplain mapping to show further encroachment of the floodplain onto airport property.

3.3 Water Quality (Volume Control)

The MWRD Watershed Management Ordinance requires that the first inch of runoff from new impervious areas have volume control storage. Volume Control practices are designed to retain and infiltrate the first inch of runoff into the ground, and they should preferably be onsite with quantifiable storage capacity.

Retention-based Volume Control Practice design considerations are detailed in sections 5.3.4 through 5.3.7 of the WMO Technical Guidance Manual (TGM). As outlined in the ordinance, for locations with separate sewer systems such as the airport property, the bottom of the retention-based practice must be at least 2-feet above the estimated seasonal high groundwater table (ESHGWT). Typical MWRD retention-based practices include:

- Infiltration trenches and basins
- Bioretention facilities
- Porous/permeable pavement
- Dry wells
- Bioswale with check dams
- Storage below the outlet of a detention facility
- Green roofs

As required by the FAA, these facilities must not provide any wildlife attractive aspects.

3.4 Community Standards

In addition to FAA and MWRD, the Airport must also adhere to the Ordinances set forth by the Village of Wheeling and City of Prospect Heights. In each case where there are discrepancies between agency requirements, the more stringent design must be followed. **Table 3-1 – Community Drainage Standards** outlines the stormwater drainage requirements that must be followed by the airport as it implements the updated Airport layout Plan.

TABLE 3-1 – Community Drainage Standards				
	FAA Advisory 150/5320-5	**MWRD**	**Village of Wheeling**	**City of Prospect Heights**
Allowable Release Rate	Follow local ordinances.	0.20 cfs/acre	The combination of storage from a 100-year storm and the designed release rate shall not result in a storage duration of more than 72 hrs.	Lesser of existing runoff rate of the from the 3-year storm OR 0.15 cfs/acre
Volume Control / BMPs / Water Quality Considerations	Consider site conditions and State and local regulations for BMP selection.	- Provide volume for the first inch of runoff over the imp. area - Capture the volume control storage for all development with imp. area greater than or equal to 0.10 ac. -	An erosion and sediment control plan is needed to minimize and control suspended sediment and degradation of downstream water quality	City Floodplain document references BMPs identified by MWRD in WMO
Floodplain and Floodway	-Actions in a floodplain must be designed to minimize adverse impact to the floodplain's natural and beneficial values. The design must also minimize the potential risks for flood-related property loss and impacts on human safety, health, and welfare.	- Finished floor elevation at or above the FPE -Development shall not increase flood elevations or decrease flood conveyance capacity upstream or downstream of the property - The maximum stormwater runoff inundation depths on roads and parking lots for all developments shall not exceed 12 in. - FPE: The highest 100-year flood elevation plus two feet of freeboard.	- Finished floor elevation shall be at or above the Flood Protection Elevation (FPE). FPE is defined as the elevation of the base flood or plus one foot of freeboard at any given location in the SFHA.	All buildings located within a 100-yr floodplain will be protected from flood damage below the flood protection elevation (FPE) (elevation of the base flood or 100-year frequency flood plus 2.5' of freeboard). -Nonresidential buildings can be flood-proofed to this elevation
Compensatory Storage Requirements	No specific regulations.	1.1:1	1.5:1	1.5:1

3.5 Coordination with MWRD and Local Municipalities

On November 20, 2023, the project team met with MWRD, the City of Prospect Heights, and the Village of Wheeling at Chicago Executive Airport to discuss the scope and need of the Master Drainage Study. Much of the MWRD and local municipality design standards were discussed, and the agencies were supportive of the Airport's progress to update their stormwater management plan in conformance with the latest MWRD Watershed Management Ordinance. MWRD noted it would be difficult to request and approve any variance to the WMO. MWRD also noted they will conceptually review the Master Drainage Study, however, any MWRD permitting will need to be submitted associated with development or redevelopment. MWRD will review the Master Drainage Study in compliance with the specified project application and can use the study as the latest stormwater management plan for future projects. It is anticipated the development for the proposed hangars within the east portion of the airport will be the next project requiring stormwater management and permitting, and MWRD is expected to review the Master Drainage Study during that time.

A copy of the meeting minutes with MWRD is included in ***Appendix G – Meeting Minutes***.

4 Drainage Modeling (Existing Conditions)

4.1 Introduction

Existing drainage conditions at PWK consist of a mixture of storm sewers, swales, and ditches to convey runoff across Milwaukee Avenue to the Des Plaines River or to the Wheeling Drainage Ditch, which then drains under Milwaukee Avenue to the Des Plaines River. The team recommended that the existing storm sewer network should be evaluated to identify any deficiencies in the system and suggest remedial measures to make sure the system operates as intended in the future. Record drawings were collected from the airport and reviewed. Gaps in the data were identified and the team's surveyors conducted additional data collection of rim, invert, and pipe size data sufficient to develop a model of the existing system.

Per the modeling, the airport existing drainage system appears to be functioning as designed and intended, with no significant remedial action required outside of continued ongoing maintenance at this time. In addition, the team reached out to the Airport Operations team if they have encountered any drainage issues in the field. Per their coordination, only minor drainage pooling was encountered within the existing infields due to flat grades, but no major issues were reported.

AutoCAD existing conditions models have been provided to the airport as a resource for future projects. These include but are not limited to topographic mapping, storm sewer pipe networks, and 1-foot contour grading. The CAD files are workable to be inputted into a GIS database for other parties.

4.2 Airport Land Use

To understand the stormwater impacts of future development, a look at the change in impervious vs. pervious land use in relation to the latest ALP was reviewed. Existing airport vs. future land use (as of December 2024), analyzing pervious vs. impervious areas is summarized as follows:

Table 4-1, Pervious vs. Impervious Land Use

	Pervious (acre)	Impervious (acre)	Total (acre)
Current Land	255.6 (61.3%)	161.5 (38.7%)	417.1
Future Land	276.4 (56.4%)	214.1 (43.6%)	490.5
Change	+20.8	+52.6	+73.4

A detailed map schematic of land use and the soil designation types found within the airport is shown in ***Appendix E, Curve Number Calculations.***

The total future airport acreage increases due to proposed land acquisition of the northeast industrial park, properties south of the Palatine Frontage Road, and parcels along the west side of Milwaukee Avenue. The proposed increase in impervious areas will require additional stormwater storage requirements such as detention,

compensatory storage, and water quality improvement volumes to meet current MWRD standards and have been considered in this study.

4.3 Model / Input Data

The team assessed the workings of the existing stormwater management system on-site to evaluate the functionality of the existing storm sewer system, as well as assess the required and provided stormwater storage that currently exists at the airport. Given the fact that MWRD requirements are more stringent since the last major development at the airport, an analysis of the airport's stormwater management system's functionality assuming current day requirements has been prepared. Doing this is important for the following reasons:

- To have a current and up to date inventory of the existing airport stormwater management system.
- To identify areas that are currently under-served and that will need enhancement/replacement when the proposed ALP development is put into place.

The airport provided record drawings and a 2D-CAD model of their topography from their available database for use in the development of a storm sewer model. Data gaps were identified, and the project survey crews conducted additional data collection, which included rims, inverts, and pipe sizes. The sewer model exhibit and inventory are included in ***Appendix C, Existing Conditions Modeling***. The CAD model network was provided to the Airport for their use.

4.4 Pipe Networks

As relevant storm sewer pipe information was gathered during the data collection process, pipe information was inputted into a 3D CAD model in AutoCAD Civil3D that was made available to the Airport for future reference. The pipe network consists of pipe sizes ranging from 12-inch to 66-inch pipes. For modeling purposes generally only pipes 18-inches and larger were included in the model. Drainage sub catchments were aggregated to drain to these pipes with a check to ensure inlet capacity was adequate to avoid water bypassing the inlets and draining to another part of the system. These restrictors are not proposed to be changed as part of this study.

There are several systems throughout the airport serving both the airside and landside portions. Several oversized pipes have been installed along runways to capture drainage from the infield drainage basins. Along the northern part of the airport there is a 96-inch bypass sewer serving the area to the west that discharges to the Wheeling Drainage Ditch.

For the overall site there are two primary outlets. One crosses Milwaukee Avenue near the eastern edge and central to PWK. The other discharges into Wheeling Ditch just northwest of the Wheeling Ditch crossing of Milwaukee Ave. Both outlets are restricted down from the incoming pipe sizes. The Milwaukee Ave outlet is a 1.63-foot restrictor,

and the Wheeling Drainage outlet is a 1.68-foot restrictor, which control the flow of stormwater discharging (and backflowing) to/from the Airport.

4.5 Drainage Basins

Existing drainage sub catchment areas were delineated based on available topography and the known pipe networks. The Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service (SCS)) methodology was used to identify and compute runoff curve number (CN) values. Times of concentration used the anticipated travel times of water in the pipe plus shallow flow travel time using the NRCS TR-55 methodology. Precipitation values were used based on the Illinois State Water Survey (ISWS) Bulletin 75 rates for northeastern Illinois. Calculations for the CN values are included in **Appendix E, Curve Number Calculations.**

4.6 Detention / Compensatory Storage Systems

Compared to the previous MWRD permit for stormwater storage calculations, updates to the MWRD WMO require updated measurements for new development moving forward. This includes methods of calculations for determining existing detention and compensatory storage. The total provided detention of existing conditions as of 2024 equals 69.1 acre-feet. The total provided compensatory storage volume equals 78.8 acre feet, which has a surplus of 3.8-acre feet compared to the required 75.0 acre-feet. The 0 to 10-year segment and the 10 to 100-year segment requirements are both met.

4.7 Existing Conditions Modeling Results and Analysis (2,5,10 & 100 Year Events)

As base drawings were prepared with all the required storm sewer data, models for delineated tributary drainage areas, calculated Curve number, and times of concentrations were developed for stormwater calculations, as shown in ***Appendix C***. This data was used to build a model that would analyze the system to determine any existing deficiencies, and to generally gain an understanding of how the entire system works. The models were evaluated using the updated Bulletin 75 Rainfall Data, as this is the current standard to use.

Because the airport's stormwater conveyance system is a conglomeration of both storm sewer and detention within the existing runway and taxiway infields, it was determined that Autodesk's 2023 version of Storm and Sanitary Analysis (SSA) would be the best option for modeling the system. This program is based on EPA's Storm Water Management Module, or SWMM, which is a commonly used model that analyzes both hydraulics and hydrology.

Two methodologies were evaluated as described below:

- **No Tailwater Scenario**
  A model which analyzes the existing conditions in the 2-year, 5-year, 10- year, and 100- year storms was developed. These are statistically determined storms that have a percent chance of occurring in any given year. The 2-year storm has a 50%

chance of occurring in any given year, while a 100-year storm has a 1% chance of occurring in any given year. The storm event is an inversion of the percentage of occurrence likelihood. Further, the analysis utilized a 1-hour storm (where the entirety of the storm occurs within one hour, which is assumed to be the critical storm, given that the times of concentration in each subarea are assumed to be conservative 5 minutes each. A 1-hour storm typically becomes the critical storm for watersheds that have shorter times of concentration, and it is a widely accepted assumption. The 5-minute time of concentration was assumed because each area has a relatively short distance from runways and other paved areas into ponds or inlets. It makes for a conservative assumption when assessing existing conditions, and as such is an appropriate methodology. These models also assume that the storm is occurring on the airport property, and that the flood elevations on the Des Plaines River have not reached their peak, and as such haven't backed up into the infields' compensatory storage areas.

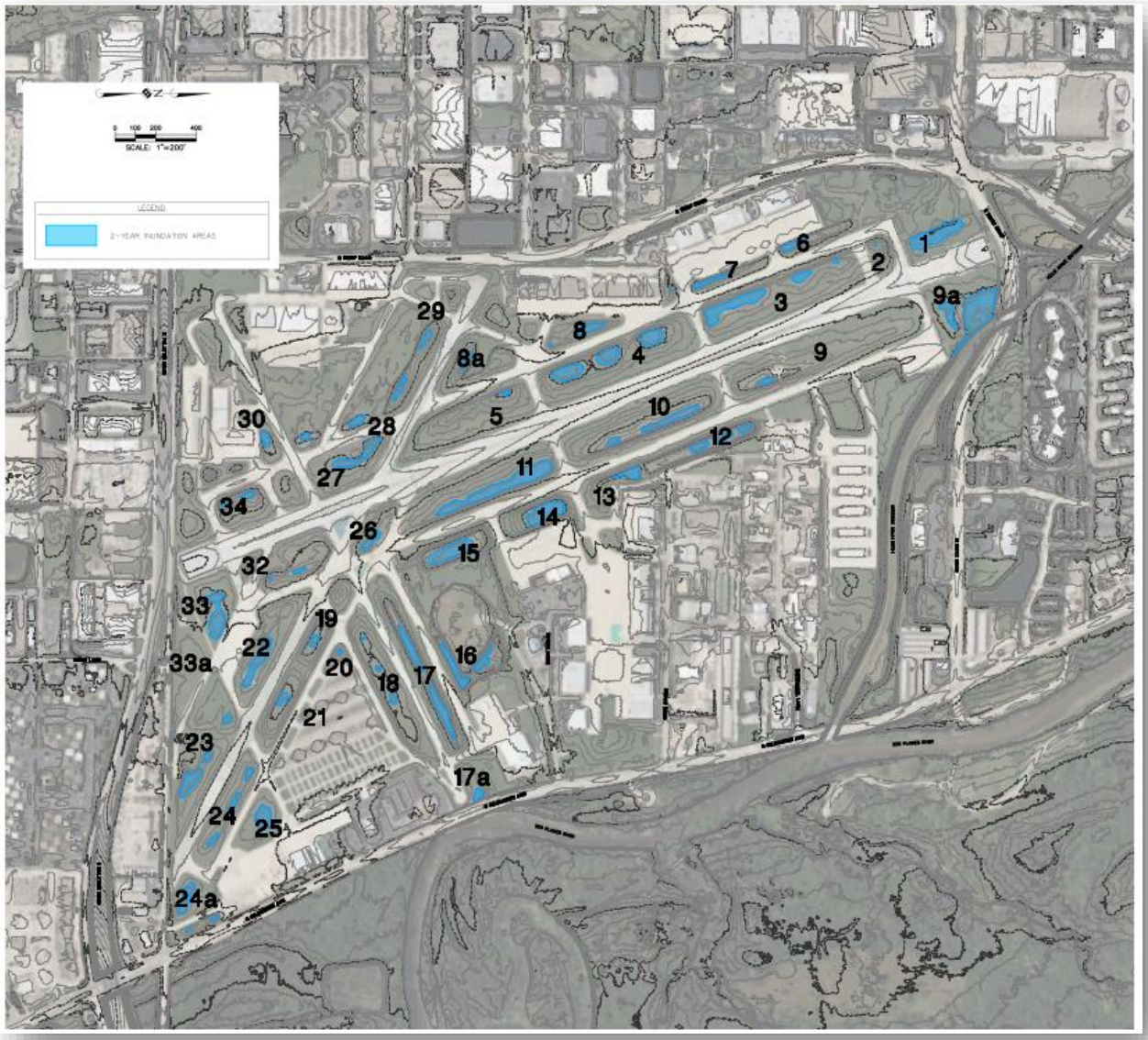
Inundation for each of these storms on airport property at the 2-year, and 5-year storm, are shown on ***Exhibits 4-1 and 4-2,*** respectively. In general, the analysis has found that the existing airport system is effective in conveying and storing the required amounts of existing detention, and outside of a few critical areas, it functions effectively. However, this scenario assumes that the compensatory storage portion of the airport storage has not been activated by flows from the adjacent floodplains of the Des Plaines River and the Wheeling Drainage Ditch. In addition, the floodplain maps as shown in Section 2, Existing Conditions could be conveyed as the 100-year flood inundation.

Exhibits show the existing profiles of the major trunk storm sewer lines through the airport in each frequency storm. This data helps identify where any of the trunklines have the potential to surcharge in this scenario.

- **Tailwater Scenario**
  It is also important to consider the situation where a storm has occurred on the airport property and elevations on the Des Plaines River have also reached their peak. In this case, given the Base Flood Elevations on these water courses, a significant amount of water will back up into the airport's systems.

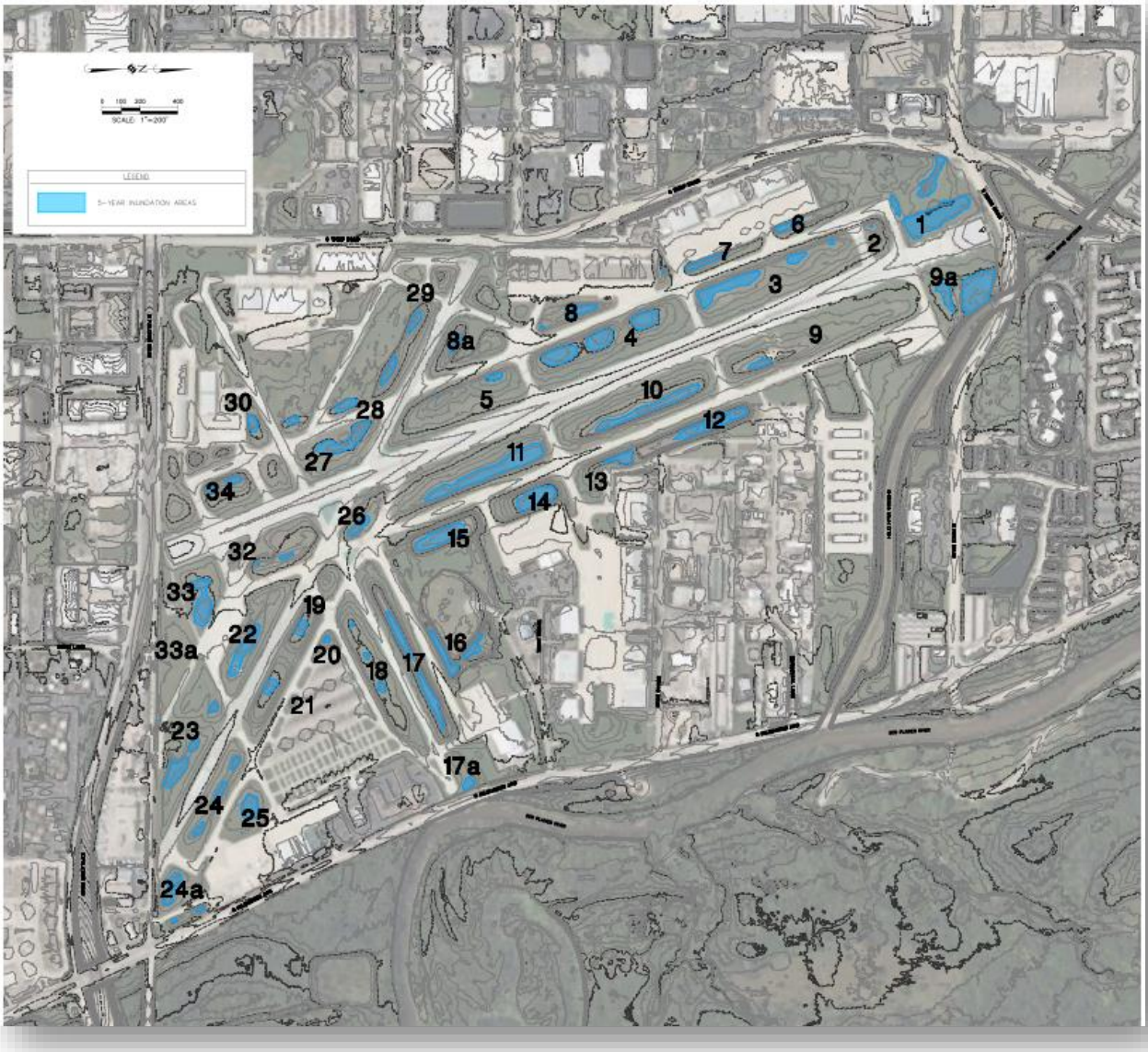
  When a tailwater scenario is implemented into the model, more of the stormwater volume backs up into the site. Given that the existing design was intended to provide compensatory storage in addition to detention, the results of this analysis show that the system generally operates as intended. However, since the BFE was increased by FEMA, and because MWRD has increased the statistical rainfall amounts since the improvements were implemented, the available storage is no longer sufficient to comply with current Federal, state, and local MWRD standards.

EXHIBIT 4-1
2-Year Inundation Map



*Full-scale exhibit can be found in **Appendix C***

EXHIBIT 4-2
5-Year Inundation Map



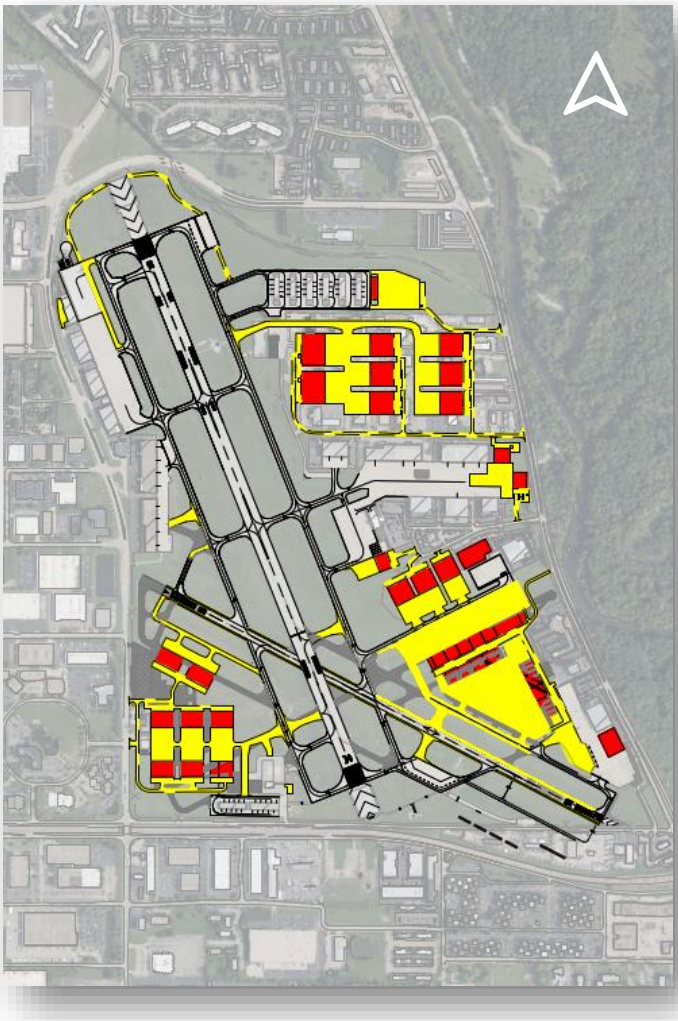
Full-scale exhibit can be found in ***Appendix C***

5 Proposed Site Development / Grading and Storage Volume Requirements

5.1 Overview

The layout of future site development / re-development improvements as shown in the Airport Layout Plan (ALP) was used as the basis for proposed drainage improvements and modifications of existing drainage facilities at the airport. In addition, the Airport noted areas where the proposed site development was likely to deviate from the ALP. Per work discussions with the Airport, the proposed site development used for proposed stormwater analysis was a combination of the ALP and site revisions per the Airport. Revisions to the site map from the ALP was discussed with the Airport and included in ***Appendix G - Meeting Minutes, dated October 15,2023***. The proposed site plan is shown below:

Exhibit 5-1, Proposed Airport Site Plan.



5.2 Key Planning and Preliminary Design Parameters

Once the proposed site plan was developed, a conceptual master site grading plan was developed to build out potential future stormwater management facilities. Design grading followed the standards outlined in Section 3 – Drainage Standards, which yielded key design parameters listed below:

- Finished floors (FF) of proposed buildings shall be 2.5' above the 100-year base flood elevation (BFE) which ranges from 640.0 to 640.2.
    - The finished building floor elevations in the southeast and northeast quadrants were set at 643.0 (640.2 + 2.5'= 642.7 minimum).
    - The finished building finished floor elevations in the southwest quadrant fell outside the 100-year floodplain, so elevations were set at 644.0 based on existing topography, existing hangar finished floor elevations from adjacent facilities, and the recent Customs and Border Patrol Facility (FF = 644.20).
- New aprons were designed to slope away from new hangars at a minimum 1.0% slope.
- Parking lots and future roadways could be as low as 1.0' below the BFE but were generally set above the BFE.
- Within the active airfield, slope requirements must meet airfield safety slope requirements adjacent to runway and taxiway pavements as outlined in the FAA Advisory Circulars.
- Detention pond side slopes were set at 4:1 maximum and set above the water table.
- The bottoms of dry-bottom detention areas were designed to have an average target slope of 2%, with a minimum slope of 0.5%. Their low points were set 2.0' above ground water elevations. From record as-builts, only a few boring logs at sporadic locations were available to use a determined groundwater elevation. Average ground water elevations were used.
- Release rates for proposed detention were assumed to be 0.15 cfs/ac, but ultimately, the detention was designed for a zero-release rate due to its proximity to the floodplain.
- Compensatory storage throughout the airport was provided at a 1.5:1 ratio.
- Volume Control volumes were determined based on the MWRD requirement of 1-inch of rainfall over the impervious area. As the airport proceeds to be developed, the location of the volume control facilities will be dependent on the capture of new impervious area.

Based on these design parameters, a new preliminary master grading plan was developed for the Proposed Airport Site Plan. The contour modeling is shown in **Appendix D, Proposed Conditions Modeling, *Proposed Topography Contour Map*.** CAD models were also provided to the Airport as a resource. The proposed grading are represented as 1-foot contours . Particular attention was given to maximizing and optimizing locations for dry-bottom excavation areas that could be utilized for storm water detention, compensatory storage, and volume control improvements.

5.3 Storm Sewer Piping Concept

The proposed site grading and proposed site plan was combined with the existing storm drainage system to determine the following:

- Locations of proposed grading "low points" that would be logical locations for new drainage inlets and/or dry-bottom detention basins.
- Locations of proposed structures / hangars that proposed new storm sewers and detention areas would need to be avoided.
- Locations where the proposed development (for example, proposed hangars) conflicts with or otherwise impacts existing storm sewers and drainage facilities.

This analysis was utilized to develop a conceptual layout of new storm sewer routing and drainage structure locations throughout the new development areas of the airport. The proposed new storm sewer systems and detention areas are shown in **Appendix D – Proposed Conditions Modeling**. These exhibits also denote areas where existing storm sewer piping is proposed to be removed and / or re-routed to eliminate developmental conflicts. The layout is preliminary and shall be modified by the designer as each development progresses.

5.4 Earthwork Cuts & Fills

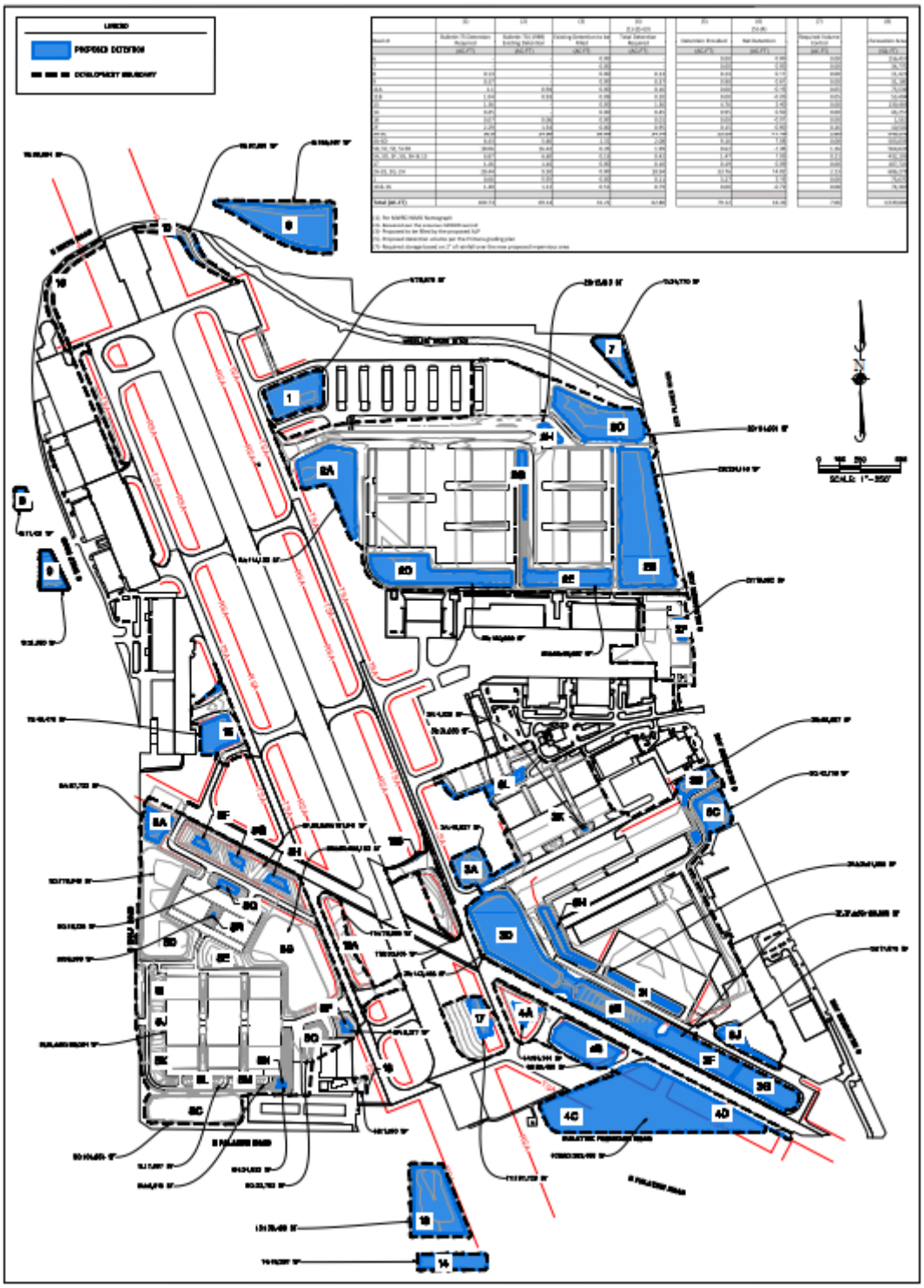
The proposed grading contours were combined with the modeled existing site contours to create a 3-Dimensional site grading CAD model of conceptual grades that focuses on detention and compensatory storage earthworks. Referencing the centerline of Runway 16/34 as a modeling baseline, conceptual cross-sections were developed at 100-foot intervals to visualize the proposed grading as it relates to stormwater storage. These cross-sections showed proposed areas that need to be cut (for development, detention, compensatory storage, and volume control) and filled (to facilitate the proposed site development). An exhibit of the cross sections is included in **Appendix D**.

Sample volumetric calculations were undertaken to determine the net detention and compensatory storage in relation to the 3D modeling. The proposed grading contours were modified through several iterative processes to meet the regulatory storage volumes required, as discussed in the following report section. The cross sections service as a conceptual visualizing for stormwater storage. The actual detention and compensatory storage calculations required and provided are tabulated in Section 5.5 and 5.6.

5.5 Detention

Proposed detention is utilized within the airfield infield basins as shown in ***Exhibit 5-2, Proposed Detention,*** shown in blue on the exhibit. In order to calculate how much detention is required in the ultimate revised development plan, the MWRD standard nomographs were used for each basin, which is an industry standard method of determining required detention.

EXHIBIT 5-2
PROPOSED DETENTION



The full-scale exhibit is shown in
Appendix D, Proposed Conditions Modeling,
Proposed Detention Exhibit

The results showed a total of 100.73 ac-ft are outlined in Column 1 of table in the exhibit. The airport has existing conditions required and provided detention per the previous MWRD permit, which is shown in Column 2 (69.14 ac-ft total). The amount of fill within these existing detention facilities being proposed as part of the development plan was calculated as shown in Column 3 (31.21 ac-ft total). The total Detention required (62.8 ac-ft) was then determined by taking Column 1, subtracting Column 2 and adding Column 3 for each basin/tributary area.

From there, calculations were performed to determine how much detention is proposed to be provided within the proposed grading plans. The plans were developed with the intent of maximizing the amount of open-air detention on the airport and minimizing the amount of required underground storage. Column 5 outlines the total detention provided within each basin (79.12 ac-ft), and Column 6 shows how much extra storage is being provided within all the basins. Overall, there is a net surplus of 16.33 ac-ft of detention. Using this plan, it appears that no underground storage will be required.

It is noteworthy to mention that within some tributary areas, there is a shortage of detention. However, when looking at the overall picture, and if the overall airport system will work together, the areas with the surpluses will provide the additional storage needed in the shortage areas. As development occurs during a phased timeline, the Airport can utilize the future modeling to account for each development detention requirement.

Proposed condition detention based on a zero-release condition using the MWRD nomographs equals 79.1 acre-feet compared to the calculated 62.8 acre-feet required. This provides a conservative estimate of required detention and flexibility in how much detention must be provided and where it could be provided, giving the airport flexibility in future development.

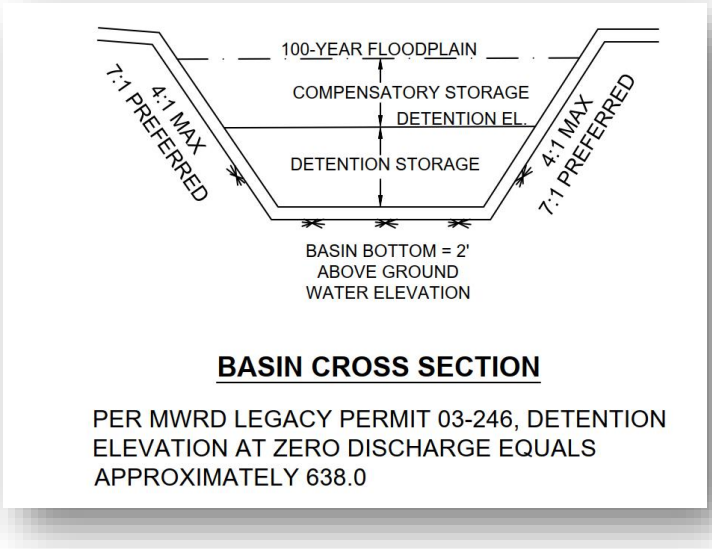
5.6 Compensatory Storage

The majority of the airport property lies within the 100-year regulatory floodplain elevation (as shown in the floodplain exhibits), and compensatory storage must be provided for any fills placed below the regulatory floodplain elevation. The jurisdictional governing ordinances dictate that fills within the floodplain must be compensated at a 1.5:1 ratio, and the existing 0-10 year and 10–100-year volume windows must be maintained minimally at a 1:1 ratio. The proposed cut and fill volumes were calculated using the average-end area method, and conceptual cross sections were cut at 100-foot intervals spanning the length of the airport, as noted in Section 5.4.

The cross sections in **Appendix D** display the existing ground, proposed ground, the detention HWL (638.0), the existing regulatory 10-year BFE, the existing regulatory 100-year BFE, and the respective cut and fill areas as applicable. The floodplain elevations were delineated based on the effective FEMA FIS profile. It should be noted that existing areas below the detention HWL elevation (638.0) are not counted as available floodplain volume. Therefore, proposed fills below elevation 638.0 are not compensated for at the 1.5:1 ratio. However, any existing detention volume filled by the proposed grading

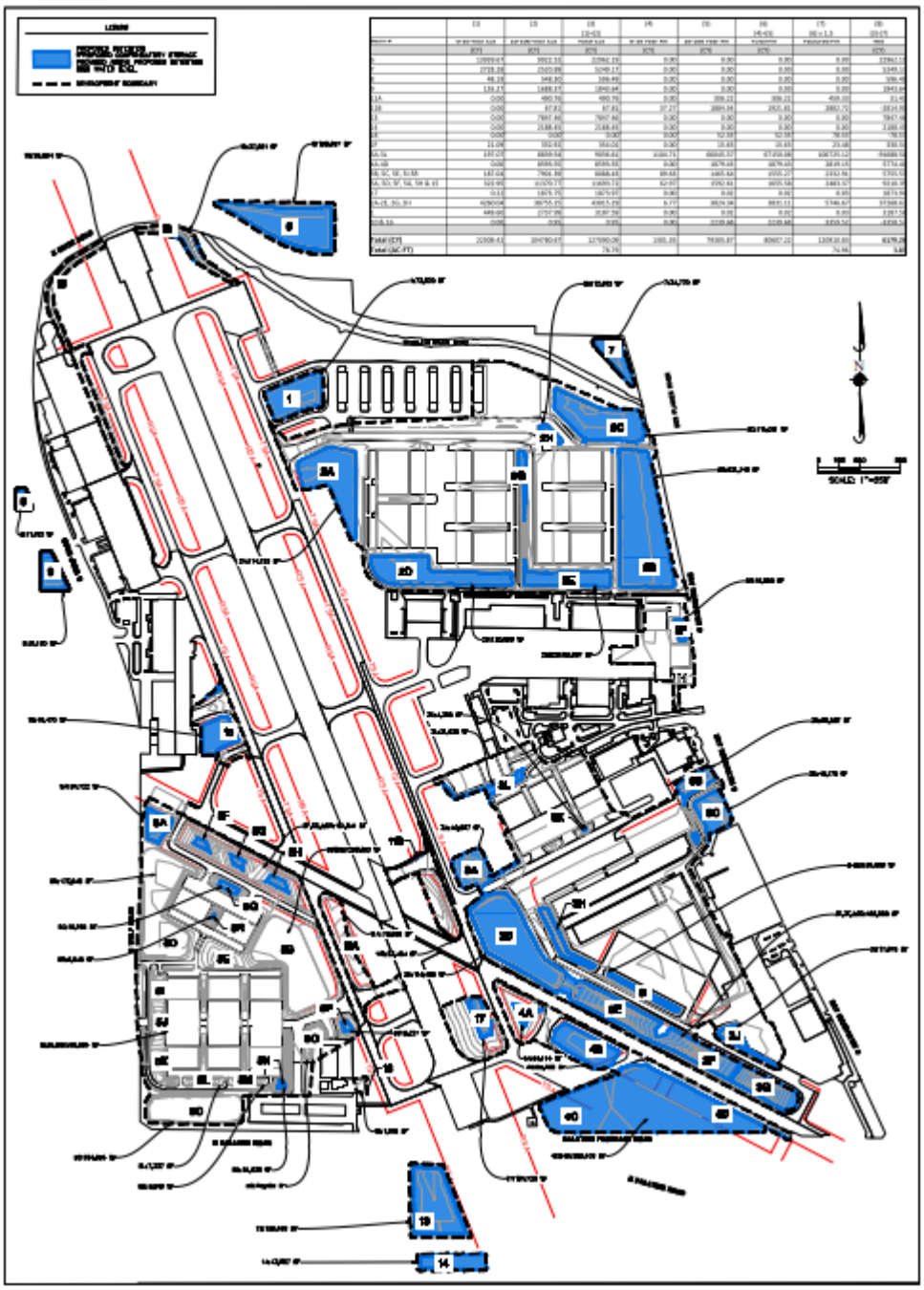
improvements will be replaced at a 1:1 ratio below elevation 638.0. The proposed compensatory storage volume is provided above elevation 638.0 and below the regulatory floodplain elevation. A cross section of the separation between compensatory storage and detention storage is shown in ***Exhibit 5-3, Basin Cross Section***, below:

EXHIBIT 5-3
BASIN CROSS SECTION



Calculations show there is 49.97 ac-ft of fill which requires 74.96 ac-ft of compensatory storage. There is 78.79 ac-ft of proposed compensatory storage and therefore meets the 1.5:1 requirement set forth by jurisdictional governing ordinance. It should also be noted that the 0-10 year and 10–100-year volume windows were maintained minimally at a 1:1 ratio. A summary of the actual compensatory storage by region of the airport can be found on **Exhibit 5-4, Proposed Compensatory Storage**.

EXHIBIT 5-4
PROPOSED COMPENSATORY STORAGE



The full-scale exhibit is shown in
Appendix D, Proposed Conditions Modeling
Proposed Compensatory Storage Exhibit

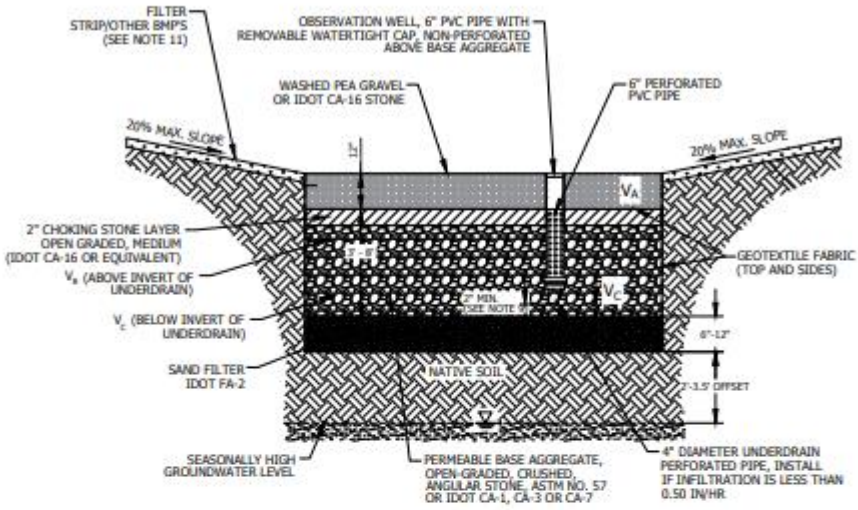
5.7 Water Quality

Providing volume control for water quality measures is required per the latest MWRD WMO. In the past, volume control measures were not an immediate requirement. Since the latest WMO updates, the Airport has provided water quality measures in the form of infiltration trenches below landscaped areas.

Several methods for promoting infiltration without creating attractive nuisances were explored. This included infiltration trenches, paver blocks that would allow grass to grow between the block voids, permeable pavers and other permeable pavement alternatives in parking lots, selected hangar aprons, and other locations deemed safe by the airport. The future maintenance and upkeep of these systems is critical to their success. Exemptions near fueling locations and other undesirable locations that could potentially contaminate ground water were removed from the analysis. Examples of volume control measures are shown on ***Exhibit 5-5, Infiltration Trench*** and ***Exhibit 5-6, Permeable Pavers***.

Volume Control calculations are provided in ***Appendix D, Proposed Conditions Modeling, Proposed Detention Exhibit*** . Column 7 shows the amount of volume control (7.06 ac-ft total) required within each basin, which is based on 1 inch of rainfall over the new proposed impervious area. Volume control requirements for MWRD equaled 7.1-acre feet and this study provides 7.1 acre-feet of volume control. Volume control will be dependent on the ultimate use and development of future airport land uses. This report shows that volume control requirements are achievable and ultimately up to future developers and their engineers to design and permit.

EXHIBIT 5-5
INFILTRATION TRENCH



BOTTOM OF THE FACILITY:	ELEV. _____
SEASONALLY HIGH GROUNDWATER:	ELEV. _____
SEPARATION:	FEET _____

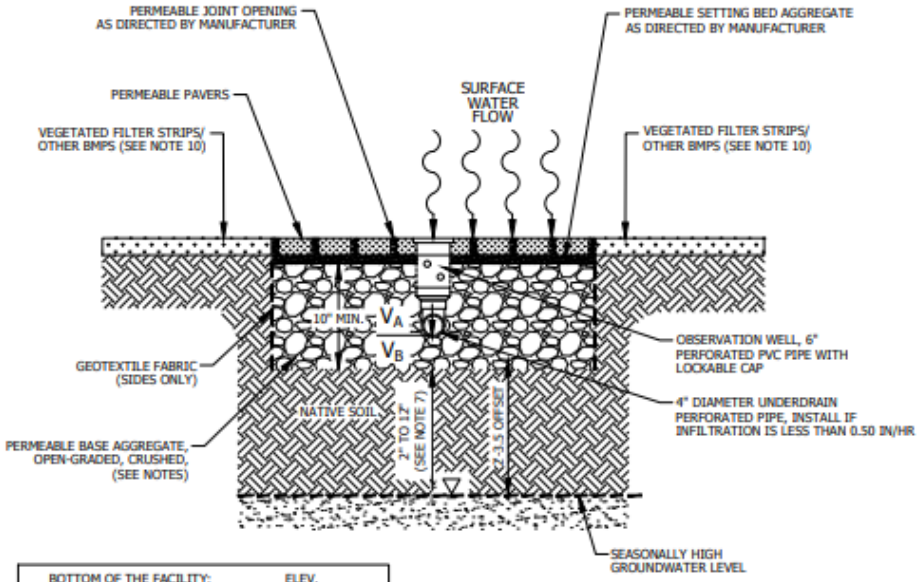
VOLUME TYPE	SURFACE AREA	DEPTH	POROSITY	STORAGE VOLUME	VOLUME PROVIDED
V_A : PEA GRAVEL			0.25	0.50 X 0.25 X V_A	
V_B : COARSE AGGREGATE (ABOVE INVERT)			0.36	0.50 X 0.36 X V_B	
V_C : COARSE AGGREGATE (BELOW INVERT)			0.36	0.36 X V_C	
				TOTAL	

NOTES:
1. THE PERIMETER OF THE VOLUME CONTROL FACILITY SHALL MAINTAIN THE MINIMUM HORIZONTAL SEPARATION DISTANCE OF: 10-FEET FROM FOUNDATIONS, UNLESS WATERPROOFED; 20-FEET FROM ROADWAY GRAVEL SHOULDER; AND 100-FEET FROM POTABLE WATER WELLS, SEPTIC TANKS/FIELDS, OR OTHER UNDERGROUND TANKS.
2. SANITARY OR COMBINED SEWERS SHALL NOT BE LOCATED WITHIN THE VOLUME CONTROL FACILITY. SANITARY OR COMBINED SEWERS SHALL NOT BE LOCATED BELOW THE FOOTPRINT OF THE VOLUME CONTROL FACILITY. WHEN LOCAL CONDITIONS PREVENT THE SEWER FROM BEING LOCATED OUTSIDE THE FOOTPRINT OF THE FACILITY THE SEWER SHALL BE CONSTRUCTED TO WATER MAIN QUALITY STANDARDS, OR IT SHALL BE ENCASED WITH A WATER MAIN QUALITY CARRIER PIPE WITH THE ENDS SEALED.
3. AVOID INSTALLATION ON SLOPES GREATER THAN 3.00%.
4. AVOID COMPACTING NATIVE SOILS. SCARIFY COMPACTED FILL.
5. GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF IUM MATERIAL SPECIFICATION 592. FOR WOVEN: APPARENT OPENING SIZE OF 0.50 MM (TABLE 1, CLASS I). FOR NON WOVEN: APPARENT OPENING SIZE OF 0.30 MM (TABLE 2, CLASS II).
6. STONE STORAGE OPTIONS ARE IDOT CA-1, IDOT CA-7, DISTRICT VULCAN MIX, OR APPROVED ALTERNATE. NO RECYCLED MATERIALS.
7. MINIMUM DISTANCE OF 2 FEET (3.5 FEET IN COMBINED SEWER AREAS) BETWEEN BOTTOM OF BMP AND SEASONALLY HIGH GROUNDWATER LEVEL.
8. UNDERDRAINS ARE REQUIRED IN TYPICAL CLAYEY SOILS WHERE INFILTRATION RATES ARE LESS THAN 0.5 INCH/HOUR. MAXIMUM OF 1 UNDERDRAIN PER 30 FEET. PROVIDE A SOIL REPORT DOCUMENTING NATIVE INFILTRATION RATE TO FOREGO UNDERDRAINS.
9. MINIMUM UNDERDRAIN BEDDING OF TWO INCHES, MAXIMUM OF 12 INCHES.
10. ONE OBSERVATION WELL REQUIRED PER 6,000 SQUARE FEET OF SURFACE AREA.
11. FOLLOW THE REQUIRED PRETREATMENT MEASURES LISTED ON THE VOLUME CONTROL PRETREATMENT MEASURES DETAIL.

NOT TO SCALE

	TECHNICAL GUIDANCE MANUAL	10/4/18
	INFILTRATION TRENCH DETAIL	STD. DWG. NO.6
		PAGE NO. 7

EXHIBIT 5-6
PERMEABLE PAVERS



VOLUME TYPE	SURFACE AREA	DEPTH	POROSITY	STORAGE VOLUME	VOLUME PROVIDED
V_A : COARSE AGGREGATE (ABOVE INVERT)			0.36	0.50 X 0.36 X V_A	
V_B : COARSE AGGREGATE (BELOW INVERT)			0.36	0.36 X V_B	
				TOTAL	

NOTES:
1. THE PERIMETER OF THE VOLUME CONTROL FACILITY SHALL MAINTAIN THE MINIMUM HORIZONTAL SEPARATION DISTANCE OF: 10-FEET FROM FOUNDATIONS, UNLESS WATERPROOFED; 20-FEET FROM ROADWAY GRAVEL SHOULDER; AND 100-FEET FROM POTABLE WATER WELLS, SEPTIC TANKS/FIELDS, OR OTHER UNDERGROUND TANKS.
2. SANITARY OR COMBINED SEWERS SHALL NOT BE LOCATED WITHIN THE VOLUME CONTROL FACILITY. SANITARY OR COMBINED SEWERS SHALL NOT BE LOCATED BELOW THE FOOTPRINT OF THE VOLUME CONTROL FACILITY. WHEN LOCAL CONDITIONS PREVENT THE SEWER FROM BEING LOCATED OUTSIDE THE FOOTPRINT OF THE FACILITY THE SEWER SHALL BE CONSTRUCTED TO WATER MAIN QUALITY STANDARDS, OR IT SHALL BE ENCASED WITH A WATER MAIN QUALITY CARRIER PIPE WITH THE ENDS SEALED.
3. AVOID INSTALLATION ON SLOPES GREATER THAN 3.00%. AVOID COMPACTING NATIVE SOILS. SCARIFY ANY COMPACTED SOIL.
4. GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF IUM MATERIAL SPECIFICATION 592. FOR WOVEN: APPARENT OPENING SIZE OF 0.50 MM (TABLE 1, CLASS I). FOR NON WOVEN: APPARENT OPENING SIZE OF 0.30 MM (TABLE 2, CLASS II).
5. STONE STORAGE OPTIONS ARE IDOT CA-1, CA-3, CA-7, DISTRICT VULCAN MIX, OR APPROVED ALTERNATE. NO RECYCLED MATERIALS.
6. MINIMUM DISTANCE OF 2 FEET (3.5 FEET IN COMBINED SEWER AREAS) BETWEEN BOTTOM OF BMP AND SEASONALLY HIGH GROUNDWATER LEVEL.
7. UNDERDRAINS ARE REQUIRED IN TYPICAL CLAYEY SOILS WHERE INFILTRATION RATES ARE LESS THAN 0.5 INCH/HOUR. MAXIMUM OF 1 UNDERDRAIN PER 30 FEET. PROVIDE A SOIL REPORT DOCUMENTING NATIVE INFILTRATION RATE TO FOREGO UNDERDRAINS.
8. MINIMUM UNDERDRAIN BEDDING OF TWO INCHES, MAXIMUM OF 12 INCHES.
9. ONE OBSERVATION WELL REQUIRED PER 6,000 SQUARE FEET OF SURFACE AREA.
10. FOLLOW THE REQUIRED PRETREATMENT MEASURES LISTED ON THE VOLUME CONTROL PRETREATMENT MEASURES DETAIL.
11. MAINTENANCE REQUIREMENTS INCLUDE ANNUAL VACUUMING AND LOW-PRESSURE POWER WASHING OF PAVEMENT SURFACE. ADJACENT VEGETATED AREAS SHALL BE WELL-MAINTAINED. BARE SPOTS AND ERODED AREAS SHALL BE REPLANTED AND STABILIZED IMMEDIATELY. DO NOT SEALCOAT OR APPLY DE-ICING SAND/GRAVEL/SALT. APPROPRIATE SIGNAGE REQUIRED FOR FACILITY, REFER TO THE TYPICAL SIGNAGE FOR PERMEABLE PAVEMENT DETAIL.

NOT TO SCALE

	TECHNICAL GUIDANCE MANUAL	8/24/18
	PERMEABLE PAVERS DETAIL	STD. DWG. NO.9
		PAGE NO. 10 – FC

6 Drainage Modeling (Proposed Conditions)

6.1 Introduction

The proposed master drainage plan for this report is conceptual and is based off the proposed Airport Site Plan developed. For each new development, it will be the responsibility of the design engineer to accurately develop the stormwater design based off the current regulations. Development and stormwater design shall be coordinated with the Airport, the Village of Wheeling, City of Prospect Heights, MWRD, and other applicable agencies for individual project permitting.

The proposed drainage modeling in this report provides a conceptual roadmap for future development and key items to consider. Assumptions for drainage modeling include approximate calculations of new land development use, calculations for stormwater events using the latest rainfall data requirements, and preliminary estimates for future stormwater detention, compensatory storage, and volume control required/provided.

6.2 Input Data

Calculating the proposed requirements for PWK created several challenges. Firstly, the tailwater impacts from the Des Plaines River are significant and place most of the storage below the Base Flood Elevation. This complicates the design and sizing of detention basins as the outlet restrictors' capacity is a function of head differentials. When the Des Plaines River is at a high flood stage, this head differential approaches zero.

Calculations for required detention were prepared using zero head differential, also called "zero release." MWRD has methodologies in place to develop required detention using these zero head conditions. Nomographs using Bulletin 75 data were consulted to determine a likely upper bound of required detention for PWK. In the future, when specific permits are pursued, a more detailed analysis or model could yield lower required detention rates, but with the uncertainty associated with future development, a more conservative approach seemed prudent.

In addition to detention estimations, the major and minor storm sewer systems will need to be re-evaluated as more detailed development designs occur. The Rational Method was used to determine general sizes of major trunklines through the airport, ranging from 24 inches in diameter at the upstream reaches to larger pipes near the outlet control structures.

Culvert Master was used to model the proposed airport overflow routes within the area of development that would affect the existing overflow route to the existing emergency overflow grate.

6.3 Proposed Conditions Modeling Results and Analysis (2,5,10 & 100 Year Events)

The storm sewer network was only evaluated during the more frequent, lesser storm events as larger and more severe storms overwhelm the system due to Des Plaines River backwater conditions.

An additional challenge to storage volumes for the necessity to elevate insurable structures, such as hangars with bathrooms to 2.5 feet above the BFE. This resulted in more impacts to floodplain fill than was originally expected. PWK has enough area to support this additional volume, but it does increase the footprint of the impacts. Since storm water management areas for detention and compensatory storage are considered impervious, this creates a situation where more storage is necessary to compensate for growing storm water management footprints. Therefore, making the basin areas as deep with steeper slopes at its maximum criteria will help reduce the footprint. However, limitations due to seasonal high groundwater and the outlet inverts of the primary outlets prevent the basins from getting as deep as would typically be recommended in a less constrained development.

PWK was split into 18 drainage areas, labeled 1 through 16 and includes a 2 North and 2 South as well as a 5 North and 5 South. Tributary areas ranged from 0.15 acres to 54.60 acres. Adjusted Runoff Curve Numbers (CN) ranged from 74 for pervious grasses to 85 for the most impervious or anticipated impervious areas. Using the MWRD Bulletin 75 nomographs detention varied for each basin from 0.07-acre feet to 30.80-acre feet, for a combined total of 100.73-acre feet required. If PWK had to meet MWRD requirements today for all the legacy development that volume would equal 69.14-acre feet.

6.4 Drainage Basins

Evaluating the tributary area of every future storm sewer structure at PWK is beyond the scope of this study, but a rough tributary area was developed for each storm sewer trunk line. This was done to identify larger pipe investments needed to support future development, especially in the southwest corner of PWK that is somewhat blocked off by the main runway.

Once basic drainage patterns were determined routing of the major drainage features and how they entered the two primary outlets were modeled. Capacity and sizing critical storm sewer pipes under runways or taxiways were explored to avoid impacts to runway or taxiway closures due to future construction.

6.5 Pipe Networks

The proposed storm sewer system was designed to accommodate a capacity from the apron areas to the infields. The storm sewer improvements include drainage pipes and structures required to meet the proposed airport site plan as well as incorporating and updating the existing storm sewer. The Rational Method was used to determine the flows and to size the proposed storm sewer.

During the design phase of each individual project, the designer will need to validate and verify the project's drainage requirements and account for the master drainage layout for the airport.

6.6 Detention / Compensatory Storage Systems

Two primary scenarios were developed to provide detention volume storage. The first was above ground basin detention within the airfield infields and open graded areas. This style of detention is the most cost-effective to construct, but it does require a large footprint that minimizes developable area for the Airport. The second consideration was underground storage, which is more expensive to construct, but provides a larger area for facility development. A third hybrid scenario was also developed identifying areas best for underground storage and others better suited to above ground storage. Conceptual cost estimates for these scenarios were also prepared.

Several key issues must be understood. The locations of storage areas are based on looking at the Airport holistically and may not suit every possible future development. Modifications to the concept during the individual project's final engineering will be required. Another concept evaluates storm water at the macro level, and not the micro level. Detention and compensatory storage do not necessarily need to be adjacent or within a future development. PWK drains through two primary outlets, and both are tributary to the Des Plaines River. If storing water in another part of PWK facilitates development, then it is possible that detention and compensatory storage may not be within or adjacent to the proposed development, but still within the limits of the airport.

The team discussed this concept with MWRD in a preapplication meeting and MWRD was favorable to this idea as the hydrologic implications are negligible. PWK owns property south of Palatine Road and utilizing this area for stormwater is permissible for development within the confines of the airport. If this 'off-site' storage drains openly and freely it can be used for compensatory storage.

Maximizing the available storage was also evaluated in the Runway Safety Area (RSA) and Taxiway Safety Areas (TSA's). This would consist of underground pipes to meet the FAA side slope criteria. Ultimately, the volume recovered with these pipes was expensive and not economical for the volume reclaimed, and this option would be low priority.

6.7 Alternative Underground Detention Storage

The current proposed site plan to date has enough stormwater detention storage if only utilizing above-ground basins. However, there may be future development that deviates from the proposed site plan and may require additional storage compared to what is outlined in previous sections. This may include scenarios where development increases pervious pavements, or if there are above-ground storage basins that can no longer be utilized, as shown in the concept plan. These scenarios could reduce the available detention storage, and the Airport would need alternative solutions.

Underground stormwater storage is an option that other local projects have utilized underground stormwater management while being able to have increased developable

area. For the Airport, underground stormwater storage could be an option to meet stormwater requirements as well as to keep areas available for future development. Underground storage would need to be strategically located within the Airport limits due to site constraints and to maintain compliance with air traffic safety. Examples of these facilities can be storage systems buried underground that contain pipes and can store water until it releases through the drainage system.

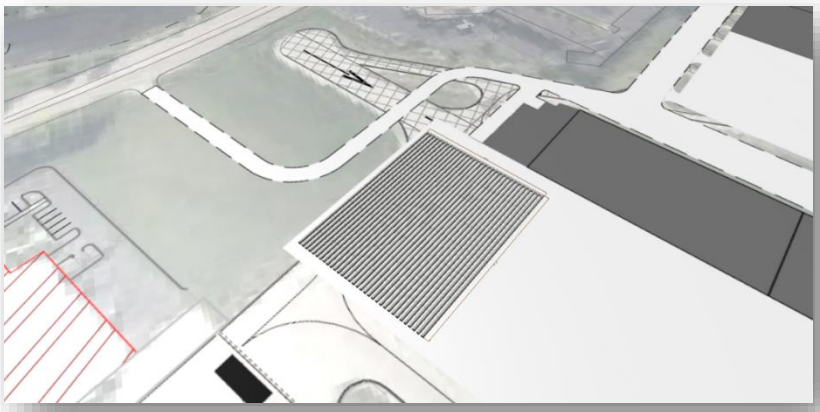
The underground storage facilities will have a higher cost and may be limited to what can be installed within the Airport due to site limitations. This include the existing topographic site constraints, the water table elevation, underground utilities, and the design layout in relation to the existing drainage system. Other cost factors would include maintenance to keep underground storage functioning.

Generally, Chicago Executive Airport is currently limited to where underground storage can be installed. However, with future development planned, underground detention locations were sorted into one of six priorities, from Priority 1 being most desirable to Priority 6 being least desirable for the Airport. These priority areas are shown in ***Appendix F, Alternative Underground Storage, Potential Underground Storage Priorities Map.***

- Priority 1 – Under Proposed New Aprons
- Priority 2 – Under Proposed New Lots and Roadways
- Priority 3 – Under New Taxiways/Taxilanes
- Priority 4 – In Existing Taxiway/Apron Infields and Shoulder Areas
- Priority 5 – In existing Runway 12/30 Runway/Taxiway Infields and Shoulder Areas
- Priority 6 – In Existing Runway 16/34 Runway/Taxiways

A conceptual example of Priority 1 underground storage is shown below for approximately 1-ac-ft of detention storage under proposed apron. Developers would need to verify proposed underground storage can meet the loads of proposed aircraft weights as well and not undermine the structural integrity of the pavement.

A conceptual design is included in **Appendix F, Alternative Underground Storage, Contech CMP Detention Systems.**



7 Drainage Infrastructure Recommendations

7.1 General

The primary focus of the Master Drainage Plan is to develop a logical concept of stormwater management which includes but not limited to storm sewer, detention, compensatory storage and volume control improvements. Stormwater management shall be in conformance with the latest regulatory requirements, which facilitate the development of the 2022 Airport Layout Plan improvements and other potential development as identified by the Airport. This report section discusses infrastructure improvement options and presents a recommended scope of physical drainage improvements that meet permitting standards.

It is the responsibility of the designer for each new development to determine the actual stormwater management for the permitting process. For new developments, coordination with the Airport will be required for conformance with the overall master drainage plan. Coordination with the local agencies and MWRD is required to meet their permitting requirements. It is recommended to begin coordination with all parties at the early stages of design to avoid delays from longer review periods due to the magnitude of the entire stormwater system within the Airport.

7.2 Storm Sewers

Proposed storm sewers are depicted in a conceptual layout with existing storm sewer modifications/removals that facilitate the proposed ALP improvements – as modified in ***Appendix D, Proposed Conditions Modeling***. In general, these improvements include:

Southwest Quadrant

The bulk of the southwest quadrant drains through an existing 30" RCP that runs under Runway 16/34 just south of the Runway 12/30 intersection. That 30" pipe drains into the existing southeast quadrant storm sewer system and eventually into the Des Plaines River at the East Outfall structure. That 30" pipe under Runway 16/34 and 12/30 is undersized. In lieu of upsizing that pipe or installing a secondary relief sewer, the ALP proposed a large dry-bottom detention pond (Area 5B) on the west side Taxiway L just north of Taxiway D. That pond will temporarily detain the excess runoff from the southwest quadrant hangar, apron, and sitework improvements. Furthermore, that pond will be interconnected to other upstream detention areas via the new proposed storm sewer system.

The northerly portion of the southwest quadrant drains north via an existing 36" RCP that runs under Runway 12/30. New runway/taxiway infield detention ponds are proposed for the south side of Runway 12/30, north of relocated Taxiway D to help prevent downstream storm sewer surcharge.

Southeast Quadrant

The existing drainage systems (storm sewers and detention areas) in the center portion of the southeast quadrant will be impacted by a proposed hangar development by Sky Harbour, which was proposed after the 2022 ALP approval and in the middle of this Drainage Master Planning effort. The Sky Harbour Development has the same concept as the proposed ALP improvements; however, current iterations include an entirely different developmental layout. This new layout (preliminary) will impact the main east storm sewer outfall and trunk storm sewer system that drains the entire south airport drainage basin into the Des Plaines River. As such, the existing open excavation detention and compensatory storage areas and main trunk sewers will need to be relocated / replaced.

Northeast and Northwest Quadrant

The bulk of the existing airport facilities located in the northeast quadrant of the airport currently drain to the north airfield outfall (which has a 20" restrictor plate). The balance of the northeast quadrant is currently private property that drains onto the airport across Sumac Road and east along Industrial Drive where it crosses Milwaukee Avenue and into the Des Plaines River.

The proposed ALP currently depicts airport acquisition of the entire Northeast Industrial Park, demolition of existing facilities, and the development of eight (8) larger hangar complexes. The bulk of the future airport improvements drain south then east through a series of dry-bottom detention ponds on the west side of Milwaukee Avenue and north side of Sumac Road. These ponds are proposed to drain north across Industrial Drive into another dry-bottom detention pond that will connect to the Wheeling Drainage ditch via an existing 24" RCP outfall.

In coordination with the Airport, management has indicated that this acquisition and subsequent development is "very long-term," and would likely be a later priority phase for further into the future.

Per the ALP and discussion with the Airport, not much development is planned within the Northwest quadrant. More recent hangar development was completed prior to this Master Drainage Study and was already included as existing conditions. Thus, no major storm sewer networks are proposed in this area.

7.3 Detention

Detention at the airport was evaluated as both above ground detention and as underground vaults. Per the study, the ultimate proposed airport plan can utilize above ground storage basins located within the airfield open areas, and still conceptually meet detention requirements at full build out. However, if airport development deviates from the plan in this study and is not able to utilize the proposed above-ground storage basins, a combined approach of above-ground and below ground detention storage facilities may be required if the to maximize developable area for new development. Activities to

prevent wildlife nuisances will need to be considered in open-air detention areas. If underground storage is utilized, operational maintenance will be required.

7.4 Compensatory Storage

Similarly to the detention recommendations above, the compensatory storage areas will utilize above ground storage and be shared with the detention storage basins. Compensatory Storage is critical within the 100-year floodplain boundaries; however, the Airport can utilize areas outside the floodplain to balance earthwork fills within the floodplain boundaries.

Vegetation should meet FAA requirements to minimize wildlife attractants while supporting stormwater management objectives required by MWRD and the local agencies.. The compensatory storage requirements may change over time due to ordinance revisions by the permitting authorities or if flood studies for the Des Plaines or Wheeling Drainage Ditch are updated. The current base flood elevations for the Des Plaines River are based on Bulletin 70 rainfall data and historical events. In the future the possibility of the Des Plaines River base flood being revised to use Bulletin 75 rainfall, which is about 20% higher than Bulletin 70, is possible and could impact future compensatory storage requirements during future development. Evaluating the Des Plaines River base flood elevation using Bulletin 75 rainfall data is beyond the scope of this study.

7.5 Water Quality/Volume Control

With the latest MWRD Watershed Management Ordinance (WMO), water quality measures are required for each project. Installation of water quality measures, such as gravel-based infiltration trenches with a turf layer on top, would make ideal best management practices. Benefits of this include avoiding wildlife attractive nuisances, minimize impacts to aircraft movements within the airfield, and minimize impacts to airport maintenance operations.

Permeable pavers are another opportunity. Pavers in lower traffic areas and locations without excessive turning movements would provide volume control meeting stormwater management requirements. Pavers can be more expensive, but the tradeoff of impervious areas when a hard surface is required can offset some of the costs and can reduce storage requirements. Pavers require more frequent maintenance and would require additional equipment or operational staff to maintain these facilities.

Shallow groundwater in several areas of the airport could present challenges to volume control, but other creative solutions, such as installing underdrains in conjunction with these measures should meet permitting requirements.

7.6 Underground Storage

An alternative option to maximize developable area and provide stormwater capacity would be to install underground storage at select locations. These facilities would come at a higher cost and would require occasional operational maintenance.

8 Proposed Drainage Improvement Cost Estimates

Conceptual cost estimates are provided for the current construction market. The estimates focus on the master drainage scope including storm sewers, drainage structures, earthwork storage basins excavations, general landscaping, and contractor mobilization costs. Cost estimates for future development such as pavements, buildings, facilities, utilities, and other proposed development that are non-drainage related to the master drainage study are excluded from the preliminary cost estimates. As an alternative, underground storage estimates are also provided for unit-cost comparison for the Airport equaling 1 ac-ft of stormwater storage.

The preliminary cost estimates presented are approximate for a full-build-out scenario according to the proposed Airport Site plan based off the ALP and other developments identified by the Airport. Due to the full-build out scenario planned over a span of 20-years according to the ALP, it is not realistic for a one-project scenario to be implemented for full master drainage updates. Drainage updates would be constructed per project development with the full buildout as a guide for stormwater management. Determining drainage improvement cost estimates for each development for the next 20 years is beyond the scope of this Master Drainage Study. To further break down the full-buildout drainage cost estimates, additional estimates were provided into 4-phases, which correlate to four (4) quadrants of the Airport (NW, NE, SW, and SE), as shown in Exhibit 6-1 below:

EXHIBIT 6-1 – PHASED CONSTRUCTION COST MAP



EXHIBIT 6-2
FULL-BUILD ESTIMATED CONSTRUCTION COSTS

FULL-BUILD - CONCEPTUAL COST ESTIMATES						
No.	Pay Item No.	Description	Unit	Quantity	Unit Price	Extended Cost
1	AR150530	TRAFFIC MAINTENANCE	L SUM	1	$ 200,000.00	$ 200,000.00
2	AR152410	UNCLASSIFIED EXCAVATION (CUT / DISPOSAL)	C YD	385,201	$ 35.00	$ 13,482,035.00
3	AR152460	TOPSOIL STRIPPING	C YD	36,070	$ 20.00	$ 721,400.00
4	AR156500	TEMPORARY EROSION CONTROL	L SUM	1	$ 150,000.00	$ 150,000.00
5	AR701512	12" RCP, CLASS IV	FOOT	3,660	$ 120.00	$ 439,200.00
6	AR701515	15" RCP, CLASS IV	FOOT	40	$ 130.00	$ 5,200.00
7	AR701518	18" RCP, CLASS IV	FOOT	16,000	$ 140.00	$ 2,240,000.00
8	AR701521	21" RCP, CLASS IV	FOOT	415	$ 150.00	$ 62,250.00
9	AR701524	24" RCP, CLASS IV	FOOT	2,800	$ 160.00	$ 448,000.00
10	AR701527	27" RCP, CLASS IV	FOOT	482	$ 170.00	$ 82,002.90
11	AR701530	30" RCP, CLASS IV	FOOT	1,900	$ 180.00	$ 342,000.00
12	AR701536	36" RCP, CLASS IV	FOOT	1,080	$ 190.00	$ 205,200.00
13	AR701542	42" RCP, CLASS IV	FOOT	790	$ 200.00	$ 158,000.00
14	AR701548	48" RCP, CLASS IV	FOOT	300	$ 205.00	$ 61,500.00
15	AR701566	66" RCP, CLASS IV	FOOT	1,300	$ 300.00	$ 390,000.00
16	AR701900	REMOVE PIPE	FOOT	4,990	$ 25.00	$ 124,750.00
17	AR751540	MANHOLE 4'	EACH	112	$ 5,500.00	$ 616,000.00
18	AR751550	MANHOLE 5'	EACH	26	$ 6,000.00	$ 156,000.00
19	AR751560	MANHOLE 6'	EACH	29	$ 6,500.00	$ 188,500.00
20	AR751567	MANHOLE 7'	EACH	14	$ 7,000.00	$ 98,000.00
21	AR751568	MANHOLE 8'	EACH	14	$ 7,500.00	$ 105,000.00
22	AR751900	REMOVE MANHOLE	EACH	52	$ 600.00	$ 31,200.00
23	AR752900	REMOVE END SECTION	EACH	20	$ 800.00	$ 16,000.00
24	AR752812	SLOPE BOX INLET 12"	EACH	32	$ 4,500.00	$ 144,000.00
25	AR752815	SLOPE BOX INLET 15"	EACH	4	$ 5,000.00	$ 20,000.00
26	AR752818	SLOPE BOX INLET 18"	EACH	23	$ 5,500.00	$ 126,500.00
27	AR801006	INFILTRATION BASIN	SQ YD	21,550	$ 30.00	$ 646,500.00
28	AR800XXX	SLOPE BOX INLET	EACH	16	$ 6,000.00	$ 96,000.00
29	AR901510	SEEDING	ACRE	76	$ 6,000.00	$ 454,200.00
30	AR905510	TOPSOILING (FROM ON SITE)	C YD	36,070	$ 25.00	$ 901,750.00
31	AR908515	HEAVY-DUTY HYDRAULIC MULCH	ACRE	76	$ 7,500.00	$ 567,750.00
32	AR800XXX	STEEL CASING PIPE, BORED AND JACKED	LF	200	$ 550.00	$ 110,000.00
					TOTAL EST. COST	$ 23,388,937.90

EXHIBIT 6-3
NORTHWEST ESTIMATED CONSTRUCTION COSTS

NORTHWEST - CONCEPTUAL CONSTRUCTION COST ESTIMATES								
No.	Pay Item No.	Description	Unit	Quantity		Unit Price		Extended Cost
1	AR150530	TRAFFIC MAINTENANCE	L SUM	1	$	50,000.00	$	50,000.00
2	AR152410	UNCLASSIFIED EXCAVATION (CUT / DISPOSAL)	C YD	6,050	$	35.00	$	211,750.00
3	AR152460	TOPSOIL STRIPPING	C YD	520	$	20.00	$	10,400.00
4	AR156500	TEMPORARY EROSION CONTROL	L SUM	1	$	18,750.00	$	18,750.00
5	AR701512	12" RCP, CLASS IV	FOOT	110	$	120.00	$	13,200.00
6	AR701515	15" RCP, CLASS IV	FOOT	0	$	130.00	$	-
7	AR701518	18" RCP, CLASS IV	FOOT	0	$	140.00	$	-
8	AR701521	21" RCP, CLASS IV	FOOT	0	$	150.00	$	-
9	AR701524	24" RCP, CLASS IV	FOOT	0	$	160.00	$	-
10	AR701527	27" RCP, CLASS IV	FOOT	0	$	170.00	$	-
11	AR701530	30" RCP, CLASS IV	FOOT	0	$	180.00	$	-
12	AR701536	36" RCP, CLASS IV	FOOT	0	$	190.00	$	-
13	AR701542	42" RCP, CLASS IV	FOOT	0	$	200.00	$	-
14	AR701548	48" RCP, CLASS IV	FOOT	0	$	205.00	$	-
15	AR701566	66" RCP, CLASS IV	FOOT	0	$	300.00	$	-
16	AR701900	REMOVE PIPE	FOOT	0	$	25.00	$	-
17	AR751540	MANHOLE 4'	EACH	0	$	5,500.00	$	-
18	AR751550	MANHOLE 5'	EACH	2	$	6,000.00	$	12,000.00
19	AR751560	MANHOLE 6'	EACH	0	$	6,500.00	$	-
20	AR751567	MANHOLE 7'	EACH	0	$	7,000.00	$	-
21	AR751568	MANHOLE 8'	EACH	0	$	7,500.00	$	-
22	AR751900	REMOVE MANHOLE	EACH	0	$	600.00	$	-
23	AR752900	REMOVE END SECTION	EACH	0	$	800.00	$	-
24	AR752812	SLOPE BOX INLET 12"	EACH	2	$	4,500.00	$	9,000.00
25	AR752815	SLOPE BOX INLET 15"	EACH	0	$	5,000.00	$	-
26	AR752818	SLOPE BOX INLET 18"	EACH	0	$	5,500.00	$	-
27	AR801006	INFILTRATION BASIN	SQ YD	950	$	30.00	$	28,500.00
28	AR800XXX	SLOPE BOX INLET	EACH	0	$	6,000.00	$	-
29	AR901510	SEEDING	ACRE	1.0	$	6,000.00	$	6,000.00
30	AR905510	TOPSOILING (FROM ON SITE)	C YD	520	$	25.00	$	13,000.00
31	AR908515	HEAVY-DUTY HYDRAULIC MULCH	ACRE	1.0	$	7,500.00	$	7,500.00
32	AR800XXX	STEEL CASING PIPE, BORED AND JACKED	LF	0.0	$	550.00	$	-
						TOTAL EST. COST	$	380,100.00

EXHIBIT 6-4
SOUTHWEST ESTIMATED CONSTRUCTION COSTS

SOUTHWEST - CONCEPTUAL CONSTRUCTION COST ESTIMATES						
No.	Pay Item No.	Description	Unit	Quantity	Unit Price	Extended Cost
1	AR150530	TRAFFIC MAINTENANCE	L SUM	1	$ 50,000.00	$ 50,000.00
2	AR152410	UNCLASSIFIED EXCAVATION (CUT / DISPOSAL)	C YD	129,500	$ 35.00	$ 4,532,500.00
3	AR152460	TOPSOIL STRIPPING	C YD	13,050	$ 20.00	$ 261,000.00
4	AR156500	TEMPORARY EROSION CONTROL	L SUM	1	$ 37,500.00	$ 37,500.00
5	AR701512	12" RCP, CLASS IV	FOOT	950	$ 120.00	$ 114,000.00
6	AR701515	15" RCP, CLASS IV	FOOT	40	$ 130.00	$ 5,200.00
7	AR701518	18" RCP, CLASS IV	FOOT	3,500	$ 140.00	$ 490,000.00
8	AR701521	21" RCP, CLASS IV	FOOT	65	$ 150.00	$ 9,750.00
9	AR701524	24" RCP, CLASS IV	FOOT	650	$ 160.00	$ 104,000.00
10	AR701527	27" RCP, CLASS IV	FOOT	300	$ 170.00	$ 51,000.00
11	AR701530	30" RCP, CLASS IV	FOOT	550	$ 180.00	$ 99,000.00
12	AR701536	36" RCP, CLASS IV	FOOT	500	$ 190.00	$ 95,000.00
13	AR701542	42" RCP, CLASS IV	FOOT	0	$ 200.00	$ -
14	AR701548	48" RCP, CLASS IV	FOOT	0	$ 205.00	$ -
15	AR701566	66" RCP, CLASS IV	FOOT	0	$ 300.00	$ -
16	AR701900	REMOVE PIPE	FOOT	580	$ 25.00	$ 14,500.00
17	AR751540	MANHOLE 4'	EACH	32	$ 5,500.00	$ 176,000.00
18	AR751550	MANHOLE 5'	EACH	4	$ 6,000.00	$ 24,000.00
19	AR751560	MANHOLE 6'	EACH	4	$ 6,500.00	$ 26,000.00
20	AR751567	MANHOLE 7'	EACH	4	$ 7,000.00	$ 28,000.00
21	AR751568	MANHOLE 8'	EACH	4	$ 7,500.00	$ 30,000.00
22	AR751900	REMOVE MANHOLE	EACH	2	$ 600.00	$ 1,200.00
23	AR752900	REMOVE END SECTION	EACH	2	$ 800.00	$ 1,600.00
24	AR752812	SLOPE BOX INLET 12"	EACH	6	$ 4,500.00	$ 27,000.00
25	AR752815	SLOPE BOX INLET 15"	EACH	4	$ 5,000.00	$ 20,000.00
26	AR752818	SLOPE BOX INLET 18"	EACH	6	$ 5,500.00	$ 33,000.00
27	AR801006	INFILTRATION BASIN	SQ YD	2,600	$ 30.00	$ 78,000.00
28	AR800XXX	SLOPE BOX INLET	EACH	4	$ 6,000.00	$ 24,000.00
29	AR901510	SEEDING	ACRE	24.3	$ 6,000.00	$ 145,800.00
30	AR905510	TOPSOILING (FROM ON SITE)	C YD	13,050	$ 25.00	$ 326,250.00
31	AR908515	HEAVY-DUTY HYDRAULIC MULCH	ACRE	24.3	$ 7,500.00	$ 182,250.00
32	AR800XXX	STEEL CASING PIPE, BORED AND JACKED	LF	200.0	$ 550.00	$ 110,000.00
					TOTAL EST. COST	$ 7,096,550.00

EXHIBIT 6-5
NORTHEAST ESTIMATED CONSTRUCTION COSTS

NORTHEAST - CONCEPTUAL CONSTRUCTION COST ESTIMATES								
No.	Pay Item No.	Description	Unit	Quantity		Unit Price		Extended Cost
1	AR150530	TRAFFIC MAINTENANCE	L SUM	1	$	50,000.00	$	50,000.00
2	AR152410	UNCLASSIFIED EXCAVATION (CUT / DISPOSAL)	C YD	182,901	$	35.00	$	6,401,535.00
3	AR152460	TOPSOIL STRIPPING	C YD	10,000	$	20.00	$	200,000.00
4	AR156500	TEMPORARY EROSION CONTROL	L SUM	1	$	37,500.00	$	37,500.00
5	AR701512	12" RCP, CLASS IV	FOOT	750	$	120.00	$	90,000.00
6	AR701515	15" RCP, CLASS IV	FOOT	0	$	130.00	$	-
7	AR701518	18" RCP, CLASS IV	FOOT	9,800	$	140.00	$	1,372,000.00
8	AR701521	21" RCP, CLASS IV	FOOT	0	$	150.00	$	-
9	AR701524	24" RCP, CLASS IV	FOOT	850	$	160.00	$	136,000.00
10	AR701527	27" RCP, CLASS IV	FOOT	0	$	170.00	$	-
11	AR701530	30" RCP, CLASS IV	FOOT	450	$	180.00	$	81,000.00
12	AR701536	36" RCP, CLASS IV	FOOT	100	$	190.00	$	19,000.00
13	AR701542	42" RCP, CLASS IV	FOOT	475	$	200.00	$	95,000.00
14	AR701548	48" RCP, CLASS IV	FOOT	300	$	205.00	$	61,500.00
15	AR701566	66" RCP, CLASS IV	FOOT	0	$	300.00	$	-
16	AR701900	REMOVE PIPE	FOOT	2,510	$	25.00	$	62,750.00
17	AR751540	MANHOLE 4'	EACH	50	$	5,500.00	$	275,000.00
18	AR751550	MANHOLE 5'	EACH	15	$	6,000.00	$	90,000.00
19	AR751560	MANHOLE 6'	EACH	15	$	6,500.00	$	97,500.00
20	AR751567	MANHOLE 7'	EACH	5	$	7,000.00	$	35,000.00
21	AR751568	MANHOLE 8'	EACH	5	$	7,500.00	$	37,500.00
22	AR751900	REMOVE MANHOLE	EACH	30	$	600.00	$	18,000.00
23	AR752900	REMOVE END SECTION	EACH	10	$	800.00	$	8,000.00
24	AR752812	SLOPE BOX INLET 12"	EACH	20	$	4,500.00	$	90,000.00
25	AR752815	SLOPE BOX INLET 15"	EACH	0	$	5,000.00	$	-
26	AR752818	SLOPE BOX INLET 18"	EACH	15	$	5,500.00	$	82,500.00
27	AR801006	INFILTRATION BASIN	SQ YD	8,000	$	30.00	$	240,000.00
28	AR800XXX	SLOPE BOX INLET	EACH	10	$	6,000.00	$	60,000.00
29	AR901510	SEEDING	ACRE	22.4	$	6,000.00	$	134,400.00
30	AR905510	TOPSOILING (FROM ON SITE)	C YD	10,000	$	25.00	$	250,000.00
31	AR908515	HEAVY-DUTY HYDRAULIC MULCH	ACRE	22.4	$	7,500.00	$	168,000.00
32	AR800XXX	STEEL CASING PIPE, BORED AND JACKED	LF	0	$	550.00	$	-
						TOTAL EST. COST		$ 10,192,185.00

EXHIBIT 6-6
SOUTHEAST ESTIMATED CONSTRUCTION COSTS

SOUTHEAST - CONCEPTUAL CONSTRUCTION COST ESTIMATES								
No.	Pay Item No.	Description	Unit	Quantity		Unit Price		Extended Cost
1	AR150530	TRAFFIC MAINTENANCE	L SUM	1	$	50,000.00	$	50,000.00
2	AR152410	UNCLASSIFIED EXCAVATION (CUT / DISPOSAL)	C YD	66,750	$	35.00	$	2,336,250.00
3	AR152460	TOPSOIL STRIPPING	C YD	12,500	$	20.00	$	250,000.00
4	AR156500	TEMPORARY EROSION CONTROL	L SUM	1	$	37,500.00	$	37,500.00
5	AR701512	12" RCP, CLASS IV	FOOT	1,850	$	120.00	$	222,000.00
6	AR701515	15" RCP, CLASS IV	FOOT	0	$	130.00	$	-
7	AR701518	18" RCP, CLASS IV	FOOT	2,700	$	140.00	$	378,000.00
8	AR701521	21" RCP, CLASS IV	FOOT	350	$	150.00	$	52,500.00
9	AR701524	24" RCP, CLASS IV	FOOT	1,300	$	160.00	$	208,000.00
10	AR701527	27" RCP, CLASS IV	FOOT	182	$	170.00	$	31,002.90
11	AR701530	30" RCP, CLASS IV	FOOT	900	$	180.00	$	162,000.00
12	AR701536	36" RCP, CLASS IV	FOOT	480	$	190.00	$	91,200.00
13	AR701542	42" RCP, CLASS IV	FOOT	315	$	200.00	$	63,000.00
14	AR701548	48" RCP, CLASS IV	FOOT	0	$	205.00	$	-
15	AR701566	66" RCP, CLASS IV	FOOT	1,300	$	300.00	$	390,000.00
16	AR701900	REMOVE PIPE	FOOT	1,900	$	25.00	$	47,500.00
17	AR751540	MANHOLE 4'	EACH	30	$	5,500.00	$	165,000.00
18	AR751550	MANHOLE 5'	EACH	5	$	6,000.00	$	30,000.00
19	AR751560	MANHOLE 6'	EACH	10	$	6,500.00	$	65,000.00
20	AR751567	MANHOLE 7'	EACH	5	$	7,000.00	$	35,000.00
21	AR751568	MANHOLE 8'	EACH	5	$	7,500.00	$	37,500.00
22	AR751900	REMOVE MANHOLE	EACH	20	$	600.00	$	12,000.00
23	AR752900	REMOVE END SECTION	EACH	8	$	800.00	$	6,400.00
24	AR752812	SLOPE BOX INLET 12"	EACH	4	$	4,500.00	$	18,000.00
25	AR752815	SLOPE BOX INLET 15"	EACH	0	$	5,000.00	$	-
26	AR752818	SLOPE BOX INLET 18"	EACH	2	$	5,500.00	$	11,000.00
27	AR801006	INFILTRATION BASIN	SQ YD	10,000	$	30.00	$	300,000.00
28	AR800XXX	SLOPE BOX INLET	EACH	2	$	6,000.00	$	12,000.00
29	AR901510	SEEDING	ACRE	28.0	$	6,000.00	$	168,000.00
30	AR905510	TOPSOILING (FROM ON SITE)	C YD	12,500	$	25.00	$	312,500.00
31	AR908515	HEAVY-DUTY HYDRAULIC MULCH	ACRE	28.0	$	7,500.00	$	210,000.00
32	AR800XXX	STEEL CASING PIPE, BORED AND JACKED	LF	0	$	550.00	$	-
						TOTAL EST. COST	$	5,701,352.90

EXHIBIT 6-7
UNDERGROUND STORAGE (1-AC-FT) ESTIMATED CONSTRUCTION COSTS

ALTERNATIVE - UNDERGROUND STORAGE UNIT PRICES						
No.	**Pay Item No.**	**Description**	**Unit**	**Quantity**	**Unit Price**	**Extended Cost**
1	AR152410	UNCLASSIFIED EXCAVATION	C YD	6,000.0	$ 20.00	$ 120,000.00
2	AR152460	TOPSOIL STRIPPING	C YD	350.0	$ 20.00	$ 7,000.00
3	AR156513	SEPARATION FABRIC	SQ YD	3,200.0	$ 2.00	$ 6,400.00
4	AR701236	36" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT	6,500.0	$ 125.00	$ 812,500.00
5	AR701242	42" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 145.00	$ -
6	AR701248	48" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 165.00	$ -
7	AR701254	54" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 185.00	$ -
8	AR701260	60" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 205.00	$ -
9	AR701266	66" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 225.00	$ -
10	AR701272	72" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 245.00	$ -
11	AR701278	78" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 255.00	$ -
12	AR701284	84" CMP W/ ALUMINIZED STEEL TYPE 2 COATING	FOOT		$ 275.00	$ -
13	AR701501	GRANULAR BEDDING/BACKFILL (CA-7)	C YD	550.0	$ 45.00	$ 24,750.00
					TOTAL EST. COST	**$ 970,650.00**

9 Summary of Findings & Recommendations

The Master Drainage Study summarizes the existing conditions and proposes stormwater infrastructure needs and requirements in correlation with the latest Airport Layout Plan (ALP) and known future development as coordinated with the Airport. The study evaluated the Airport's existing infrastructure and found the Airport currently provides an adequate storm sewer system, and stormwater storage is currently met without any critical airfield facilities identified to be a flood risk during a 100-year flood event. Existing conditions such as site layout, contour mapping, storm sewer and structure inventory, and pipe network systems were modeled in CAD and provided to the Airport.

Proposed drainage infrastructure developed in-line with a future airport site plan can utilize above ground storage basins within the airfield and meet stormwater storage requirements. As individual projects are designed, additions or removals to the existing storm sewer shall be modeled for capacity. A proposed conceptual storm sewer layout is provided and no capacity issues are identified. The combination of above-ground storage basins and upgrades to the storm sewer layout suffices and is the most cost-effective solution for the Airport. However, if future development deviates from the proposed site plan and not be able to utilize above-ground storage basins in this report, underground storage may be an option to meet stormwater storage requirements while also providing the Airport additional development area. However, this alternative will increase costs significantly with respect to drainage infrastructure and operational maintenance.

As the Airport constructs new development, local and federal regulations will need to be met. As the county's stormwater review agency, the Metropolitan Water Reclamation District of Greater Chicago (MWRD) will be the most critical permitting agency. The Airport should follow a stormwater management plan similar to what they have used in the past but should update the methods in correlation to the latest MWRD Watershed Management Ordinance (WMO). Many of the required permitting documents can be found on the MWRD website and they have valuable resources and templates the Airport can utilize when applying for MWRD permitting. The existing stormwater storage calculations presented in this study can serve as a starting basis for the Airport's new stormwater management plan and be coordinated with MWRD as individual projects are constructed and accounted for.

This Master Drainage Plan is anticipated to be used as a guide to identify potential stormwater management solutions when preparing stormwater improvements for each individual development. It is the responsibility of the design engineer or developer to design and meet stormwater regulations, as well as to obtain required permits for each project.

End of Report

June 2025

Definitions

100-Year Flood Elevation	The highest elevation of the BFE or a project-specific 100-year flood elevation
Actual Release Rate	The release rate from the control structure of a detention facility at the 100-year high water elevation.
Airport Layout Plan (ALP)	A scaled drawing or set of drawings, in either hardcopy or electronic form, of existing and future airport facilities that provides a graphic representation of the existing and long-term development plan for the airport and demonstrates the preservation and continuity of safety, utility, and efficiency of the airport to the FAA's satisfaction
Base Flood Elevation (BFE)	Base Flood Elevation. The height of the base flood in relation to the North American Vertical Datum of 1988 that is associated with the Special Flood Hazard Area on the effective FIRM. The BFE shall be determined by the effective Flood Insurance Study (FIS) for a project.
Compensatory Storage	An excavated volume of storage used to offset the loss of existing flood storage capacity when fill or structures are placed within the floodplain
Control Structure	The structure (i.e., restrictor) that controls the flow rate out of the detention facility such that the required detention volume is provided.
Detention	Stormwater detention is the process of temporarily collecting and storing stormwater runoff, typically in basins or underground systems, before releasing it at a controlled rate. This helps prevent downstream flooding and erosion by managing the volume and rate of stormwater discharge
Detention Facility	A facility providing temporary storage of stormwater runoff to comply with the requirements of this Ordinance. The detention facility includes the stormwater storage facility, control structure (i.e., restrictor), emergency overflow structure, and associated storm sewers and structures.
FEMA	Federal Emergency Management Agency. The federal agency whose primary mission is to reduce the loss of life and property and protect the nation from all hazards (including natural disasters, acts of terrorism, and other man-made disasters) by leading and supporting the nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation.
Flood or Flooding	A general and temporary condition of partial or complete inundation of normally dry land areas from accumulation or runoff of surface waters from any source.
Floodplain	The area adjacent to and including a body of water where ground surface elevations are at or below a specified flood elevation. Floodplains include regulatory floodplains.

Floodway	The channel and portion of the floodplain adjacent to a stream or watercourse that is required to store and convey the base flood without cumulatively increasing the water surface elevation greater than or equal to one-tenth of a foot (0.10 feet). Floodways include regulatory floodways.
Groundwater	Subsurface water occupying the saturation zone below the normal water table.
Impervious Area	A surface that does not readily allow for the infiltration of stormwater runoff into the ground. Impervious areas include, but are not limited to, rooftops, asphalt or concrete pavement, compacted graveled, and ponded water at its normal water level. Volume control practices, green infrastructure, or other areas which include, but are not limited to, non-compacted gravel, porous/permeable pavement, and bio-retention (rain gardens and bio-swales, composed of an engineered soil mix) that are designed to promote infiltration of stormwater runoff into the ground shall not be considered an impervious area.
Object Free Area	An area centered on the surface of a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by remaining clear of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.
Outfall	The end point of any storm, sanitary, or combined sewer, providing a point source discharge into a defined waterway or Lake Michigan. Outfalls do not include culverts or open conveyances systems connecting two segments of a waterway, or private single-family home storm drains
Required Detention Volume	The volume required to be provided within a detention facility to store the 100-year storm event with a 24-hour duration at the actual release rate.
Runway Safety Area (RSA)	A defined area surrounding the runway consisting of a prepared surface suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway.
Stormwater Facility	Structures and measures both natural and artificial which serve as a means of draining surface and subsurface water from land including, but not limited to, ditches, channels, conduits, bridges, culverts, levees, ponds, natural and man-made impoundments, wetlands, wetland buffers, riparian environment, tile, swales, storm sewers, and waterways.
Stormwater Facility	Structures and measures both natural and artificial which serve as a means of draining surface and subsurface water from land including, but not limited to, ditches, channels, conduits, bridges, culverts, levees, ponds, natural and man-made impoundments, wetlands, wetland buffers, riparian environment, tile, swales, storm sewers, and waterways.

Taxiway Safety Area (TSA)	A defined surface on both sides of the taxiway prepared and suitable for reducing the risk of damage to aircraft deviating from the pavement and for supporting passage of aircraft rescue and fire fighting (ARFF) equipment.
TGM	Technical Guidance Manual. A manual prepared in conjunction with this Ordinance that provides technical information and guidance for compliance with the provisions of this Ordinance, and as amended from time to time.
Underground Storage Facility	An underground storage facility is a large subsurface reservoir located under pavements or open space to manage stormwater runoff through infiltration, extended detention, or the combination of the two.
Volume Control Storage	The first inch of runoff from the impervious area.
Watershed	Tributary areas discharging to a common point.

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8. Metropolitan Water Reclamation District of Greater Chicago (MWRD). (2025). Watershed Management Ordinance (WMO).
   https://mwrd.org/sites/default/files/2025-01/Watershed_Management_Ordinance_010925.pdf

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   https://mwrd.org/doing-business/watershed-management-ordinance-and-infiltrationinflow/watershed-management-ordinance-wmo-and-technical-guidance-manual-tgm/technical-guidance-manual-tgm

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APPENDIX A

AIRPORT LAYOUT PLAN

Airport Building Identification		
Building Identifier	Building Description	Building Elevation (ft. MSL)
1	Hawthorne Global Aviation	684.7'
7	Hangar	676.9'
9	Priester Aviation / West Star Aviation	677.4'
10	Hangar	670.4'
DH	Hangar	678.8'
12	Hangar	685.3'
15	Hangar	682.9'
16	Hangar	682.9'
18	Hangar	685.6'
19	Hangar	689.3'
20	Hangar	679.3'
21	Hangar	685.1'
24	Signature Flight Support	667.4'
40	Atlantic Aviation	677.4'
41	Hangar	677.9'
42	Hangar	682.3'
50	T-Hangar	662.0'
51	T-Hangar	664.9'
52	T-Hangar	662.2'
53	T-Hangar	662.4'
54	T-Hangar	662.4'
55	T-Hangar	662.4'
56	T-Hangar	662.4'
57	T-Hangar	662.4'
58	T-Hangar	662.4'
59	Corporate Hangar	
60	Corporate Hangar	
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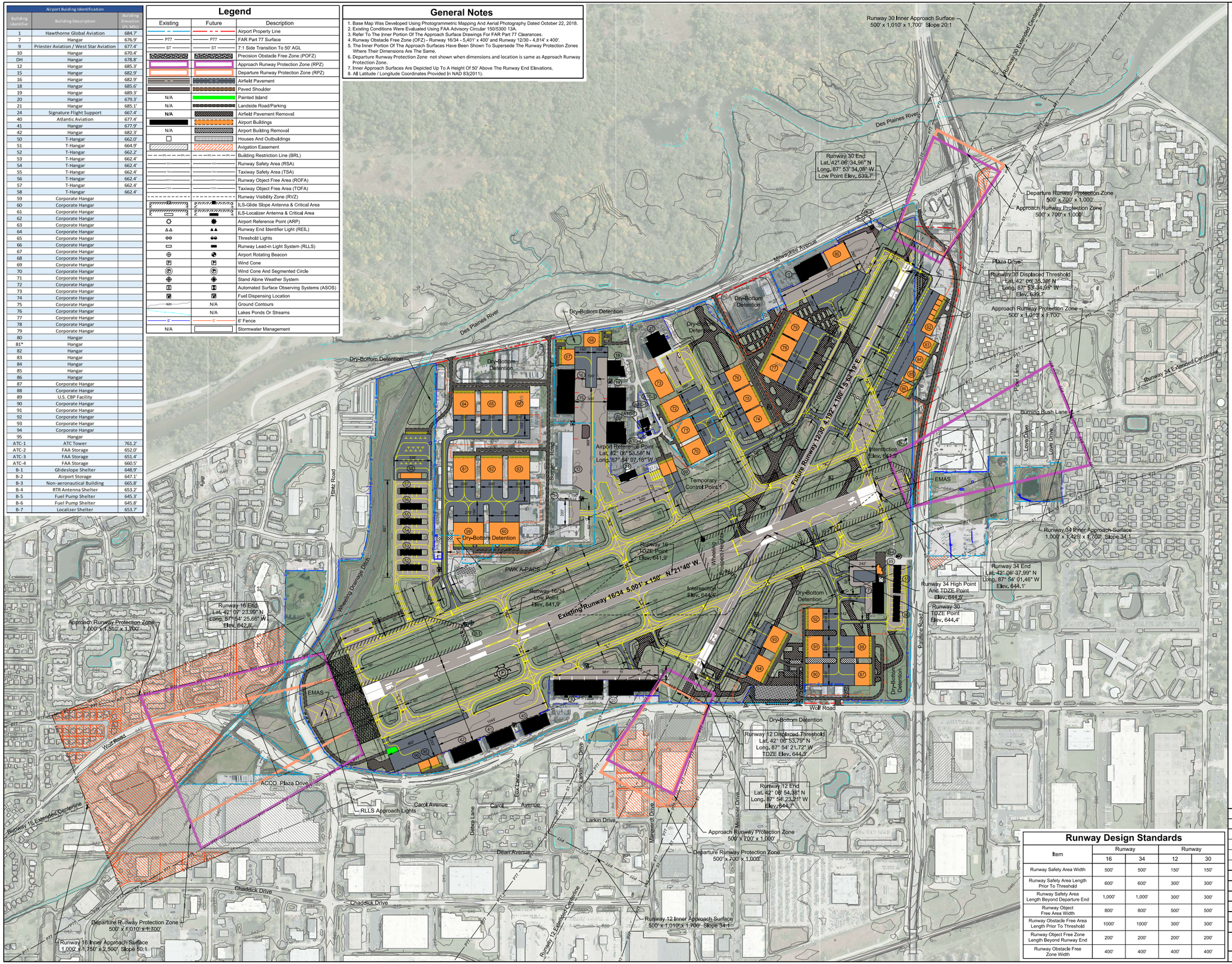
81*	Hangar	
82	Hangar	
83	Hangar	
84	Hangar	
85	Hangar	
86	Hangar	
87	Corporate Hangar	
88	Corporate Hangar	
89	U.S. CBP Facility	
90	Corporate Hangar	
91	Corporate Hangar	
92	Corporate Hangar	
93	Corporate Hangar	
94	Corporate Hangar	
95	Hangar	
ATC-1	ATC Tower	761.2'
ATC-2	FAA Storage	652.0'
ATC-3	FAA Storage	651.4'
ATC-4	FAA Storage	660.5'
B-1	Glideslope Shelter	648.9'
B-2	Airport Storage	647.1'
B-3	Non-aeronautical Building	665.8'
B-4	RTR Antenna Shelter	653.2'
B-5	Fuel Pump Shelter	645.3'
B-6	Fuel Pump Shelter	645.8'
B-7	Localizer Shelter	653.7'

Legend

Existing	Future	Description
		Airport Property Line
P77	P77	FAR Part 77 Surface
ST	ST	7:1 Side Transition To 50' AGL
		Precision Obstacle Free Zone (POFZ)
		Approach Runway Protection Zone (RPZ)
		Departure Runway Protection Zone (RPZ)
		Airfield Pavement
		Paved Shoulder
N/A		Painted Island
N/A		Landside Road/Parking
N/A		Airfield Pavement Removal
		Airport Buildings
N/A		Airport Building Removal
		Houses And Outbuildings
		Avigation Easement
BRL	BRL	Building Restriction Line (BRL)
RSA	RSA	Runway Safety Area (RSA)
TSA	TSA	Taxiway Safety Area (TSA)
ROFA	ROFA	Runway Object Free Area (ROFA)
TOFA	TOFA	Taxiway Object Free Area (TOFA)
		Runway Visibility Zone (RVZ)
		ILS-Glide Slope Antenna & Critical Area
		ILS-Localizer Antenna & Critical Area
		Airport Reference Point (ARP)
		Runway End Identifier Light (REIL)
		Threshold Lights
		Runway Lead-in Light System (RLLS)
		Airport Rotating Beacon
		Wind Cone
		Wind Cone And Segmented Circle
		Stand Alone Weather System
		Automated Surface Observing Systems (ASOS)
		Fuel Dispensing Location
600	N/A	Ground Contours
	N/A	Lakes Ponds Or Streams
6'	6'	6' Fence
N/A		Stormwater Management

General Notes

1. Base Map Was Developed Using Photogrammetric Mapping And Aerial Photography Dated October 22, 2018.
2. Existing Conditions Were Evaluated Using FAA Advisory Circular 150/5300 13A.
3. Refer To The Inner Portion Of The Approach Surface Drawings For FAR Part 77 Clearances.
4. Runway Obstacle Free Zone (OFZ) - Runway 16/34 - 5,401' x 400' and Runway 12/30 - 4,814' x 400'.
5. The Inner Portion Of The Approach Surfaces Have Been Shown To Supersede The Runway Protection Zones Where Their Dimensions Are The Same.
6. Departure Runway Protection Zone not shown when dimensions and location is same as Approach Runway Protection Zone.
7. Inner Approach Surfaces Are Depicted Up To A Height Of 50' Above The Runway End Elevations.
8. All Latitude / Longitude Coordinates Provided In NAD 83(2011).



Runway Design Standards

Item	Runway 16	Runway 34	Runway 12	Runway 30
Runway Safety Area Width	500'	500'	150'	150'
Runway Safety Area Length Prior To Threshold	600'	600'	300'	300'
Runway Safety Area Length Beyond Departure End	1,000'	1,000'	300'	300'
Runway Object Free Area Width	800'	800'	500'	500'
Runway Obstacle Free Area Length Prior To Threshold	1000'	1000'	300'	300'
Runway Object Free Zone Length Beyond Runway End	200'	200'	200'	200'
Runway Obstacle Free Zone Width	400'	400'	400'	400'

CMT
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CONSULTING ENGINEERS
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CHICAGO EXECUTIVE AIRPORT

Future Airport Layout Drawing

0 300 600
Scale in Feet

Magnetic Declination
Declination 3° 15' 00" W (11/13/2018)
Rate of Change: 0° 4' W, Per Year

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (30x42)

K:\ALP\Chicago Executive-III\2017 ALP Update\Drawn\Sheets
FILE: PWK 2017 ALP_02 Future Airport Layout Drawing.dwg
UPDATE BY: Mike Wilson
SURVEY BOOK #
DATE: 11/17/2021 10:52 AM
XREF DWG:

REVISIONS		
NO.	BY	DATE

DESIGN BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
DATE: 4/10/2019
JOB No: 17290-04-00

SHEET 03 OF 54 SHEETS

APPENDIX B

PREVIOUS AIRPORT STORMWATER MANAGEMENT SYSTEM

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

INFORMATION PAMPHLET: Construction Under MWRD Sewer Permits

SUBJECT: Permit No. 03-246 Date of Issue: JUN 23 2004

02290-02-01

Project: Palwaukee Municipal Airpir Master Drainage Study

Location: NWI of Palatine Road & Milwaukee Ave. Wheeling & Prospect Heights

The above permit was issued on the date indicated and copies of the permit are being mailed as follows:

_____ Both copies of the permit, together with the permit drawings are mailed to the Permittee.

__X__ One copy of the permit together with the permit drawings is mailed to the Permittee and one copy is mailed to the designated individual.

If you need any assistance or if you have any questions at any time involving this project or other related matters, please call the Local Sewer Systems Section (Telephone (312) 751-3260). Requirements governing sewer construction are contained in the Sewer Permit Ordinance and the Manual of Procedures for the Administration of the Sewer Permit Ordinance (Manual). Your cooperation is solicited and your attention is invited to the following:

1. Read carefully the conditions of the permit and the special conditions that may have been included. If you object to any of the special conditions, return the permit with a letter indicating your non-acceptance, but do not proceed with the construction. Construction constitutes acceptance of the special conditions.

2. Prior to the beginning of construction, advance notice of at least two working days is required. For your protection, a written notice by certified mail is preferable, provided the notice is received at least two working days in advance of construction. At a minimum, a telephone call to the Local Sewer Systems field office is required two working days in advance of the construction start. (Telephone (708) 588-4055). Work on direct connections to MWRD facilities shall not be started without the presence of a MWRD representative.

3. On small projects (e.g., building connection) our inspectors should, as a general rule, visit the job in the first part of the same day of the job start. Please look for him. If he does not appear on the job, chances are we have not received the advance notice. It is worth your while to check, or better yet, make another call.

4. A copy of the approved permit together with the permit drawings must be kept at the job site at all times while construction is in progress.

5. No sewer shall be backfilled unless it has been inspected and approved by the Inspection Engineer or his authorized representative and the backfilling authorized by him.

6. Construction shall conform to the permit plans and specifications and be in accordance with applicable rules and regulations. Be sure that the installation is inspected and approved by the Inspection Engineer and the Municipal Engineer.

7. Upon completion of construction (and preferable no later than 15 days thereafter), submit a fully executed "Request for Final Inspection and Approval" (RFI) form and make necessary arrangements for final testing and inspection with the Local Sewer Systems field office (Telephone (708) 588-4055). The RFI form is being mailed to the Engineer.

8. Upon successful final inspection and testing by the MWRD, the RFI will be executed by the MWRD and one copy will be mailed to the Permittee. The executed copy is the formal approval by the MWRD. No sewer shall be put in service prior to final inspection and approval by the MWRD.

9. If upon final inspection and testing the installation is not approved, a report will be furnished by the MWRD as to the reasons. Please proceed promptly with the corrections and make arrangements for re-testing.

10. The permit is issued to the Permittee(s) shown. The Permittee is held responsible for the full and faithful compliance with all the permit conditions regardless of any understandings that may exist between any parties that may be involved in this project.

11. If a violation report is filed against the project during construction, it is advisable that necessary corrective measures be promptly taken prior to proceeding with other construction.

12. All sewer construction requires stone bedding ¼" to 1" in size, and having a minimum thickness of 4". The gradation must be in accordance with Article 4-3 of the Manual, as amended April 7, 1994.

13. Overhead plumbing is mandatory for occupancy areas below grade. (See Article 4-1 of the Manual.

14. Footing drains shall be connected to sump pumps and discharge shall be made into storm sewers, combined sewers or drainage ditches. No footing drains shall be connected to sanitary sewers. (See Articles 6-2d and 6-3b of the Manual).

15. Consult the Manual for detention requirements.

16. Sump pumps installed for sanitary sewers shall not be used for storm sewers. Those pumps installed for storm sewers shall not be used for sanitary sewers.

17. Fee Refund: Permit fee refunds will be made for sewer pipe included in the original permit but not installed, if the total fee to be refunded is more than $100.00.

cc: Permittee, Owner, Engineer

SEWERAGE SYSTEM PERMIT

MWRDGC Permit No. 03-246

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO
100 EAST ERIE, CHICAGO, ILLINOIS, 60611
312-751-5600
http://www.mwrd.org

03 JUN -4 PM

INSTRUCTIONS FOR COMPLETING PERMIT FORM: Submit four typed copies of permit application (eight pages) and any required schedules listed below; do not leave any blank spaces; use "X" for checking applicable information. Also submit four copies of location map and plans. Submit two copies of specifications, if specifications are not part of the plan sheets. Address all correspondence to the Local Sewer Systems Section; for any inquiries or assistance, telephone (312) 751-3260.

NAME AND LOCATION:

Name of project (as shown on plans): Palwaukee Municipal Airport Master Drainage Study Update

Location of Project (street address or with respect to two major streets): Northwest intersection of Palatine Road and Milwaukee Avenue

Municipality (Township, if unincorporated) Village of Wheeling and City of Prospect Heights

Section 11, 12, 13, 14, Township 42 N, Range 11

SERVICE BASIN
NOR-North Side WRP

Is project in MWRDGC combined sewer area Yes ☐ No ☒

DOCUMENTS BEING SUBMITTED

- ☒ Basic Information (Required in all cases) ..... Schedule A (Page 4 of 8)
- ☒ Sewer Summary (Required in all cases) ..... Schedule B (Page 5 of 8)
- ☒ Sewer Connections (Required in all cases) ..... Schedule C (Page 6 of 8)
- ☒ Detention Facilities ..... Schedule D (3 Pages)
- ☐ Lift Station and/or Force Main ..... Schedule E (1 Page)
- ☐ Characteristics of Waste Discharges ..... Schedule F (1 Page)
- ☐ Treatment or Pre-treatment Facilities ..... Schedule G (1 Page)
- ☐ Certification Relative to Compliance with Art. 4-1, 6-2d, & 6-3b ..... Schedule H (1 Page)
- ☒ Affidavit Relative to Compliance with Art. 4-1, 6-2d, & 6-3b ..... Schedule J (1 Page)
- ☒ Affidavit of Disclosure of Property Interest ..... Schedule K (1 Page)
- ☒ Notice of Requirements for Storm Water Detention ..... Schedule L (1 Page)
- ☒ Current Survey of Property Interests ..... Exhibit (1 Page)

OTHER DOCUMENTS: Indicate title, number of pages and originator **Master Drainage Study Update, 6 pages, 7 exhibits & 4 attachments, by Crawford, Murphy & Tilly, Inc.**

NOTE: ATTACH FEE PAYMENT VOUCHER AND PAYMENT IF APPLICABLE

MWRDGC USE ONLY
Application received on: JUN 04 2003 Permit issued on: JUN 23 2004

WARNING
FLOOD HAZARD AREA
PERMITTEE ASSUMES ALL LIABILITY

Construction covered by this permit is in an area designated as floodplain according to the data source specified in the permit. The indemnity clause of this permit paragraph 12 shall operate to protect The Metropolitan Sanitary District of Greater Chicago from any and all claims for damages, costs or expenses incurred by any person for injury or death to any person or damage to any personal property or real estate, caused by flood or high water, the liability for which is hereby disclaimed by The Metropolitan Sanitary District of Chicago and is hereby assumed by the Permittee.

GENERAL CONDITIONS OF THE PERMIT

1. **Adequacy of Design**. The schedules, plans, specifications and all other data and documents submitted for this permit are made a part hereof. The responsibility for the adequacy of the design shall rest solely with the Design Engineer and the issuing of this permit shall not relieve him of that responsibility. The issuance of this permit shall not be construed as approval of the concept or construction details of the proposed facilities and shall not absolve the Permittee, Co-permittee or Design Engineer of their respective responsibilities.
2. **Joint Construction and Operation Permits.** Unless otherwise stated by the Special Conditions, the issuance of this permit shall be a joint construction and operation permit provided all General, Standard and Special Conditions are complied with.
3. **Allowable Discharges.** Discharges into the sanitary sewer system constructed under this permit shall consist of sanitary sewage only. Unless otherwise stated by the Special Conditions, there shall be no discharge of industrial wastes under this permit. Storm waters shall not be permitted to enter the sanitary sewer system. Without limiting the general prohibition of the previous sentence, roof and footing drains shall not be connected to the sanitary sewer system.
4. **Construction Inspection.** All sewer construction shall be inspected and approved by a Registered Professional Engineer acting on behalf of the Permittee or the owner of the project, or by a duly authorized and competent representative of the Professional Engineer. No sewer trenches shall be backfilled except as authorized by the Inspection Engineer after having inspected and approved the sewer installation.
5. **Maintenance.** The sewer connections, lines, systems or facilities constructed hereunder or serving the facilities constructed hereunder shall be properly maintained and operated at all times in accordance with all applicable requirements. It is understood that the responsibility for maintenance shall run as a joint and several obligation against the property served, the owner and/or the operator of the facilities, and said responsibility shall not be discharged nor in any way affected by change of ownership of said property.

MWRDGC STANDARD CONDITIONS

6. **Indemnification.** The Permittee shall be solely responsible for and shall defend, indemnify and save harmless the Metropolitan Water Reclamation District of Greater Chicago (hereinafter MWRDGC) from and against any and all claims, costs, damages, or expenses the MWRDGC may suffer, incur, sustain or become liable for on account of any injury to, or death of, any person or persons, or any damage to, or destruction of, any real or personal property that may be caused by the construction, use, state of repair; operation and maintenance of the proposed facilities, arising out of or in consequence of the issuance of this permit. Without limiting the generality of the preceding sentence, the provisions of this paragraph shall extend to indemnify and save harmless the MWRDGC from any claims or damages arising out of or in connection with the termination or revocation of this permit.
7. **Construction by MWRDGC.** Permittee understands and acknowledges that the MWRDGC has the right and power to construct and extend sewer service facilities and render such services within the area to be served by the project for which this permit is issued, and that by the MWRDGC constructing and extending such sewer service facilities and rendering such services, the facilities constructed by the Permittee under this permit may decrease in value, become useless or of no value whatsoever, the Permittee may also sustain a loss of business, income and profits.

   Therefore, by accepting this permit and acting thereon, the Permittee, for itself, its successors and assigns, does remise, release and forever discharge the MWRDGC of any and all claims whatsoever which Permittee may now have or hereafter acquire and which Permittee's successors and assigns hereafter can, shall, or may have against the MWRDGC for all losses and damages, either direct or indirect, claimed to have been incurred by reason of the construction or extension at any time hereafter by the MWRDGC of sewer service facilities in the service area contemplated by this permit, the rendering of such services, which MWRDGC facilities and services decrease the value of the facilities constructed by the Permittee under this permit, make same useless or of no value whatsoever, including but not limited to, any and all damages arising under Illinois Revised Statutes, Chapter 42, Section 339; the taking of private property for public use without due compensation; the interference with the contracts of Permittee; the interference with Permittee's use and enjoyment of its land; and the decrease in value of Permittee's land.

8. **Third Parties.** This permit does not grant the right or authority to the Permittee: (a) to construct or encroach upon any lands of the MWRDGC or of any other parties, (b) to construct outside of the territorial boundaries of the MWRDGC, (c) to construct or encroach upon the territorial boundaries of any units of local government within the MWRDGC, (d) to connect to or discharge into or be served by (directly or indirectly) any sewer or sewer system owned or operated by third parties.

9. **Costs.** It is expressly stipulated and clearly understood that the sewerage system or facilities for which the permit is issued shall be constructed, operated and maintained at no cost to the MWRDGC.

10. **Other Construction.** The MWRDGC reserves the right, privilege and authority to permit others to reconstruct, change, alter and replace all sewers and appurtenances thereto at the point of connection of any sewerage system to an MWRDGC interceptor and/or in public right-of-ways of MWRDGC easements, and to introduce additional sewage flow through this connection into the intercepting sewer of said MWRDGC.
11. **Change of Use.** This permit shall be incorporated in the Building and Occupancy Permit for the building or buildings served under this permit. The owner or occupant of any building served under this permit shall not cause, or permit, a change of use of the building to a use other than that indicated in this permit without first having obtained a written permission from the General Superintendent of the MWRDGC.
12. **Interceptors Overloading.** The MWRDGC hereby serves notice that its interceptors may flow full and may surcharge, and flooding of the proposed system may occur. The Permittee agrees that the proposed systems shall be constructed, operated and maintained at the sole risk of the Permittee.
13. **Non-Transferability.** This permit may not be assigned or transferred without the written consent of the General Superintendent of the MWRDGC.
14. **Termination.** It is understood and agreed that in the event the Permittee shall default in or fail to perform and carryout any of the covenants, conditions and provisions of this permit and such default or violation shall continue for sixty (60) days after receipt or notice thereof in writing given by the General Superintendent of the MWRDGC, then it shall be lawful for the MWRDGC at or after the expiration of said sixty (60) days to declare said permit terminated. The Permittee agrees that immediately upon receipt of written notice of such termination it will stop all operations, discontinue any discharges and disconnect the sewerage system or facilities constructed under this permit. If the Permittee fails to do so, the MWRDGC shall have the right to disconnect said system. The Permittee hereby agrees to pay for any costs incurred by the MWRDGC for said disconnection. The various rights and remedies of the MWRDGC contained in this permit shall be construed as cumulative, and no one of them shall be construed as exclusive of any one or more of the others or exclusive of any other rights or remedies allowed by applicable rules, regulations, ordinances and laws. An election by the MWRDGC to enforce any one or more of its rights or remedies shall not be construed as a waiver of the rights of the MWRDGC to pursue any other rights or remedies provided under the terms and provisions of this permit or under any applicable rules, regulations, ordinances or laws.
15. **Expiration.** This permit shall expire if construction has not started within one (1) year from the date of issue. Construction under an expired permit is deemed construction without a permit. All construction under this permit shall be completed within two (2) years after start of construction. If conditions so warrant, an extension may be granted. For publicly financed projects (e.g. special assessments) the one(1) year period indicated will be considered from the date of final court action.
16. **Revocation.** In issuing this permit, the MWRDGC has relied upon the statements and representations made by the Permittee or his agent. Any incorrect statements or representations shall be cause for revocation of this permit, and all the rights of the Permittee hereunder shall immediately become null and void.
17. **Advance Notice.** Prior to commencement of construction under this permit, the Permittee shall give the MWRDGC an advance notice of at least two working days. When advance notice is given, the Permittee shall provide the permit number, municipality and location.
18. **Compliance with Plans and Specifications.** All construction shall be in accordance with the plans and specifications submitted for this permit and made a pan hereof. No changes in, or deviation from the plans and specifications which affect capacity, maintenance, design requirements, service area or permit requirements shall be permitted unless revised plans shall have been submitted to, and approved by the MWRDGC. The permit together with a set of the plans and specifications (revised plans and specifications, if any) shall be kept on the job site at all times during construction until final inspection and approval by the MWRDGC.
19. **Testing and Approval.** All construction under this permit shall be subject to inspection, testing and approval by the MWRDGC. All testing shall be made, or caused to be made, by the Permittee at no cost to the MWRDGC and in the presence of the MWRDGC representative. Upon satisfactory completion of construction, the Permittee and the owner shall submit, or cause to be submitted, a completion certificate and request for approval on the form prescribed by the MWRDGC. No sewer or other facilities shall be put in service until all the conditions of the permit have been satisfactorily met.
20. **Record Drawings.** Within sixty (60) days after final inspection and approval by the MWRDGC, the Permittee shall furnish, or cause to be furnished to the MWRDGC, a set of Record drawings, or a statement that the project was constructed in accordance with the original plans and specifications.
21. **Compliance with Rules and Regulations.** The Permittee here by expressly assumes all responsibilities for meeting the requirements of all applicable rules, regulations, ordinances and laws of Local, State and Federal authorities. Issuance of this permit shall not constitute a waiver of any applicable requirements.

SCHEDULE A
BASIC INFORMATION

MWRDGC Permit No. 03-246 03-246

1. **NAME OF PROJECT** Palwaukee Municipal Airport Master Drainage Study Update
(as shown on the plans)

2. **APPURTENANCES** (check all applicable items)

☐ Siphon ☐ Drop Manholes
☐ Stream Crossing ☐ Direct Connections to MWRDGC

3. **RECEIVING SANITARY SEWER SYSTEM**

A. System that project will connect to is:
☒ Existing ☐ Proposed /Under Construction → MWRDGC Permit # _____

B. List owners of all sewers from project to MWRDGC interceptor _____

4. **EXISTING LIFT STATION**

☒ No ☐ Yes → Receiving system includes existing lift station

If yes, indicate location _____

5. **FLOOD PLAIN**
Is any part of the project area in a flood plain?
☐ No ☒ Yes → Percentage of area in flood plain 21 %

Flood crest elevation 639.5 ft.

Identify any manholes in flood plain: NONE (SANITARY MHS) manholes in floodplain are non-sanitary

6. **SIZE OF PROJECT**

A. What is the size of this project?	369.5 + 26.82 acres (OFF-SITE) = 396.32 Acres *	
B. Total contiguous ownership, including project	417.31	acres
C. Existing impervious area within project	118.51	acres
D. New impervious area created within project	63.43	acres

7 ~~A~~. **DETENTION**

A. Is detention provided under this permit?
☐ No ☒ Yes → Detention required by: ☒ MWRDGC ☒ Other

B. Is project in the service area of existing detention reservoir?
☐ No ☒ Yes → MWRDGC Permit No. These detention facilities will be replaced by new facilities under this permit

* Detention is provided for 396.32 acres. However, the distubed/developed is 330.00 acres

SCHEDULE B
SEWER SUMMARY
COMPLETE IN ALL CASES

MWRDGC Permit No 03-246

PROJECT NAME: Palwaukee Municipal Airport Master Drainage Study Update
(as shown on the plans)

1. **Sewer Summary,** including all building service sewers, stubs and risers:
   Include all sewers in combined sewer area
   Include all sanitary sewers in separate sewered area

Pipe Size in.							
Total length ft.			N/A				
Min. slope used -%							
Pipe Material *							
Total manholes							
Total cleanouts							

*Pipe material and joint specifications must be shown on plans. See Manual of Procedures for acceptable specifications.

2. **NATURE OF PROJECT** (Check all that apply)

- ☒ Project is publicly financed
- ☐ Sewer system serving a subdivision
- ☐ Off-site trunk sewer to serve subdivision
- ☐ Sewer extension to serve future development
- ☐ Storm sewers in combined sewer area
- ☐ Service connections to serve buildings (Schedule C)
- ☒ Other Stormwater Facilities for overall airport development

3. **SEWER EXTENSIONS**

If any part of the proposed project is designed to service future connections (not included in Schedule C), check yes below and submit service area map and estimate of population equivalent to be served.

☒ NO ☐ YES → ☐ Service area map

☐ P.E. estimate submitted

SCHEDULE - C
SEWER CONNECTIONS
(FILL OUT ALL SECTIONS THAT APPLY)

MWRDGC Permit No. 03-246

1. **BUILDING CONNECTION DATA** N.A

A. RESIDENTIAL BUILDINGS

☐ Single Family Total dwelling units * _____

Number of sewer connections * _____ PE** _____

☐ Multi Family Total dwelling units * _____

Number of sewer connections * _____ PE** _____

B. COMMERCIAL& RECREATIONAL BUILDINGS

☐ Number of sewer connections _____ PE** _____

C. INDUSTRIAL BUILDINGS

☐ Number of sewer connections _____ PE** _____

* Each sanitary line exiting a building is a connection

** Population Equivalent

2. **BUILDING USE - (Check all that apply)**

A. COMMERCIAL & RECREATIONAL

☐ Food preparation or processing (install grease separator)
☐ Auto service (install triple basin)
☐ Auto wash (install mud basin)
☐ Swimming pool (provide pool plans)
☐ Other _____

B. INDUSTRIAL BUILDINGS

☐ Sewer connections will receive domestic sewage only
☐ Industrial waste is produced

NOTE: If industrial waste is produced, submit Schedule F & Schedule G and plumbing plans along with flow diagram for pretreatment system.

SCHEDULE D – DETENTION

MWRDGC Permit No. 03-246-DY

A. PROJECT INFORMATION

Name of Project Palwaukee Airport Master Drainage Study Update-North Basin
(as shown on plans)

B. METHOD OF DETENTION

☒ Reservoir · ☐ Rooftop ☐ Parking Lot ☐ Others__ ___

C. UNDEVELOPED SITE-DETERMINATION OF ALLOWABLE RELEASE (Delineate total, developed, undeveloped and unrestricted areas on a grading plan)

1. Area of site	177.24 *	acres
2. Average ground slope	0.01	feet/foot
3. Longest overland flow distance (show on a contour map for undeveloped site)	4630	feet
4. Overland flow time of concentration	116.36	minutes
5. Average slope of channelized flow (see note)		feet/foot
6. Channelized flow distance (see note)...		feet
7. Channelized flow time of concentration		minutes
8. Total time of concentration (line 4 + line 7)	116.4	minutes
9. Rainfall intensity for 3-year storm	1.0	inches/hr
10. Gross Allowable release rate (0.15* line 9* line 1 or Q = 0.15*I*A)	26.59	cfs
11. Unrestricted release rate (Qun).... Qun = Cun Iun Aun; Cun-developed site, Iun-100 year storm, Aun-unrestricted site	0	cfs
12. Net allowable release rate (line 10 – line 11)	26.6	cfs
13. Actual release rate at ~~HWL~~ EL 637.02 (cannot be greater than line 12)	26.6 when WDD is not at flood stage, 0 when it is	cfs
14. Restrictor type and size..... (Provide details & calculations)	1.68 ft dia plate in manhole	inches

NOTE: For flow time in a well defined channel, determine time of concentration from measured lengths, cross-sections and slopes. Submit necessary calculations.

* Air Port Property -- 168.36 Acres.
OFF site Area --- 8.88 Acres
Total --- 177.24 Acres.

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SCHEDULE D – DETENTION (continued) **MWRDGC Permit No.** 03-246

D. DEVELOPED SITE-DETERMINATION OF RESERVOIR SIZE
(Submit calculations for Items 1 thru 6)

OFFICE COPY

1. Impervious drainage area excluding wet pond area*.	74.84	acres
2. Impervious wet pond area*	0	acres
3. Pervious drainage area*	102.41	acres
4. Composite runoff coefficient(c).....	0.64	
5. Required detention capacity at actual release rate	28.94 ac-ft at free discharge 56.72 ac-ft at zero discharge 34.81 ac-ft for comp storage	acre-feet
6. Actual detention capacity provided at HWL.	28.94 ac-ft at free discharge @ EL 637.02 56.72 ac-ft at zero discharge @ EL 638.23 108.10 51.38 ac-ft for comp storage @ EL 638.5	acre-feet

* Unrestricted areas shall be excluded here.

E. REQUIRED BYPASS RATE THROUGH DEVELOPMENT SITE FROM UPSTREAM AREA

NOTE: Following steps are applicable to bypass flow over a weir or bypassing detention system. Design frequency shall be determined by local ordinance. If no local requirement is established, use 5-year storm frequency. (Delineate bypass areas on grading plans or USGS maps).

1. Total area upstream.....		acres
2. Impervious area.....		acres
3. Pervious area.....		acres
4. Composite runoff coefficient (minimum of 0.35)		
5. Design storm frequency for the upstream area		year
6. Time concentration for upstream area at point of entry; upstream area to be considered as developed.		minutes
7. Rainfall intensity for time of concentration		inches/hr.
8. Permissible bypass rate... (line 1* line 4 * line 7)		cfs
9. Bypass system – Type & capacity... (Provide detail and calculations)		cfs

Name Brian R. Welker, P.E. Title Project Manager

Signature [signature] Date 4/26/04

Engineering Firm Crawford, Murphy, and Tilly, Inc.

ILLINOIS REGISTERED No. 043722 PROFESSIONAL ENGINEER BRIAN WELKER

4/28/

SCHEDULE D – DETENTION

MWRDGC Permit No. 03-246

OFFICE COPY

A. PROJECT INFORMATION

Name of Project Palwaukee Airport Master Drainage Study Update - South Basin
(as shown on plans)

B. METHOD OF DETENTION

☒ Reservoir ☐ Rooftop ☐ Parking Lot ☐ Others__ ___

C. UNDEVELOPED SITE-DETERMINATION OF ALLOWABLE RELEASE (Delineate total, developed, undeveloped and unrestricted areas on a grading plan)

1. Area of site	219.08 *	acres
2. Average ground slope	0.01	feet/foot
3. Longest overland flow distance (show on a contour map for undeveloped site)	4980	feet
4. Overland flow time of concentration	120.67	minutes
5. Average slope of channelized flow (see note)		feet/foot
6. Channelized flow distance (see note)...		feet
7. Channelized flow time of concentration		minutes
8. Total time of concentration (line 4 + line 7)	120.67	minutes
9. Rainfall intensity for 3-year storm	1.0	inches/hr
10. Gross Allowable release rate (0.15* line 9* line 1 or Q = 0.15*I*A)	32.86	cfs
11. Unrestricted release rate (Qun).... Qun = Cun Iun Aun; Cun-developed site, Iun-100 year storm, Aun-unrestricted site	0	cfs
12. Net allowable release rate (line 10 – line 11)	32.86	cfs
13. Actual release rate at HWL... EL. 638.25 (cannot be greater than line 12)	32.86	cfs
14. Restrictor type and size..... (Provide details & calculations)	1.63 ft dia plate in MH	inches

NOTE: For flow time in a well defined channel, determine time of concentration from measured lengths, cross-sections and slopes. Submit necessary calculations.

* Air Port Property - - 201.14 Acres.
OFF SITE Property - - 17.94 Acres
Total 219.08 Acres.

Rev. 2/10/01

SCHEDULE D – DETENTION (continued) **MWRDGC Permit No.** 03-246

OFFICE COPY

D. DEVELOPED SITE-DETERMINATION OF RESERVOIR SIZE (Submit calculations for Items 1 thru 6)

1. Impervious drainage area excluding wet pond area*.	* 107.1	acres
2. Impervious wet pond area*	0	acres
3. Pervious drainage area*	* 126.69	acres
4. Composite runoff coefficient(c).....	0.68	
5. Required detention capacity at actual release rate	41.97 ac-ft for detention 39.35 ac-ft for comp. storage	acre-feet
6. Actual detention capacity provided at HWL.	82.69 { 43.34 ac-ft for detention @ EL 638.25 39.35 ac-ft for comp. strge at 639.5	acre-feet

* Unrestricted areas shall be excluded here.

E. REQUIRED BYPASS RATE THROUGH DEVELOPMENT SITE FROM UPSTREAM AREA

NOTE: Following steps are applicable to bypass flow over a weir or bypassing detention system. Design frequency shall be determined by local ordinance. If no local requirement is established, use 5-year storm frequency. (Delineate bypass areas on grading plans or USGS maps).

1. Total area upstream.....		acres
2. Impervious area.....		acres
3. Pervious area.....		acres
4. Composite runoff coefficient (minimum of 0.35)		
5. Design storm frequency for the upstream area		year
6. Time concentration for upstream area at point of entry; upstream area to be considered as developed.		minutes
7. Rainfall intensity for time of concentration		inches/hr.
8. Permissible bypass rate... (line 1* line 4 * line 7)		cfs
9. Bypass system – Type & capacity... (Provide detail and calculations)		cfs

Name Brian R. Welker, P.E. Title Project Manager

Signature [signature] Date 5/13/04

Engineering Firm Crawford, Muprhy, and Tilly, Inc.

ILLINOIS REGISTERED No. 043722 PROFESSIONAL ENGINEER P.E. BRIAN R. WELKER

5/13/04

* Detention ~~is~~ includes future Air Port Property 14.71 Acres. for Storage but not for rele...

SPECIAL CONDITIONS FOR MWRD PERMIT NO. 03-246

1. This permit is issued in reliance upon the Affidavits of Disclosure of Property Interest (Schedule K) and the Notices of Requirements for Stormwater Detention (Schedule L) submitted by the owners, and said Affidavits and Notices are made a part of this permit.

   The Notices of Requirements for stormwater detention submitted in conjunction with this permit shall be recorded at the expense of the Permittee.

2. The North Basin and South Basin stormwater detention facilities shown on the plans are made a part of this permit. Construction of these facilities shall proceed prior to or concurrently with other construction on the project and shall be completed before any occupancy occurs. The detention is provided by dry basins located throughout the airfield.

3. The proposed restrictors shall have the following characteristics:

	Restrictor size in feet	Type of restrictor	Edge Type
North Basin	1.68	Orifice Plate	Sharp edge
South Basin	1.63	Orifice Plate	Sharp edge

4. Construction must conform with the floodplain requirements of the Village of Palatine and Village of Mount Prospect.

5. Note: The existing detention facilities covered by previous MWRD permits shall not be eliminated until such time as the proposed detention facilities and storm structures are completed and until such a time as it is shown that the previously permitted areas have been made tributary to the detention facilities proposed under this permit.

6. Construction under this permit consists of storm sewers and detention facilities only.

7. The Permittee/Co-Permittee shall be responsible for obtaining applicable National Pollution Discharge Elimination System (NPDES) permits from Illinois Environmental Protection Agency (IEPA) as may be necessary for all stormwater sewer outfalls to the waterway(s).

SPECIAL CONDITIONS FOR MWRD PERMIT NO. 03-246

8. The Permittee hereby acknowledges that the off-site bypass flow(s), for a 3-year frequency storm through the detention facility restrictor(s), is approved provided that the off-site bypass area(s) as delineated in the permit submittal remains tributary to the restrictor(s). Any change in the off-site tributary area(s)/flow(s) will require a revision to the restrictor(s) and/or detention facilities and all necessary revisions will be immediately undertaken by the Permittee to meet the MWRD storm water detention requirements at all times. Any and all bypass flow changes and necessary revision(s) to the issued permit shall be reported to the MWRD for review and approval.

ENGINEERING CERTIFICATIONS

MWRDGC Permit No. 03-246

CERTIFICATE BY DESIGN ENGINEER: I hereby certify that the project described herein has been designed in accordance with the requirements set forth in this application and all applicable ordinances, rules, regulations, Local, State and Federal laws, and design criteria of the issuing authority; that the storm drainage and sanitary sewer system designed for this project are proper and adequate; that where the design involves one or more connections to a existing local sewer system, the capacity of said system has been examined and the system is found to be adequate to transport the wastewater that will be added through the proposed sewer without violating any provisions of the Illinois Environmental Protection Act or the rules and regulations thereunder.

Comments, if any: _____

Engineering Firm: Crawford, Murphy & Tilly, Inc. **Telephone:** (630) 820 - 1022

Address: 600 N. Commons Drive **City:** Aurora, IL **Zip:** 60504

Signature: _____ **Date:** 3/5/2003

(Name and Title) Region Off Mgr

3/5/2003

Exp 11/30/2003

CERTIFICATE BY MUNICIPAL OR SYSTEM ENGINEER: The application and the drawings, together with other data being submitted with this application, have been examined by me and are found to be in compliance with all applicable requirements. The manner of drainage is satisfactory and proper. The existing local sewer system to which the project discharges has been examined and the system is found to be adequate to transport the wastewater that will be added through the proposed sewer without violating any provisions of the Illinois Environmental Protection Act or the rules and regulations thereunder.

I hereby certify that the project area is within the municipal corporate limits. ☒ YES ☐ NO

I hereby certify that the project area is within a Tax Increment Financing (TIF) District. ☐ YES ☒ NO

Owner of Local Sewer System: Village of Wheeling

Municipal Engineer: Richard G. Glenz **Telephone:** 847.459.2985

Address: 255 West Dundee Road **City:** Wheeling, IL **Zip** 60090

Signature: _____ **Date:** 3-17-03

(Name and Title) **Richard G. Glenz - Village Engineer**

CERTIFICATE BY INSPECTION ENGINEER: I hereby certify that construction of the project will be in substantial compliance with the data and the plans submitted with this application; that approval will be obtained from the issuing authority prior to making any changes that would affect capacity, maintenance, design requirements, service area or the permit requirements; that a set of RECORD drawings, signed and sealed by the undersigned Engineer will be furnished to the MWRDGC within sixty (60) days after testing and approval by the District of the completed work.

Engineering Firm: Crawford, Murphy & Tilly, Inc. **Telephone:** 630.820.1022

Address: 600 N. Commons Drive **City:** Aurora, IL **Zip** 60504

Signature: _____ **Date:** 03/05/2003

(Name and Title) Region Off Mgr

3/5/2003

Exp 11/30/2003

ENGINEERING CERTIFICATIONS

MWRDGC Permit No. 03-246

CERTIFICATE BY DESIGN ENGINEER: I hereby certify that the project described herein has been designed in accordance with the requirements set forth in this application and all applicable ordinances, rules, regulations, Local, State and Federal laws, and design criteria of the issuing authority; that the storm drainage and sanitary sewer system designed for this project are proper and adequate; that where the design involves one or more connections to a existing local sewer system, the capacity of said system has been examined and the system is found to be adequate to transport the wastewater that will be added through the proposed sewer without violating any provisions of the Illinois Environmental Protection Act or the rules and regulations thereunder.

Comments, if any: _____

Engineering Firm: Crawford, Murphy & Tilly, Inc. **Telephone:** (630) 820 - 1022

Address: 600 N. Commons Drive **City:** Aurora, IL **Zip:** 60504

P.E. SEAL

Signature: SEE PAGE 7 OF 8 **Date:** 3/5/2003

(Name and Title) FOR SIGNATURE

CERTIFICATE BY MUNICIPAL OR SYSTEM ENGINEER: The application and the drawings, together with other, data being submitted with this application, have been examined by me and are found to be in compliance with all applicable requirements. The manner of drainage is satisfactory and proper. The existing local sewer system to which the project discharges has been examined and the system is found to be adequate to transport the wastewater that will be added through the proposed sewer without violating any provisions of the Illinois Environmental Protection Act or the rules and regulations thereunder.

I hereby certify that the project area is within the municipal corporate limits. ☒ YES ☐ NO

I hereby certify that the project area is within a Tax Increment Financing (TIF) District. ☐ YES ☒ NO

Owner of Local Sewer System: City of Prospect Heights

Municipal Engineer: Chris Papierniak **Telephone:** 847.459.0588

Address: 124 East Camp McDonald Road **City:** Prospect Heights, IL **Zip** 60070

CHRISTOPHER H. PAPIERNIAK 062-054544 LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

Signature: _____ **Date:** 5-14-03

(Name and Title)

CERTIFICATE BY INSPECTION ENGINEER: I hereby certify that construction of the project will be in substantial compliance with the data and the plans submitted with this application; that approval will be obtained from the issuing authority prior to making any changes that would affect capacity, maintenance, design requirements, service area or the permit requirements; that a set of RECORD drawings, signed and sealed by the undersigned Engineer will be furnished to the MWRDGC within sixty (60) days after testing and approval by the District of the completed work.

Engineering Firm: Crawford, Murphy & Tilly, Inc. **Telephone:** 630.820.1022

Address: 600 N. Commons Drive **City:** Aurora, IL **Zip** 60504

P.E. SEAL

Signature: SEE PAGE 7 OF 8 **Date:** 03/05/2003

(Name and Title) FOR SIGNATURE

A

SCHEDULE - K

MWRDGC Permit No. 03-246 03-246

AFFIDAVIT OF DISCLOSURE OF PROPERTY INTEREST

STATE OF ILLINOIS)
) SS
COUNTY OF COOK)

Name of Project: Palwaukee Airport Master Drainage Study Update

A. Greg Klatecki (Name of Affiant -Type or Print) after first being duly sworn under oath, states that he is ~~(the owner and record title holder), (a principal beneficiary of Land Trust No. held by (Name of Trust Holder) as Trustee),~~ (an officer Village President (Official Capacity) of Village of Wheeling (Name of Corporation) ~~Corporation), (a General Partner of (Name of Partnership) Partnership),~~ which is the record title holder of the property which is the subject of a certain sewerage system permit application (covering the project indicated and designated by the number shown above) filed with the Metropolitan Water Reclamation District of Greater Chicago, which property is shown on the attached plat of survey which together with the legal description of the property are attached hereto as Exhibit "A" and specifically incorporated by reference herein.

B. Affiant further states that said property described, in Exhibit "A" (Plat of Survey with legal description) has a total area, including project area, of 417.31 acres and constitutes the total contiguous ownership of the owner, and that the portion of the property currently proposed for development consists of 369.5 acres, and the property is intended for use as described hereinafter: airport facilities including runways, taxiways, aprons, hangars, and storm water management facilities

*C. Affiant further states that, because of its size and intended use, the property described in Exhibit "A" comes under the requirements of the MWRDGC with respect to the establishment of on-site storm water detention, and that such detention facilities will be provided as part of the project in accordance with the design and calculations furnished to satisfy said requirements with respect to the property described in Exhibit "A", and further states that:

1. The owner of the property or any beneficiary of a land trust, if any, which is the record title holder of the property has no present interest, nor had any interest at any time during the previous two years, in any lands contiguous to said property. (If such interest is or was held, detention must be provided for the total.)

2. No owner of any lands contiguous to the property and no beneficiary of a land trust, if any, which is the record title holder of any land contiguous to the property has any interest in the property. (if such interest is held, detention must be provided for the total.)

3. Affiant understands and agrees that any permit issued by MWRDGC in reliance upon this affidavit shall be deemed to contain a special condition that if, within two years after the issuance of the permit, the owner or any beneficiary of a land trust, if any, which is the record title holder of the property, acquires any interest in lands contiguous to the property, the owner shall provide for storm water detention for such lands in which an interest is acquired, regardless of the size of such lands.

Affidavit to be submitted with all permit applications in separate sewer areas
* Delete paragraph C if exemption is claimed
* Delete paragraph D if no exemption is claimed.

SCHEDULE - K (Continued)

MWRDGC Permit No. 03-246 03-246

~~Affiant further states that, because of its size and intended use, the property described in Exhibit "A" is exempt from the requirements of the MWRDGC with respect to the establishment of on-site storm water detention, and further states that:~~

~~1. The owner of the property or any beneficiary of a land trust, if any, which is the record title holder of the property has no present interest, nor had any interest at any time during the previous two years, in any lands contiguous to said property, such that the aggregate total area of the property and the contiguous lands exceeds five (5) acres. (If such interest is or was held, detention must be provided for the total.)~~

~~2. No owner of any lands contiguous to the property and no beneficiary of a land trust, if any, which is the record title holder of any land contiguous to the property has any interest in the property, such that the aggregate total area of the property and the contiguous lands exceeds five (5) acres. (If such interest is held, detention must be provided for the total.)~~

~~3. Affiant understands and agrees that any permit issued by MWRDGC in reliance upon this affidavit shall be deemed to contain a special condition that if, within two years after the issuance of the permit, the owner or any beneficiary of a land trust, if any, which is the record title holder of the property acquires any interest in lands contiguous to the property such that the aggregate area of the property and the contiguous lands exceeds five (5) acres, the owner shall provide for storm water detention for the entire aggregate area.~~

~~This affidavit is given to induce the Metropolitan Water Reclamation District of Greater Chicago to issue its sewerage system permit with respect to the aforedescribed property and to exempt said property from any present requirements to provide and maintain storm water detention facilities thereon.~~

Affiant further states, that for the purpose of this affidavit, the following terms have the meanings indicated:

Owner: means record title holder or a beneficiary of a land trust which is the record title holder, and includes singular and plural; if the owner is other than an individual, the term includes beneficiaries, agents, shareholders, officers and directors.

Ownership: means holding of record title or any beneficial interest.

Interest: means property interest or contractual interest, legal or equitable, directly or indirectly, in part or in full, and includes option to buy. In the case of shareholder interest, the shareholder shall be deemed to have interest if he owns or controls 5% or more of the shares.

Contiguous: means adjacent to and touching at one point or more; if the lands are separated by an easement or a dedicated right-of-way, it shall be considered contiguous.

F. Affiant understands and agrees that in the event that any of the aforementioned information is incorrect, erroneous, false or misleading, the District shall have the option to immediately terminate any permit issued based on the above information.

Dated this 26 day of May 20 04

Guy Blakeman
(Affiant)

SUBSCRIBED and SWORN to before me this 26 day of May 20 04

Christine Brady
(Notary Public)

OFFICIAL SEAL
CHRISTINE BRADY
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 10-4-20

Affidavit to be submitted with all permit applications in separate sewer areas
* Delete paragraph C if exemption is claimed
* Delete paragraph D if no exemption is claimed.

SCHEDULE L- **Sewer Permit No. 03-246** 03-246

OFFICE OF THE RECORDER OF DEEDS OF COOK COUNTY
NOTICE OF REQUIREMENTS FOR STORM WATER DETENTION

Name of Project: Palwaukee Airport Master Drainage Study UPdate

A. NOTICE IS HEREBY GIVEN that the undersigned is (select one) ~~(the owner and record title holder),(a principal beneficiary of Land Trust No. _____, held by _____ as Trustee)~~,(an Officer **Village President** (Official capacity)

of **Village of Wheeling** (Name of Corporation) ~~Corporation),(a General Partner of _____ partnership), which~~ (Name of Partnership)

is the record title holder of the property or properties shown on the attached plat of survey and legally described on the attached sheet(s) and having a total area of **417.31** acres; said plat of survey and legal description being attached hereto as Exhibit "A" and specifically incorporated by reference herein; said property being now divided or will be divided into two or more lots or parcels to be sold to, occupied by, or developed and built up for the benefit or use of more than one owner or user, and said property being more than five (5) acres, is subject to the rules and regulations of the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) governing storm water detention requirements.

B. NOTICE IS FURTHER GIVEN that a sewerage system permit (covering the project indicated and designated by the number shown above) has been granted by the MWRDGC with respect to the real estate described in Exhibit "A", for the construction of a sanitary sewer lateral or system as shown on the permit and accompanying documents on file with the MWRDGC, and that said lots or parcels comprising the property described in Exhibit "A" are, by design, immediately or ultimately serviceable by the sanitary sewer lateral or system contemplated under said permit, either by the construction of building sanitary service sewers connecting directly to the lateral or system contemplated, or by the construction of an extension to the lateral or system contemplated and subsequent construction of building sanitary service sewers connecting to said extension.

~~***C. NOTICE IS FURTHER GIVEN** that the construction contemplated under the permit on file with the MWRDGC does not include the construction of building sanitary service sewers and no buildings are contemplated for construction at this time, and that the construction contemplated either does not include the construction of any storm water detention facilities, or does include the construction of storm water detention facilities which are not adequate to satisfy the MWRDGC rules, regulations and criteria relative to the storm water detention facilities required with respect to the property described in Exhibit "A".~~

***D. NOTICE IS FURTHER GIVEN** that the construction contemplated under the permit on file with the MWRDGC, in addition to the construction of a sanitary sewer lateral or system, includes the construction of one or more building sanitary service sewers, to serve one or more buildings contemplated or planned for construction at the present time on certain lot(s) or parcel(s) having a total area of 369.50 ~~417.31~~ acres (which lots or parcels are part of the property described in Exhibit "A") as shown on the permit and/or the accompanying documents which are specifically incorporated by reference herein, and that the contemplated construction includes the construction of storm water detention facilities to satisfy the MWRDGC requirements for storm water detention only with respect to the property shown in the aforementioned permit and/or accompanying documents and such storm water detention facilities are not adequate to meet the MWRDGC requirements with respect to any part of the property described in Exhibit "A" outside of the property shown on the aforementioned permit and /or accompanying documents.

E. NOTICE IS FURTHER GIVEN that the intention of the owner and/or applicant under aforementioned permit granted by MWRDGC is that by filing of an application for permit and obtaining a permit from the MWRDGC, it has covenanted and agreed that any request for sewerage system permits hereinafter made or filed with respect to any or all of the property described in the aforesaid Exhibit "A"(which in the aggregate, comprises an excess of five (5) acres in area, including the property shown in the aforesaid permit and/or accompanying documents) will provide for proper storm water detention in accordance with the rules and regulations of the MWRDGC.

F. THIS NOTICE, after it has been recorded, shall not be withdrawn, rescinded or removed, except after the MWRDGC requirements relative to detention facilities have been satisfied with respect to the entire property described in Exhibit "A", and a written release from the obligations hereunder is obtained from the MWRDGC.

Schedule L is to be executed by owner and furnished to MWRDGC for recording. Owner to pay all expenses for recording. Submit two originals and six copies of Schedule L and eight copies of the Plat of Survey, maximum size 30"x 36". The information provided on the plat should be legible when it is recorded (microfilmed). All documents submitted for filing must comply with the Illinois Plat Act and additional requirements as set forth by the County Recorder of Deeds.

*Delete paragraph C or D, as appropriate.

(OVER)

Revised July 19, 2000.

Schedule L – (Continued) **Sewer Permit No. 03-246** 03-246

This notice is intended to be given to any party or parties hereinafter acquiring any interest in the aforedescribed real estate, or dealing with said real estate in any manner whatsoever, notifying them of the requirements for providing storm water detention facilities for said real estate as provided herein.

The owner hereby certifies that the property is recorded in the office of the Cook County Recorder of Deeds.

Signed by owner and record title holder dated
this _____ day of _____ 200_.
CHOOSE A, B, C, or D

Impress Corporate Seal Here

A (for individual owner) _____ Owner

B (for Partnership) _____ General Partner

C (for Corporation _____ ~~President~~

Village President _____ ~~Secretary~~

D (for property in a land trust) _____ Individual holding power of direction

NOTARIZATION OF OWNER'S SIGNATURE

NOTE: (For individual, Partnership or Corporation) (if title to property is held in land trust, the trust officer must countersign in space provided.)
CHOOSE A, B, C, or D, same as above
State of Illinois }
County of _____} ss.

A INDIVIDUAL OWNER

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that _____ personally known to me to be the same person(s) whose name (s) (is) (are) subscribed to the foregoing instrument appeared before me this day in person, and acknowledged that (he) (she) signed, sealed and delivered the said instrument as (his) (her) free and voluntary act, for the uses and purposes therein set forth, or,

B PARTNERSHIP

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that _____ personally known to me to be a general partner of the _____ partnership, personally known to me to be the same person(s) whose name (s) (is) (are) subscribed to the foregoing instrument appeared before me this day in person, and acknowledged that (he) (she) signed, sealed and delivered the said instrument as (his) (her) free and voluntary act, for the uses and purposes therein set forth, or,

C CORPORATION

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that **Greg Klatecki**, President of **Village of Wheeling**, ~~and _____, Secretary of the corporation,~~ are personally known to me to be the same persons whose names are subscribed to the preceding instrument as President ~~and Secretary respectively,~~ appeared before me this day in person and acknowledged that they signed and delivered the instrument as President ~~and Secretary~~ of the ~~corporation~~ Village, and affixed the corporate seal of the corporation, pursuant to authority given by the Board of Directors of the corporation, as their free and voluntary act, and as the free and voluntary act of the corporation, for the uses and purposes there stated.

Given under my hand and official seal,
this 26 day of 5, 2004.

OFFICIAL SEAL
CHRISTINE BRADY
NOTARY PUBLIC, STATE OF ILLINOIS
COMMISSION EXPIRES 10-4-2004

Christine Brady
(Notary Public)

Commission expires 10-4, 2004

D LAND TRUST

COUNTERSIGNATURE

_____ _____ held by _____ as Trustee.
(Trust Officer) (Trust No.) (Name of Trustee)

SCHEDULE - K

MWRDGC Permit No. 03-246

03-246

FIDAVIT OF DISCLOSURE OF PROPERTY INTEREST

STATE OF ILLINOIS)
) SS
COUNTY OF COOK)

Name of Project: Palwaukee Airport - Master Drainage Study Update

A. Rodney Pace (Name of Affiant -Type or Print) after first being duly sworn under oath, states that he is ~~(the owner and record title holder), (a principal beneficiary of Land Trust No. held by (Name of Trust Holder) as Trustee)~~, (an officer [ ] Mayor (Official Capacity) of City of Prospect Heights ~~Corporation), (a General Partner of~~ (Name of Corporation) (Name of Partnership) ~~Partnership)~~, which is the record title holder of the property which is the subject of a certain sewerage system permit application (covering the project indicated and designated by the number shown above) filed with the Metropolitan Water Reclamation District of Greater Chicago, which property is shown on the attached plat of survey which together with the legal description of the property are attached hereto as Exhibit "A" and specifically incorporated by reference herein.

B. Affiant further states that said property described, in Exhibit "A" (Plat of Survey with legal description) has a total area, including project area, of 417.31 acres and constitutes the total contiguous ownership of the owner, and that the portion of the property currently proposed for development consists of 369.5 acres, and the property is intended for use as described hereinafter: airport facilities including runways, taxiways, aprons, hangars, and stormwater management facilities

*C. Affiant further states that, because of its size and intended use, the property described in Exhibit "A" comes under the requirements of the MWRDGC with respect to the establishment of on-site storm water detention, and that such detention facilities will be provided as part of the project in accordance with the design and calculations furnished to satisfy said requirements with respect to the property described in Exhibit "A", and further states that:

1. The owner of the property or any beneficiary of a land trust, if any, which is the record title holder of the property has no present interest, nor had any interest at any time during the previous two years, in any lands contiguous to said property. (If such interest is or was held, detention must be provided for the total.)

2. No owner of any lands contiguous to the property and no beneficiary of a land trust, if any, which is the record title holder of any land contiguous to the property has any interest in the property. (if such interest is held, detention must be provided for the total.)

3. Affiant understands and agrees that any permit issued by MWRDGC in reliance upon this affidavit shall be deemed to contain a special condition that if, within two years after the issuance of the permit, the owner or any beneficiary of a land trust, if any, which is the record title holder of the property, acquires any interest in lands contiguous to the property, the owner shall provide for storm water detention for such lands in which an interest is acquired, regardless of the size of such lands.

Affidavit to be submitted with all permit applications in separate sewer areas
* Delete paragraph C if exemption is claimed

SCHEDULE - K (Continued)

MWRDGC Permit No. 03-246 03-246

D. Affiant further states that, because of its size and intended use, the property described in Exhibit "A" is exempt from the requirements of the MWRDGC with respect to the establishment of on-site storm water detention, and further states that:

1. The owner of the property or any beneficiary of a land trust, if any, which is the record title holder of the property has no present interest, nor had any interest at any time during the previous two years, in any lands contiguous to said property, such that the aggregate total area of the property and the contiguous lands exceeds five (5) acres. (If such interest is or was held, detention must be provided for the total.)

2. No owner of any lands contiguous to the property and no beneficiary of a land trust, if any, which is the record title holder of any land contiguous to the property has any interest in the property, such that the aggregate total area of the property and the contiguous lands exceeds five (5) acres. (If such interest is held, detention must be provided for the total.)

3. Affiant understands and agrees that any permit issued by MWRDGC in reliance upon this affidavit shall be deemed to contain a special condition that if, within two years after the issuance of the permit, the owner or any beneficiary of a land trust, if any, which is the record title holder of the property acquires any interest in lands contiguous to the property such that the aggregate area of the property and the contiguous lands exceeds five (5) acres, the owner shall provide for storm water detention for the entire aggregate area.

This affidavit is given to induce the Metropolitan Water Reclamation District of Greater Chicago to issue its sewerage system permit with respect to the aforedescribed property and to exempt said property from any present requirements to provide and maintain storm water detention facilities thereon.

Affiant further states, that for the purpose of this affidavit, the following terms have the meanings indicated:

Owner: means record title holder or a beneficiary of a land trust which is the record title holder, and includes singular and plural; if the owner is other than an individual, the term includes beneficiaries, agents, shareholders, officers and directors.

Ownership: means holding of record title or any beneficial interest.

Interest: means property interest or contractual interest, legal or equitable, directly or indirectly, in part or in full, and includes option to buy. In the case of shareholder interest, the shareholder shall be deemed to have interest if he owns or controls 5% or more of the shares.

Contiguous: means adjacent to and touching at one point or more; if the lands are separated by an easement or a dedicated right-of-way, it shall be considered contiguous.

F. Affiant understands and agrees that in the event that any of the aforementioned information is incorrect, erroneous, false or misleading, the District shall have the option to immediately terminate any permit issued based on the above information.

Dated this 9th day of June 20 04

(Affiant)

SUBSCRIBED and SWORN to before me this 9th day of June 20 04

(Notary Public)

"OFFICIAL SEAL"
KAREN A. PEDERSEN
Notary Public, State of Illinois
My Commission Expires 03/26/05

Affidavit to be submitted with all permit applications in separate sewer areas
* Delete paragraph C if exemption is claimed

SCHEDULE L- **Sewer Permit No. 03-246** 03-246

OFFICE OF THE RECORDER OF DEEDS OF COOK COUNTY
NOTICE OF REQUIREMENTS FOR STORM WATER DETENTION

Name of Project: Palwuakee Airport Master Drainage Study Update

A. NOTICE IS HEREBY GIVEN that the undersigned is (select one) ~~(the owner and record title holder), (a principal beneficiary of Land Trust No. _____, held by _____ as Trustee)~~, (an Officer Mayor (Official capacity) of City of Prospect Heights (Name of Corporation) ~~Corporation), (a General Partner of _____ (Name of Partnership) partnership), which~~ is the record title holder of the property or properties shown on the attached plat of survey and legally described on the attached sheet(s) and having a total area of 41731 acres; said plat of survey and legal description being attached hereto as Exhibit "A" and specifically incorporated by reference herein; said property being now divided or will be divided into two or more lots or parcels to be sold to, occupied by, or developed and built up for the benefit or use of more than one owner or user, and said property being more than five (5) acres, is subject to the rules and regulations of the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) governing storm water detention requirements.

B. NOTICE IS FURTHER GIVEN that a sewerage system permit (covering the project indicated and designated by the number shown above) has been granted by the MWRDGC with respect to the real estate described in Exhibit "A", for the construction of a sanitary sewer lateral or system as shown on the permit and accompanying documents on file with the MWRDGC, and that said lots or parcels comprising the property described in Exhibit "A" are, by design, immediately or ultimately serviceable by the sanitary sewer lateral or system contemplated under said permit, either by the construction of building sanitary service sewers connecting directly to the lateral or system contemplated, or by the construction of an extension to the lateral or system contemplated and subsequent construction of building sanitary service sewers connecting to said extension.

~~*C. NOTICE IS FURTHER GIVEN that the construction contemplated under the permit on file with the MWRDGC does not include the construction of building sanitary service sewers and no buildings are contemplated for construction at this time, and that the construction contemplated either does not include the construction of any storm water detention facilities, or does include the construction of storm water detention facilities which are not adequate to satisfy the MWRDGC rules, regulations and criteria relative to the storm water detention facilities required with respect to the property described in Exhibit "A".~~

***D. NOTICE IS FURTHER GIVEN** that the construction contemplated under the permit on file with the MWRDGC, in addition to the construction of a sanitary sewer lateral or system, includes the construction of one or more building sanitary service sewers, to serve one or more buildings contemplated or planned for construction at the present time on certain lot(s) or parcel(s) having a total area of ~~417.31~~ 69.50 acres (which lots or parcels are part of the property described in Exhibit "A") as shown on the permit and/or the accompanying documents which are specifically incorporated by reference herein, and that the contemplated construction includes the construction of storm water detention facilities to satisfy the MWRDGC requirements for storm water detention only with respect to the property shown in the aforementioned permit and/or accompanying documents and such storm water detention facilities are not adequate to meet the MWRDGC requirements with respect to any part of the property described in Exhibit "A" outside of the property shown on the aforementioned permit and /or accompanying documents.

1

E. NOTICE IS FURTHER GIVEN that the intention of the owner and/or applicant under aforementioned permit granted by MWRDGC is that by filing of an application for permit and obtaining a permit from the MWRDGC, it has covenanted and agreed that any request for sewerage system permits hereinafter made or filed with respect to any or all of the property described in the aforesaid Exhibit "A"(which in the aggregate, comprises an excess of five (5) acres in area, including the property shown in the aforesaid permit and/or accompanying documents) will provide for proper storm water detention in accordance with the rules and regulations of the MWRDGC.

F. THIS NOTICE, after it has been recorded, shall not be withdrawn, rescinded or removed, except after the MWRDGC requirements relative to detention facilities have been satisfied with respect to the entire property described in Exhibit "A", and a written release from the obligations hereunder is obtained from the MWRDGC.

Schedule L is to be executed by owner and furnished to MWRDGC for recording. Owner to pay all expenses for recording. Submit two originals and six copies of Schedule L and eight copies of the Plat of Survey, maximum size 30"x 36". The information provided on the plat should be legible when it is recorded (microfilmed). All documents submitted for filing must comply with the Illinois Plat Act and additional requirements as set forth by the County Recorder of Deeds.

*Delete paragraph C or D, as appropriate.

(OVER)

Revised July 19, 2000.

Schedule L – (Continued) **Sewer Permit No. 03-246** 03-246

This notice is intended to be given to any party or parties hereinafter acquiring any interest in the aforedescribed real estate, or dealing with said real estate in any manner whatsoever, notifying them of the requirements for providing storm water detention facilities for said real estate as provided herein.

The owner hereby certifies that the property is recorded in the office of the Cook County Recorder of Deeds.

Signed by owner and record title holder dated this _____ day of _____ 200_.
CHOOSE A, B, C, or D

Impress Corporate Seal Here

CITY OF PROSPECT HEIGHTS CORPORATE SEAL Incorporated A.D. 1976 ILLINOIS

A (for individual owner) _____ Owner

B (for Partnership) _____ General Partner

C (for Corporation X _____ Mayor

_____ ~~Secretary~~

D (for property in a land trust) _____ Individual holding power of direction

NOTARIZATION OF OWNER'S SIGNATURE

NOTE: (For individual, Partnership or Corporation) (if title to property is held in land trust, the trust officer must countersign in space provided.)
CHOOSE A, B, C, or D, same as above
State of Illinois }
County of **Cook**} ss.

A INDIVIDUAL OWNER

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that _____ personally known to me to be the same person(s) whose name (s) (is) (are) subscribed to the foregoing instrument appeared before me this day in person, and acknowledged that (he) (she) signed, sealed and delivered the said instrument as (his) (her) free and voluntary act, for the uses and purposes therein set forth, or,

B PARTNERSHIP

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that _____ personally known to me to be a general partner of the _____ partnership, personally known to me to be the same person(s) whose name (s) (is) (are) subscribed to the foregoing instrument appeared before me this day in person, and acknowledged that (he) (she) signed, sealed and delivered the said instrument as (his) (her) free and voluntary act, for the uses and purposes therein set forth, or,

C CORPORATION

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that _____, Rodney Pace, Mayor of Prospect Heights , are personally known to me to be the same persons whose names are subscribed to the preceding instrument as President ~~and Secretary respectively~~, appeared before me this day in person and acknowledged that they signed and delivered the instrument as President ~~and Secretary~~ of the ~~corporation~~, and affixed the corporate seal of the corporation, pursuant to authority given by the Board of Directors of the corporation, as their free and voluntary act, and as the free and voluntary act of the corporation, for the uses and purposes there stated.

Given under my hand and official seal,
this 9th day of June 2003

"OFFICIAL SEAL"
KAREN A. PEDERSEN
Notary Public, State of Illinois
My Commission Expires 03/26/05

Commission expires _____, 200 Karen A Pederson (Notary Public)

D LAND TRUST

COUNTERSIGNATURE

_____ _____ held by _____ as Trustee.
(Trust Officer) (Trust No.) (Name of Trustee)

Palwaukee Airport Parcel information

MWRD Permit No. 03-246

03-246

~~Tract~~ Demo's	Parcel #	Tax ID#	Acreage	Notes
4	20B	03-13-301-015	2.32	
4		03-13-301-017		
5	21	03-13-301-010	1.54	
6	22	03-13-301-005	0.87	
7	23B	03-13-301-013	0.87	
8	23A	03-13-301-014	2.63	
9	24	03-19-100-005	1.79	
10	25	03-13-100-008	10.62	
11	26	03-13-100-009	4.17	
12	27	03-13-100-010	3.92	
13	28	09-13-102-031	5.54	
14	29B	03-19-102-037	3.38	
15	30C	03-13-102-032	0.731	
16	31	03-13-200-011	8.04	
17	32	03-13-300-005 03-13-102-010	12.46	
18	33	03-13-102-010	3.75	
18	34	03-13-400-001	8.88	
19	40B	03-13-401-024	1.372	
20	43	03-11-401-019	13.907	
21	45	03-12-300-008 03-12-300-009	1.43	
22	46	03-12-300-010	1.08	
23	47	03-12-300-011	0.81	
24	48	03-12-900-012 03-12-300-013	1.16	
25	49/50	03-12-300-015 03-12-300-021	3.25	
26	51	03-12-300-022	1.18	
27	52A	03-14-201-005	0.74	
27	52B	03-14-201-005	4.26	
28	53	03-14-201-014	2.5	
29	54	03-14-201-015	2.5	
30	55	03-14-201-035	3.79	
31	56	03-14-201-008	4.79	
32	57	03-14-202-015	1.08	
33	58	03-14-202-011	1	
34	59	03-14-202-005	1.99	
35	84A	03-11-406-020	0.447	
35	84B	03-11-406-020	0.528	
36	85A	03-14-206-001	0.87	
36	85B	03-14-206-001	0.102	
37	86	03-14-205-014	0.93	
38	87A	03-14-205-013	0.598	
38	87B	03-14-205-013	0.332	
39	88	03-14-202-009	1.995	
40	89	03-14-202-017	0.504	
41	90	03-14-202-016	0.95	
42	91	03-14-202-014	0.714	

EXHIBIT A

Palwaukee Airport Parcel information

03-246

EXHIBIT A

~~Tract~~ EXHIBIT	Parcel #	Tax ID#	Acreage	Notes
47	96	03-12-300-044	0.503	
48	97	03-12-300-045	0.983	
49	98	03-12-300-028	0.849	
50	100A	03-13-101-016	23.581	
51	101/102A	03-14-201-013 03-14-201-012	0.87	
56	111	03-14-204-002	0.459	
57	112B	03-14-206-002	0.591	
58	112A	03-14-206-002	0.057	
43	92	03-14-201-033	0.496	
44	93	03-14-201-032	0.496	
45	94	03-14-201-031	0.496	
46	95	03-14-201-030	0.496	
52	107	03-14-201-026	0.496	
53	108	03-14-201-027	0.496	
54	109	03-14-201-028	0.496	
55	110	03-14-201-029	0.496	
			158.181	
		+	**266.369**	Parcel 1-See next page for list of pin numbers
			5.904	tract 11
			0.884	Tract 13
			0.77	Tract 7 See Exhibit 59, 60, & 61 -ROW
			1.942	Tract 8 Bought by Air Port
			1.127	Tract x
			0.306	Tract y
			0.07	Tract z
			435.553	
ROW:				deeded back to Cook County/State of Illinois
9			1.908	
10			4.777	
14			3.283	
15			1.834	
16			1.275	
1			0.513	
1a			0.026	See Exhibit 59, 60, & 61
2			0.019	ROW -dedicated
3			1.331	
4			3.087	
5			0.193	
		-	**18.246**	-deduction
			417.307	TOTAL AIRPORT PROPERTY

Palwaukee Airport Parcel information

03-246

PARCEL-1

Tract	Parcel #	Tax ID#	Acreage	Notes
	1	03-13-100-006		EXHIBIT A
		03-13-100-050		
		03-13-102-044		
		03-13-102-046		
		03-13-102-048		
		03-13-200-029		
		03-13-300-012		
		03-13-300-013		
		03-13-301-023		
		03-13-301-024		
		03-13-301-025		
		03-13-301-026		
		03-13-301-027		
		03-13-301-028		
		03-13-400-031		
		03-13-400-033		
		03-13-400-034		
		03-13-400-035		
		03-13-400-041		
		03-13-401-020	266.364 Acres	

REQUEST FOR FINAL INSPECTION

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO
LOCAL SEWER SYSTEMS SECTION
6001 PERSHING ROAD
CICERO, IL 60804

Type or print this Request for Final Inspection (RFI) and submit in duplicate to the Local Sewer Systems Field Office at the above address. If there are any questions, please call the Field Supervisor at (708) 588-4055.

PERMIT NO. 03-246 NAME OF PROJECT: _____

LOCATION: _____ MUNICIPALITY: _____

Request is hereby made by the Permittee to the Metropolitan Water Reclamation District of Greater Chicago (MWRD) to approve the sewer project described above. This request is for the (complete / partial) project. If partial, describe on reverse side of form. The following information is submitted in support of the request:

* *

CERTIFICATE BY INSPECTION (P.E.) ENGINEER:

NAME / COMPANY: _____ TELEPHONE NO. _____

ADDRESS: _____ MUNICIPALITY: _____

I hereby certify that I have inspected the work covered by this permit during the progress of construction, that I have approved the material and workmanship, that I have not allowed any defective materials or poor workmanship on the project. I further certify that the completed permit work meets with my approval and that it is in substantial conformance with the plans and specifications, and I hereby recommend the acceptance of this project.

BY: _____ DATE. _____
(Print name and title of engineering representative)

BY: _____
(Signature of engineering representative)

P.E. SEAL

* *

CERTIFICATE BY MUNICIPAL OR SYSTEM (P.E.) ENGINEER:

NAME / COMPANY: _____ TELEPHONE NO. _____

ADDRESS: _____ MUNICIPALITY: _____

I hereby certify that the work completed under this permit has been inspected and meets with my approval and satisfaction and is in accordance with applicable requirements, and I hereby recommend the acceptance of this project.

BY: _____ DATE. _____
(Print name and title of engineering representative)

BY: _____
(Signature of engineering representative)

P.E. SEAL

* *

CERTIFICATE BY PERMITTEE:

I hereby certify that this project has been completed and approved; and that to the best of my knowledge and belief, there has been no violation of any of the terms and conditions of this Permit nor any local laws, rules, regulations and ordinances applicable to the permit. I hereby recommend acceptance of this permit.

BY: _____ DATE. _____
(Print name and title of authorized official)

BY: _____ TELEPHONE NO. _____
(Signature of authorized official)

REQUEST FOR FINAL INSPECTION

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO
LOCAL SEWER SYSTEMS SECTION
6001 PERSHING ROAD
CICERO, IL 60804

Type or print this Request for Final Inspection (RFI) and submit in duplicate to the Local Sewer Systems Field Office at the above address. If there are any questions, please call the Field Supervisor at (708) 588-4055.

PERMIT NO. 03-246 NAME OF PROJECT: _____

LOCATION: _____ MUNICIPALITY: _____

Request is hereby made by the Permittee to the Metropolitan Water Reclamation District of Greater Chicago (MWRD) to approve the sewer project described above. This request is for the (complete / partial) project. If partial, describe on reverse side of form. The following information is submitted in support of the request:

* *

CERTIFICATE BY INSPECTION (P.E.) ENGINEER:

NAME / COMPANY: _____ TELEPHONE NO. _____

ADDRESS: _____ MUNICIPALITY: _____

I hereby certify that I have inspected the work covered by this permit during the progress of construction, that I have approved the material and workmanship, that I have not allowed any defective materials or poor workmanship on the project. I further certify that the completed permit work meets with my approval and that it is in substantial conformance with the plans and specifications, and I hereby recommend the acceptance of this project.

BY: _____ DATE. _____
(Print name and title of engineering representative)

BY: _____
(Signature of engineering representative)

P.E. SEAL

* *

CERTIFICATE BY MUNICIPAL OR SYSTEM (P.E.) ENGINEER:

NAME / COMPANY: _____ TELEPHONE NO. _____

ADDRESS: _____ MUNICIPALITY: _____

I hereby certify that the work completed under this permit has been inspected and meets with my approval and satisfaction and is in accordance with applicable requirements, and I hereby recommend the acceptance of this project.

BY: _____ DATE. _____
(Print name and title of engineering representative)

BY: _____
(Signature of engineering representative)

P.E. SEAL

* *

CERTIFICATE BY PERMITTEE:

I hereby certify that this project has been completed and approved; and that to the best of my knowledge and belief, there has been no violation of any of the terms and conditions of this Permit nor any local laws, rules, regulations and ordinances applicable to the permit. I hereby recommend acceptance of this permit.

BY: _____ DATE. _____
(Print name and title of authorized official)

BY: _____ TELEPHONE NO. _____
(Signature of authorized official)

TESTING CERTIFICATE

THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

Permit No. 03-246 Project Palwaukee Airport Master Drainage Study Sheet 1 of 1

Location N.W. intersection of Palatine Rd. & Milwaukee Ave. Municipality Prospect Heights

PARTIAL TEST No. ____ (Description of portion tested must appear herein and in RFI

SINGLE TEST ENTIRE PROJECT (✓) DETENTION REQ. YES (✓) NO( ) COMPLETED YES( ) NO( )

TYPE OF TEST: Infiltration( ) Exfiltration( ) Air Pressure( ) Visual (✓) Other( )

From						
To						
Diameter - inches						
Length - feet						
Water table above crown - ft.						
*Allowable - gal/day						
Measured - gal/day						
Allowable Pressure Drop - psi						
Time Allowable - sec						
**Initial gauge pressure - psi						
Final gauge pressure - psi						
Actual pressure drop - psi						
Pass/Fail						

Building Connection( ) M.H. @ Connection( ) Direct Connection( ) Main Line Only(

Main Line W/Service( ) %Service Allowed _____% As-Builts Required( )

*Infiltration/exfiltration based on ~~200~~ 100 gals/mile/day/inch diameter of pipe

**Initial gauge pressure shall not be less than 3.5 psi; and shall be increased 0.5 psi for every foot of ground water present above the crown of the sewer.

COMMENTS: Storm Detention Permit Only.

North Basin - 1.68" orifice plate restrictor (downstream side) } PASS

South Basin - 1.63" orifice plate restrictor (upstream side)

The undersigned hereby certify that the project has been tested as shown, and that the test results are as indicated above.

CONTRACTOR	DATE OF TEST 4/22/05
MUNICIPAL INSPECTOR	MWRD AREA INSPECTOR
INSPECTION/MUNICIPAL ENGINEER	MWRD AREA ENGINEER

This certification DOES NOT constitute approval for occupancy of the above project. The project SHALL NOT be occupied until the RFI is executed and

LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- ULTIMATE AIRFIELD PAVEMENTS
- OFFSITE AREA
- WATERSHED BOUNDARIES
- 100 YR CLOMR (639.5) FLOODPLAIN BOUNDARY FROM DES PLAINES RIVER
- 100 YR DETENTION HIGH WATER LEVEL (638.0)
- 100 YR FEMA FLOODPLAIN BOUNDARY FROM DES PLAINES RIVER (640.5)
- 100 YR CLOMR FLOODPLAIN BOUNDARY ON WHEELING DRAINAGE DITCH (VARIES FROM 639.5 TO 641.0 UPSTREAM OF WOLF ROAD)
- CURRENT DEVELOPMENT – HAWTHORNE AVIATION NORTH TOWER ROAD HANGAR – PHASE 2B

NORTH
0
300
600
SCALE IN FEET

20" DIAMETER RESTRICTOR

PROPOSED DEVELOPMENT

MILWAUKEE AVENUE

DES PLAINES RIVER

S1
S2
S3
S4
N1
N2
N3

SOUTH BASIN

NORTH BASIN

BERM TO BE CONSTRUCTED TO ELEVATION 638.5

20" DIAMETER RESTRICTOR

HINTZ ROAD

RELOCATED WHEELING DRAINAGE DITCH

WOLF ROAD

PALATINE ROAD

FILE: North Tower Road Hangar – Site Map – re
LAYOUT:
UPDATE BY: Layout
SURVEY BOOK: se
DATE: Wed 3/23/22 4:14pm
XREF DWG:

REVISIONS

NUMBER	BY	DATE

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22).

CHICAGO EXECUTIVE AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

MASTER DRAINAGE STUDY

SITE PLAN

©Copyright CMT, Inc.

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS
License No. 184-000613

CHICAGO EXECUTIVE AIRPORT

DESIGN BY:	KWS
DRAWN BY:	KWS
CHECKED BY:	DKP
APPROVED BY:	DKP
DATE:	03/23/2022
JOB No:	17290-01-00

SHEET 1 OF 1 SHEETS

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CHICAGO EXECUTIVE AIRPORT
September 13, 2024
SUMMARY OF AIRPORT DETENTION

DATE	DESCRIPTION OF DEVELOPMENT & RUNNING TOTALS		DETENTION VOLUME SUMMARY				
			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #33 : Expand Airport East Quadrant GA Aircraft Parking Apron; SOUTH BASIN: 0.299 ac-ft detention required minus volume control detention credit = 0.0508 ac-ft = 0.2482 ac-ft total detention required. Volume control: Detention Required 0.0508 ac-ft minus Additional Detention Created 0.0546 ac-ft = - 0.0038 ac-ft detention provided (surplus); NET DECREASE OF 0.2444 AC-FT IN SOUTH BASIN STORAGE.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.25		0.25	0.00	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
March 22, 2023	EXPAND AIRPORT EAST QUADRANT GENERAL AVIATION AIRCRAFT PARKING APRON MWRD PERMIT 2023-0054	NORTH BASIN	54.86			142.28	
		SOUTH BASIN	42.92			89.08	
		TOTAL AIRPORT =	97.78	95.9	193.68	231.36	37.69
REVISION #34 : Construct Apron (NE Quad) and Taxilane Access; NORTH BASIN: 1.127 ac-ft detention required minus volume control detention credit = 0.258 ac-ft = 0.869 ac-ft total detention required. NET DECREASE OF 0.869 AC-FT IN NORTH BASIN STORAGE.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.87		0.87	0	
		SOUTH BASIN =	0.00		0.00	0.00	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
Sep 13, 2024	CONSTRUCT APRON (NE QUAD) AND TAXILANE ACCESS MWRD PERMIT 2024-0181	NORTH BASIN	55.73			142.28	
		SOUTH BASIN	42.92			89.08	
		TOTAL AIRPORT =	98.64	95.9	194.54	231.36	36.82

CHICAGO EXECUTIVE AIRPORT
September 13, 2024
SUMMARY OF AIRPORT DETENTION

	DATE	DESCRIPTION OF DEVELOPMENT & RUNNING TOTALS		DETENTION VOLUME SUMMARY: MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
Ultimate	6/23/2004 and As Amended on 12/21/09 and 3/4/10	ULTIMATE FUTURE DEVELOPED AIRPORT VALUES = AS PERMITTED AND AGREED TO BY AGENCIES	NORTH BASIN	60.27			111.65	
			SOUTH BASIN	41.97			86.49	
			TOTAL AIRPORT =	102.24	95.9	198.14	198.14	0
REVISED Ultimate	Amended on 2/15/2021 (added detention in existing storm sewer pipe)	ULTIMATE FUTURE DEVELOPED AIRPORT VALUES = AS PERMITTED AND AGREED TO BY AGENCIES	NORTH BASIN	63.12			114.5	
			SOUTH BASIN	44.56			89.08	
			TOTAL AIRPORT =	107.68	95.9	203.58	203.58	0

FOR REVISED ULTIMATE
Note: North Basin: Additional detention added in storm sewer 2.85 ac-ft for an amended total of 63.12 ac-ft.
South Basin: Additional detention added in storm sewer 2.59 ac-ft for an amended total of 44.56 ac-ft.

Verified using 2022 Cook County GIS Contours (09/13/2024)	EXISTING DETENTION AS VERIFIED EXCEEDS REQUIRED DETENTION	NORTH BASIN	90.9	Item 5H, 8G and 8I		142.28	
		SOUTH BASIN	See note below			See note below	

Note: Detention at the South Basin will be verified at the next project within the South Basin.

EXHIBIT 1

CHICAGO EXECUTIVE AIRPORT

July 26, 2022

SUMMARY OF AIRPORT DETENTION

DATE	DESCRIPTION OF DEVELOPMENT & RUNNING TOTALS		DETENTION VOLUME SUMMARY				
			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
June 23, 2004	AS PERMITTED BASELINE - CURRENT CONDITION (per MWRDGC Permit 03-246)	NORTH BASIN	48.93			99.7	
		SOUTH BASIN	32.91			142.9	
		TOTAL AIRPORT =	81.84	95.9	177.74	242.6	64.86
REVISION #1 : NEW DEVELOPMENT - SIGNATURE FLIGHT SUPPORT HANGAR AND APRON; 0.87 AC-FT. Detention Required; No Additional Detention Created							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0		0	0	
		SOUTH BASIN =	0.87		0.87	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
July 1, 2005	Signature Flight Support Development in the East Quadrant of the Airport - South Basin of the Drainage System	NORTH BASIN	48.93			99.7	
		SOUTH BASIN	33.78			142.9	
		TOTAL AIRPORT =	82.71	95.9	178.61	242.6	63.99
REVISION #2 : NEW DEVELOPMENT - RUNWAY 12/30 REHABILITATION ; 0.17 AC-FT. Detention Required; -0.1 AC-FT. Additional Detention Created							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.14		0.14	2.1	
		SOUTH BASIN =	0.03		0.03	-2.2	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
July 1, 2005	Runway 12/30 Rehabilitation	NORTH BASIN	49.07			101.80	
		SOUTH BASIN	33.81			140.70	
		TOTAL AIRPORT =	82.88	95.9	178.78	242.5	63.72
REVISION #3 : NEW DEVELOPMENT - NE QUADRANT T-HANGAR SITEWORK ; 0.459 AC-FT. Detention Required; -0.52 AC-FT. Additional Detention Created in North Basin (ACTUALLY FILLED IN, THEREFORE, 0.52 AC-FT TAKEN); -4.21 AC-FT Additional Detention Created in South Basin FOR Total Created = -4.73 AC-FT.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.459		0.459	-0.52	
		SOUTH BASIN =	0.00		0.00	-4.21	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
June 7, 2006	NE Quadrant T-Hangar Sitework	NORTH BASIN	49.53			101.28	
		SOUTH BASIN	33.81			136.49	
		TOTAL AIRPORT =	83.34	95.9	179.24	237.77	58.53

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CHICAGO EXECUTIVE AIRPORT

July 26, 2022

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			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #4 : NEW DEVELOPMENT - TAXIWAY C AND EAST QUAD. APRON PAVING; 0.586 AC-FT. Detention Required; -17.30 AC-FT. Additional Detention Created							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.59		0.59	-17.3	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
June 9, 2006	Taxiway C and East Quadrant Apron Paving (Parallel Txy to Rwy 6/24)	NORTH BASIN	49.53			101.28	
		SOUTH BASIN	34.39			119.19	
		TOTAL AIRPORT =	83.92	95.9	179.82	220.47	40.65
REVISION #5 : NEW DEVELOPMENT - BRIGADOON AVIATION APRON, HANGAR AND AUTO PARKING LOTS; 0.602 AC-FT. Add'l. Detention Required; -4.117 AC-FT. Additional Detention Created (Detention removed from Airport Bank)							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.60		0.60	-4.12	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
October 30, 2008	Brigadoon Aviation Apron, Hangar and Auto Parking Lot	NORTH BASIN	49.53			101.28	
		SOUTH BASIN	34.99			115.07	
		TOTAL AIRPORT =	84.53	95.9	180.43	216.35	35.92
REVISION #6 : WASTE MANAGEMENT OFFSITE BANK NEGOTIATION; 1.79 AC-FT. Add'l. Detention Required; -1.79 AC-FT. Additional Detention Created (Detention removed from Airport Bank - South Basin)							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.00		0.00	-1.79	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
May 4, 2009	Waste Management Offsite Detention Easement (2009-2019)	NORTH BASIN	49.53			101.28	
		SOUTH BASIN	34.99			113.28	
		TOTAL AIRPORT =	84.53	95.9	180.43	214.56	34.13

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CHICAGO EXECUTIVE AIRPORT

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			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #7 : Phase 1 - Rwy 16/34 OFA/RSA Improvements including Extending Twy L and Northeast Quad Sitework; 1.03 AC-FT. Add'l. Detention Required; .406 AC-FT. Additional Detention Created (Detention removed from Airport Bank)							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.99		0.99	0.358	
		SOUTH BASIN =	0.04		0.04	0.048	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
June 30, 2009	Phase 1 - Rwy 16/34 OFA/RSA Improvements including Extending Twy L and Northeast Quad Sitework	NORTH BASIN	50.52			101.64	
		SOUTH BASIN	35.03			113.33	
		TOTAL AIRPORT =	85.56	95.9	181.46	214.966	33.51
REVISION #8 : Southeast Quadrant Apron; 0.042 AC-FT. Add'l. Detention Required; -0.103 AC-FT. Additional Detention Created (Detention removed from Airport Bank); NET ADDITION OF -0.145 AC-FT REMOVED FROM BANK							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.04		0.04	-0.103	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
August 5, 2009	Southeast Quadrant Apron	NORTH BASIN	50.52			101.64	
		SOUTH BASIN	35.08			113.23	
		TOTAL AIRPORT =	85.60	95.9	181.50	214.86	33.37
REVISION #9 : CORRECTION of Waste Management Parcel Development #6; 1.79 AC-FT. Add'l. Detention Required was INCORRECTLY Removed from the South Basin. This amount will be added back in to the "Bank" within this entry							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.00		0.00	1.79	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
September 11, 2009	CORRECTION of Waste Management Development #6	NORTH BASIN	50.52			101.64	
		SOUTH BASIN	35.08			115.02	
		TOTAL AIRPORT =	85.60	95.9	181.50	216.65	35.16

EXHIBIT 1

CHICAGO EXECUTIVE AIRPORT
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			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #10 : Waste Management Parcel Development #10; Remove 1.34 Acre-Feet of Detention from the North Basin of the Airport Detention Bank/Surplus. No Additional Detention will be provided or Created within this project. The 1.34 acre-ft of required storage will be removed from the airport surplus/bank.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	1.34		1.34	0	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
September 11, 2009	Waste Management Development #10: Remove 1.34 Acre-Ft. of Detention Storage from the North Basin of the Airport Bank/Surplus of Storage.	NORTH BASIN	51.86			101.64	
		SOUTH BASIN	35.08			115.02	
		TOTAL AIRPORT =	86.94	95.9	182.84	216.65	33.82
REVISION #11 : SE Quadrant Apron Development #8; .508 ac-ft must be removed from surplus/bank in order to meet the requirements of the City of Prospect Heights 1.5:1 cut/fill ratio within the floodplain. The project actually provides 1.15 ac-ft of cut, while 1.658 ac-ft is required; The additional .508 ac-ft is provided via the surplus/bank in the South Basin.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.51		0.51	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
January 18, 2010	SE Quadrant Apron Development #11: Remove 0.508 Acre-Ft. of Detention Storage from the South Basin of the Airport Bank/Surplus of Storage.	NORTH BASIN	51.86			101.64	
		SOUTH BASIN	35.58			115.02	
		TOTAL AIRPORT =	87.45	95.9	183.35	216.65	33.31
REVISION #12 : Phase 2 - RWY 16/34 OFA/RSA Improvements including Extending Twy L and Bypass L1 Development #9; NORTH BASIN: 1.95 ac-ft detention req'd; 0.022 Add'l Detention provided, NET DECREASE IN NORTH BASIN STORAGE BANK OF 1.93 ac-ft. South Basin: 0.06 ac-ft of detention req'd; 2.579 ac-ft of detention provided; NET INCREASE IN SOUTH BASIN STORAGE BANK OF 2.52 AC-FT							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	1.95		1.95	0.022	
		SOUTH BASIN =	0.06		0.06	2.579	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
May 4, 2010	Phase 2 - Rwy 16/34 OFA/RSA Improvements including Extending Twy L and Bypass TWY L1	NORTH BASIN	53.81			101.66	
		SOUTH BASIN	35.64			117.59	
		TOTAL AIRPORT =	89.45	95.9	185.35	219.25	33.90

EXHIBIT 1

CHICAGO EXECUTIVE AIRPORT

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			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #13 : Construct Partial Parallel Taxiway Echo and Partial Overlay of Taxiway Echo. Development #10; 2.96 ac-ft of detention is required and 3.22 ac-ft of detention is provided. A surplus of 0.258 ac-ft of detention is added back into the surplus/bank in the South Basin. No changes to the North Basin.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	2.96		2.96	3.22	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
May 5, 2010	Construct Partial Parallel Taxiway Echo and Partial Overlay of Taxiway Echo	NORTH BASIN	53.81			101.66	
		SOUTH BASIN	38.60			120.81	
		TOTAL AIRPORT =	92.41	95.9	188.31	222.47	34.16
REVISION #14 : Design, Furnish and Build 8-Unit Nested T-Hangar Buildings. Development #11; 0.54 ac-ft of storage will be removed from the South Basin surplus/bank to meet the Village of Wheeling detention requirements. No additional detention is being created.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.54		0.54	0	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
May 12, 2010	Design, Furnish and Build 8-Unit Nested T-Hangar Buildings	NORTH BASIN	54.35			101.66	
		SOUTH BASIN	38.60			120.81	
		TOTAL AIRPORT =	92.96	95.9	188.86	222.47	33.62
REVISION #15 : International Aviation Hangar Site Development. Development #12; 1.179 ac-ft of detention will be removed from the North Basin surplus/bank to meet the Village of Wheeling detention requirements. No additional detention is being created.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	1.10		1.10	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
August 4, 2010	International Aviation Hangar Site Development	NORTH BASIN	54.35			101.66	
		SOUTH BASIN	39.70			120.81	
		TOTAL AIRPORT =	94.06	95.9	189.96	222.47	32.52

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REVISION #16 : Atlantic Aviation Apron Paved Shoulders. Development #13; 0.049 ac-ft of detention will be removed from the North Basin surplus/bank to meet the Village of Wheeling detention requirements. No additional detention is being created.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.05		0.05	0	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
August 18, 2010	Atlantic Aviation Apron Paved Shoulders	NORTH BASIN	54.40			101.66	
		SOUTH BASIN	39.70			120.81	
		TOTAL AIRPORT =	94.11	95.9	190.01	222.47	32.47
REVISION #17 : REVISIONS to Phase 2 - RWY 16/34 OFA/RSA Improvements including Extending Twy L and Bypass L1 Development #9; Twy L1 removed from project. No impacts to North Basin. NORTH BASIN: -1.95 ac-ft detention req'd; -0.022 Add'l Detention provided, NET INCREASE IN NORTH BASIN STORAGE BANK OF 1.93 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	-1.95		-1.95	-0.022	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
August 18, 2010	Revision Phase 2 - Rwy 16/34 OFA/RSA Improvements including Extending Twy L and Bypass TWY L1	NORTH BASIN	52.45			101.64	
		SOUTH BASIN	39.70			120.81	
		TOTAL AIRPORT =	92.16	95.9	188.06	222.45	34.40
REVISION #18 : SFS Fuel Storage Facility Development #14; NORTH BASIN: 0.060 ac-ft detention req'd; 0.060ac-ft detention provided in North Detention Basin; NET DECREASE IN NORTH BASIN STORAGE BANK OF 0.060 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.08		0.08	0	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
August 18, 2010	SFS Fuel Storage Faciltiy	NORTH BASIN	52.53			101.64	
		SOUTH BASIN	39.70			120.81	
		TOTAL AIRPORT =	92.23	95.9	188.13	222.45	34.32

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REVISION #19 : Added Alt #2 Runway 6/24 Overlay Development #15; SOUTH BASIN: 0.585 ac-ft detention req'd; 0.585ac-ft detention provided in South Detention Basin; NET DECREASE IN SOUTH BASIN STORAGE BANK OF 0.585 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.59		0.59	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
May 10, 2011	Runway 6/24 Overlay East End	NORTH BASIN	52.53			101.64	
		SOUTH BASIN	40.29			120.81	
		TOTAL AIRPORT =	92.82	95.9	188.72	222.45	33.73
REVISION #20 : Atlantic Aviation Hangar 42 Development #16; NORTH BASIN: 0.657 ac-ft detention req'd; 0.657 ac-ft detention provided in North Detention Basin; NET DECREASE IN NORTH BASIN STORAGE BANK OF 0.657 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.66		0.66	0	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
January 27, 2012	Atlantic Aviation Hangar 42	NORTH BASIN	53.19			101.64	
		SOUTH BASIN	40.29			120.81	
		TOTAL AIRPORT =	93.48	95.9	189.38	222.45	33.08
REVISION #21 : Tin Goose Garage Hangar 18 Development #17; SOUTH BASIN: 0.337 ac-ft detention req'd;0.337 ac-ft detention provided in South Detention Basin; NET DECREASE IN SOUTH BASIN STORAGE BANK OF 0.337 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.34		0.34	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
October 15, 2012	Tin Goose Garage Hangar 18	NORTH BASIN	53.19			101.64	
		SOUTH BASIN	40.62			120.81	
		TOTAL AIRPORT =	93.81	95.9	189.71	222.45	32.74

EXHIBIT 1

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			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #22 : Sovereign Office/Hangar Development #18; SOUTH BASIN: 1.366 ac-ft detention req'd; 1.366 ac-ft detention provided in South Detention Basin; NET DECREASE IN SOUTH BASIN STORAGE BANK OF 1.366 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	1.37		1.37	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
January 2, 2013	Sovereign Office/Hangar	NORTH BASIN	53.19			101.64	
		SOUTH BASIN	41.99			120.81	
		TOTAL AIRPORT =	95.18	95.9	191.08	222.45	31.37
REVISION #23 : CORRECTION of SE Quadrant Apron Revision #8 which was never built; -0.042 AC-FT. Add'l. Detention Required; +0.103 AC-FT. Additional Detention Created (Detention added back to Airport Bank); NET ADDITION OF +0.145 AC-FT TO SOUTH BASIN STORAGE BANK							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	-0.04		-0.04	0.103	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
April 1, 2014	Southeast Quad Apron - never built	NORTH BASIN	53.19			101.64	
		SOUTH BASIN	41.95			120.92	
		TOTAL AIRPORT =	95.14	95.9	191.04	222.56	31.52
REVISION #24 : Rehab EQ GA Apron; SOUTH BASIN: 0.092 ac-ft detention req'd;0.092ac-ft detention provided in South Detention Basin; NET DECREASE IN SOUTH BASIN STORAGE BANK OF 0.415 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.09		0.09	-0.323	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
April 1, 2014	Rehab EQ GA Apron	NORTH BASIN	53.19			101.64	
		SOUTH BASIN	42.04			120.59	
		TOTAL AIRPORT =	95.23	95.9	191.13	222.23	31.10

EXHIBIT 1

CHICAGO EXECUTIVE AIRPORT
July 26, 2022
SUMMARY OF AIRPORT DETENTION

DATE	DESCRIPTION OF DEVELOPMENT & RUNNING TOTALS		DETENTION VOLUME SUMMARY				
			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #25 : Construct EMAS Runway 34 End (16 Departure End); SOUTH BASIN: 0.058 ac-ft detention req'd;0.058ac-ft detention provided in South Detention Basin; NET DECREASE IN SOUTH BASIN STORAGE BANK OF 0.07 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.06		0.06	-0.01	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
April 2, 2014	34 END EMAS	NORTH BASIN	53.19			101.64	
		SOUTH BASIN	42.10			120.58	
		TOTAL AIRPORT =	95.29	95.9	191.19	222.22	31.03
REVISION #26 : Preliminary 94th Area Fill; SOUTH BASIN: 0.058 ac-ft detention req'd;0.058ac-ft detention provided in South Detention Basin; NET DECREASE IN SOUTH BASIN STORAGE BANK OF 0.07 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	-0.39		-0.39	-5.8	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
April 2, 2014	PRELIM 94TH FILL	NORTH BASIN	53.19			101.64	
		SOUTH BASIN	41.71			114.78	
		TOTAL AIRPORT =	94.90	95.9	190.80	216.42	25.62
REVISION #27 : Village of Wheeling Industrial Lane Improvements; NORTH BASIN: 0.00 ac-ft detention req'd;0.44 ac-ft detention provided in North Detention Basin; NET DECREASE IN NORTH BASIN STORAGE BANK OF 0.44 ac-ft.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	-0.44	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
March 25, 2015	Village of Wheeling Industrial Lane Improvements (borrowed detention)	NORTH BASIN	53.19			101.20	
		SOUTH BASIN	41.71			114.78	
		TOTAL AIRPORT =	94.90	95.9	190.80	215.98	25.18

EXHIBIT 1

CHICAGO EXECUTIVE AIRPORT

July 26, 2022

SUMMARY OF AIRPORT DETENTION

DATE	DESCRIPTION OF DEVELOPMENT & RUNNING TOTALS		DETENTION VOLUME SUMMARY				
			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #28 : Construct EMAS Runway 16 End 34 Departure End); NORTH BASIN: 0.34 ac-ft detention required. Additional Detention Required; -0.779 ac-ft. No Additional Detention Created; NET DECREASE OF 1.119 AC-FT IN NORTH BASIN STORAGE.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.34		0.34	-0.779	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
August 12, 2015	RUNWAY 16 END EMAS	NORTH BASIN	53.53			100.42	
		SOUTH BASIN	41.71			114.78	
		TOTAL AIRPORT =	95.24	95.9	191.14	215.20	24.06
REVISION #29 : Construct Bypass Taxiway L1; NORTH BASIN: 0.14 ac-ft detention required. Additional Detention Required; -1.798 ac-ft. No Additional Detention Created; NET DECREASE OF 1.938 AC-FT IN NORTH BASIN STORAGE.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.14		0.14	-1.798	
		SOUTH BASIN =	0.00		0.00	0	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
March 22, 2017	CONSTRUCT BYPASS TAXIWAY L1	NORTH BASIN	53.67			98.62	
		SOUTH BASIN	41.71			114.78	
		TOTAL AIRPORT =	95.38	95.9	191.28	213.41	22.13
REVISION #30 : Hawthorne Aviation North Tower Road Hangar; SOUTH BASIN: 0.288 ac-ft detention required. Additional Detention Required; -0.005 ac-ft. No Additional Detention Created; NET DECREASE OF .293 AC-FT IN SOUTH BASIN STORAGE.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.29		0.29	-0.005	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
February 15, 2018	HAWTHORNE AVIATION NORTH TOWER ROAD HANGAR	NORTH BASIN	53.67			98.62	
		SOUTH BASIN	42.00			114.78	
		TOTAL AIRPORT =	95.67	95.9	191.57	213.40	21.83

EXHIBIT 1

CHICAGO EXECUTIVE AIRPORT

July 26, 2022

SUMMARY OF AIRPORT DETENTION

DATE	DESCRIPTION OF DEVELOPMENT & RUNNING TOTALS		DETENTION VOLUME SUMMARY				
			MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
REVISION #31 : Hawthorne Aviation Phase 2B Hanagr and Parking; SOUTH BASIN: DETENTION: 0.647 ac-ft detention required minus 0.175 ac-ft volume control detention credit = 0.472 ac-ft total detetion required . COMP. STORAGE: Additional Detention Required 0.3402 ac-ft minus Additional Detention Created 0.3685 ac-ft = - 0.0283 ac-ft detention provided (surplus); NET DECREASE OF 0.4437 AC-FT IN SOUTH BASIN STORAGE.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.472		0.47	0.028	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
Updated March 11, 2022	HAWTHORNE AVIATION PH 2B HANGAR AND PARKING	NORTH BASIN	53.67			98.62	
		SOUTH BASIN	42.47			114.81	
		TOTAL AIRPORT =	96.14	95.9	192.04	213.43	21.39
REVISION #32 : Sitework for Customs Facility; SOUTH BASIN: 0.03 ac-ft detention required. Additional Detention Required; -0.01 ac-ft. No Additional Detention Created; NET DECREASE OF .04 AC-FT IN SOUTH BASIN STORAGE.							
CHANGES IN EACH BASIN AS REQUIRED BY NEW DEVELOPMENT		NORTH BASIN =	0.00		0.00	0	
		SOUTH BASIN =	0.03		0.03	-0.01	
UPDATED RUNNING TOTALS FOR ENTIRE AIRPORT							
June 9, 2020	SITEWORK FOR CUSTOMS FACILITY	NORTH BASIN	53.67			98.62	
		SOUTH BASIN	42.50			114.80	
		TOTAL AIRPORT =	96.17	95.9	192.07	213.42	21.35

EXHIBIT 1

CHICAGO EXECUTIVE AIRPORT

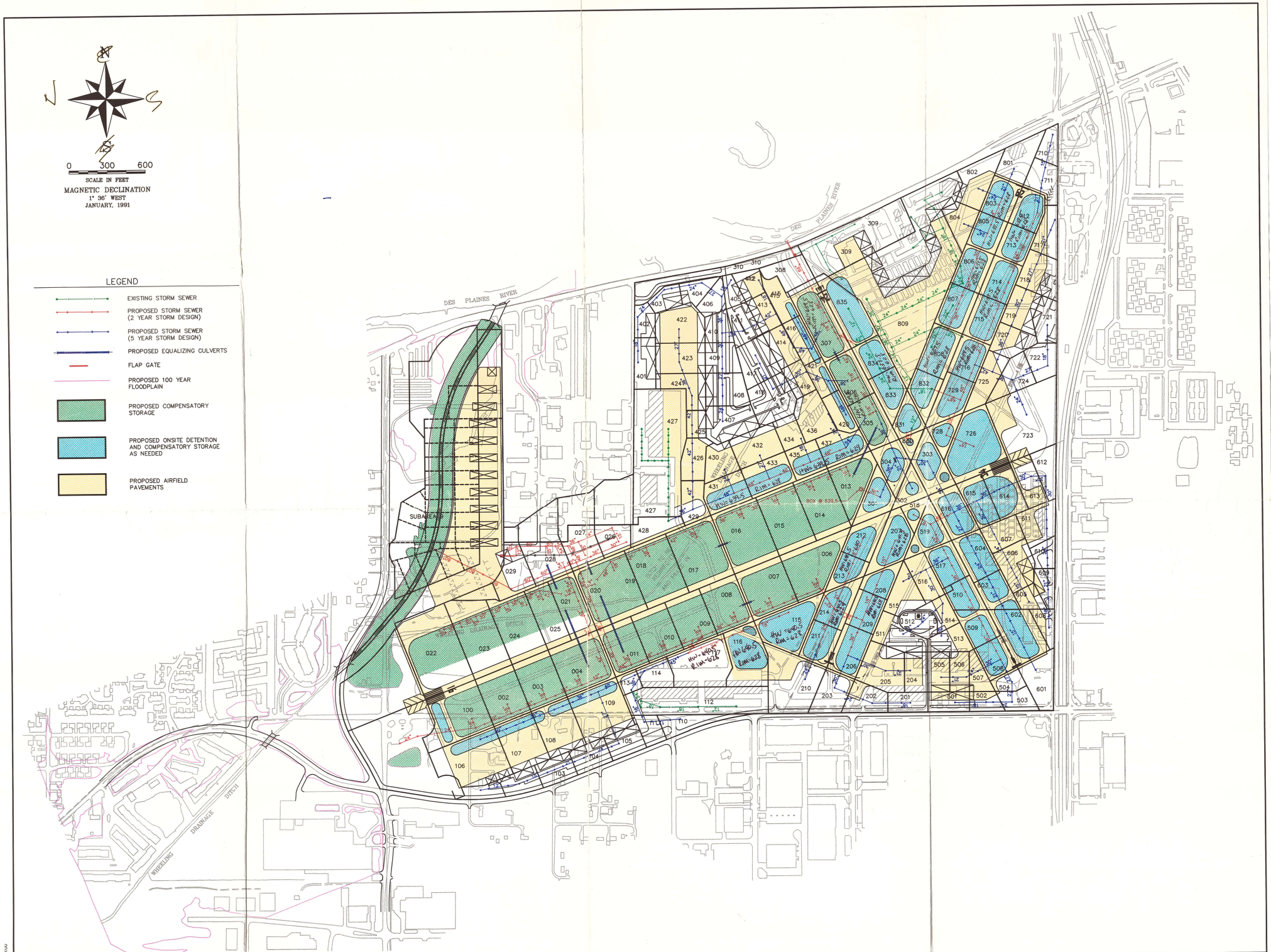
July 26, 2022

SUMMARY OF AIRPORT DETENTION

	DATE	DESCRIPTION OF DEVELOPMENT & RUNNING TOTALS		DETENTION VOLUME SUMMARY				
				MWRDGC *REQUIRED & PROVIDED* (AC-FT.)	FEMA COMP. STORAGE REQUIRED & PROVIDED (AC-FT.)	TOTAL DETENTION *REQUIRED* (AC.-FT.)	TOTAL DETENTION *PROVIDED* (AC.-FT.)	SURPLUS DETENTION (Positive # = Excess Avail.; Neg. # = Remove)
Ultimate	6/23/2004 and As Amended on 12/21/09 and 3/4/10	ULTIMATE FUTURE DEVELOPED AIRPORT VALUES = AS PERMITTED AND AGREED TO BY AGENCIES	NORTH BASIN	60.27			111.65	
			SOUTH BASIN	41.97			86.49	
			TOTAL AIRPORT =	102.24	95.9	198.14	198.14	0
REVISED Ultimate	Amended on 2/15/2021 (added detention in existing storm sewer pipe)	ULTIMATE FUTURE DEVELOPED AIRPORT VALUES = AS PERMITTED AND AGREED TO BY AGENCIES	NORTH BASIN	63.12			114.5	
			SOUTH BASIN	44.56			89.08	
			TOTAL AIRPORT =	107.68	95.9	203.58	203.58	0

FOR REVISED ULTIMATE

Note: North Basin: Additional detention added in storm sewer 2.85 ac-ft for an amended total of 63.12 ac-ft.
South Basin: Additional detention added in storm sewer 2.59 ac-ft for an amended total of 44.56 ac-ft.



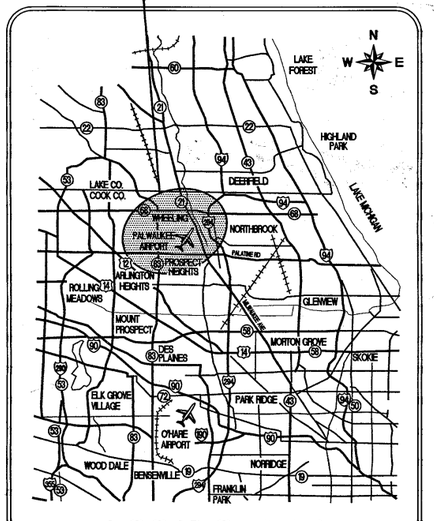
CMT COMPUTER AIDED DESIGN & DRAFTING CADD FINAL AURORA OFFICE \9429020\DRAIN	CMT CRAWFORD, MURPHY & TILLY, INC. CONSULTING ENGINEERS ■ SPRINGFIELD, IL ■ AURORA, IL ■ ST. LOUIS, MO	REVISIONS NO. BY DATE NO. BY DATE	DESIGN BY SJT DRAWN BY LRC CHECKED BY SJT APPROVED BY	PALWAUKEE MUNICIPAL AIRPORT WHEELING/ PROSPECT HEIGHTS, ILLINOIS	CONCEPTUAL AIRPORT DRAINAGE AND STORM SEWER LAYOUT	SCALE SHOWN DATE 12/95 SHEET OF SHEETS	JOB NO. 94290-02

PALWAUKEE MUNICIPAL AIRPORT COMMISSION
WHEELING/PROSPECT HEIGHTS, ILLINOIS

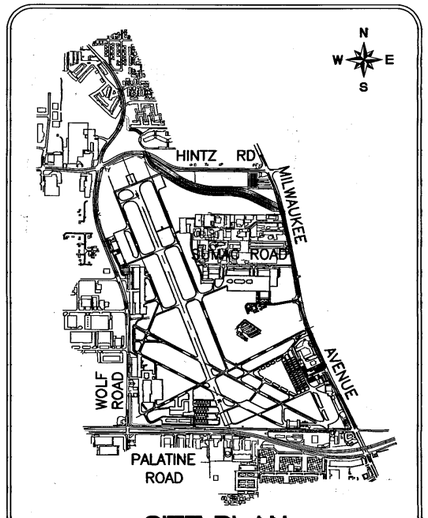
MWRDGC OVERALL PERMIT DRAWINGS
FOR
PALWAUKEE MUNICIPAL AIRPORT

SEPTEMBER 23, 2003
REVISED NOVEMBER 25, 2003
REVISED JANUARY 14, 2004
REVISED MARCH 29, 2004
REVISED APRIL 23, 2004
REVISED MAY 10, 2004

PROJECT LOCATION



LOCATION MAP



SITE PLAN

INDEX TO SHEETS

1. COVER SHEET
2. PROPERTY MAP
3. EXISTING GRADING PLAN
4. PROPOSED GRADING PLAN
5. PROPOSED NORTH BASIN DETAIL
6. PROPOSED SOUTH BASIN DETAIL
7. POND DETAIL – KEY MAP
8. NORTH BASIN DETAIL – SUBAREA 1
9. NORTH BASIN DETAIL – SUBAREAS 2A AND 2B
10. NORTH BASIN DETAIL – SUBAREA 9
11. SOUTH BASIN DETAIL – SUBAREAS 3, 7 AND 8
12. SOUTH BASIN DETAIL – SUBAREA 3A AND PARTIAL SUBAREAS – 3, 7 AND 8
13. SOUTH BASIN DETAIL – SUBAREA 4
14. SOUTH BASIN DETAIL – SUBAREAS 5 AND 6
15. RESTRICTOR DETAILS
16. RESTRICTOR DETAILS AND GENERAL NOTES

ILLINOIS REGISTERED No. 062-037722 PROFESSIONAL ENGINEER BRIAN R. WELKER
5/13/2004
EXP. 11/30/2005

PALWAUKEE MUNICIPAL AIRPORT

TOWNSHIP: 42 NORTH — WHEELING TOWNSHIP
RANGE: 11 EAST — (SECTION: 13)
COOK COUNTY

02290-02-01

CMT
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CONSULTING ENGINEERS

SUBMITTED BY _____ BRIAN R. WELKER, P.E.
DATE 5/13/2004

CALL J.U.L.I.E
BEFORE EXCAVATING
1-800-892-0123

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This copy of plans on file with Metropolitan Water Reclamation District of Greater Chicago
Sewage Permit 03-246

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09-4W-3806

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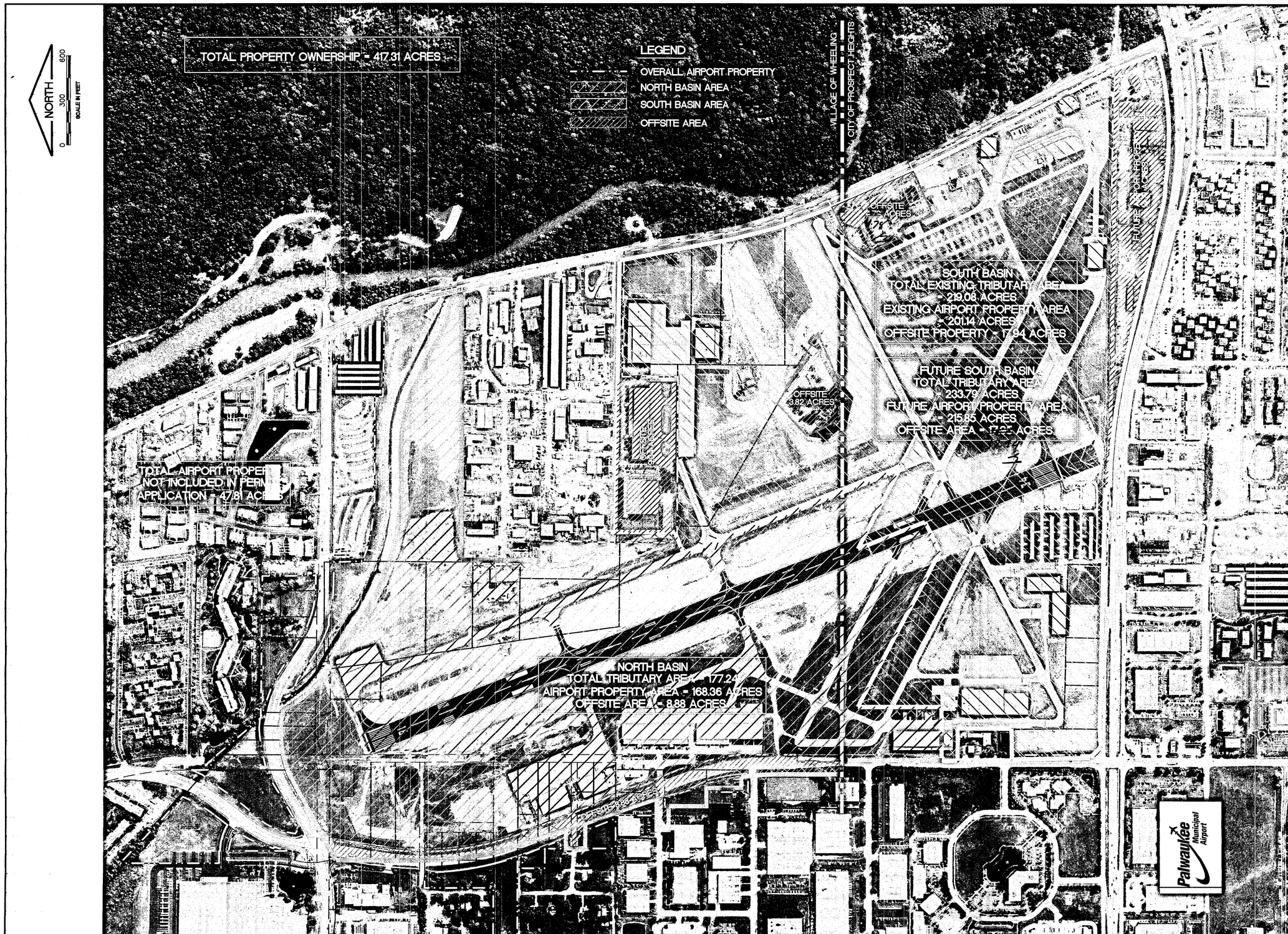

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SURVEY BOOK #
DATE: Thu 5/13/04 2:58pm

REVISIONS

NUMBER	BY	DATE

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THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22).

PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

MASTER DRAINAGE STUDY

PROPERTY MAP

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JOB No:	02290-02-01

SHEET 2 OF 15 SHEETS

LEGEND

NON-AIRPORT PROPERTY INCLUDED IN DETENTION CALCULATION

WATERSHED BOUNDARY

NORTH BASIN

SOUTH BASIN

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Contour.DWG

REVISIONS		
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THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22).

PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

MASTER DRAINAGE STUDY

EXISTING CONDITIONS GRADING PLAN

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SHEET 3 OF 16 SHEETS

LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- ULTIMATE AIRFIELD PAVEMENTS
- LONGEST OVERLAND FLOW PATH
- OFFSITE AREA
- WATERSHED BOUNDARIES

100 YEAR FLOODPLAIN BOUNDARY VARIES FROM 639.5 TO 641.0 UPSTREAM OF WOLF ROAD.

NORTH
0 300 600
SCALE IN FEET

INSTALL 1.63' DIAMETER RESTRICTOR

INSTALL 1.68' DIAMETER RESTRICTOR

VILLAGE OF WHEELING
CITY OF PROSPECT HEIGHTS
DES PLAINES RIVER
MILWAUKEE AVENUE
HINTZ ROAD
RELOCATED WHEELING DRAINAGE DITCH
CLOSED LID STRUCTURE
SOUTH BASIN
NORTH BASIN
BERM TO BE CONSTRUCTED TO ELEVATION 638.5
WOLF ROAD
PALATINE ROAD

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Floodplain.dwg
Base-Alignment.DWG
Base.dwg
tbcint.dwg
tb.dwg

REVISIONS

NUMBER	BY	DATE

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22).

PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

MASTER DRAINAGE STUDY

PROPOSED GRADING PLAN

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APPROVED BY:	
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JOB No:	02290-02-01

SHEET 4 OF 16 SHEETS

LEGEND

- EXISTING STORM SEWER
- SS — PROPOSED STORM SEWER
- LONGEST DIAGONAL DISTANCE
- ULTIMATE AIRFIELD IMPERVIOUS AREAS
- DES PLAINES RIVER BACKWATER HWL 639.5
  WHEELING DRAINAGE DITCH BACKWATER HWL = 639.5
- NORTH BASIN DETENTION HWL (FREE DISCHARGE) = 637.02
  NORTH BASIN DETENTION HWL (ZERO DISCHARGE) = 638.23
  SOUTH BASIN DETENTION HWL = 638.25
- SUBAREA LIMIT
- DRAINAGE BASIN LIMITS
- CURRENT AIRPORT PROPERTY LIMITS
- PROPOSED AIRPORT PROPERTY LIMITS

INSTALL 1.63' DIAMETER RESTRICTOR

HINTZ ROAD

RELOCATED WHEELING DRAINAGE DITCH

BERM TO BE CONSTRUCTED TO ELEVATION 638.5

NORTH BASIN

SOUTH BASIN

SUBAREA 1

SUBAREA 2A

SUBAREA 2B

SUBAREA 9

L = 4630'
S = 0.001 ft/ft

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UPDATE BY: johse
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XREF DWG:
XREF DWG:
DATE: Tue 7/1/03 9:39am

REVISIONS

NUMBER	BY	DATE

0 1 2
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PROPOSED NORTH BASIN DETAIL

PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

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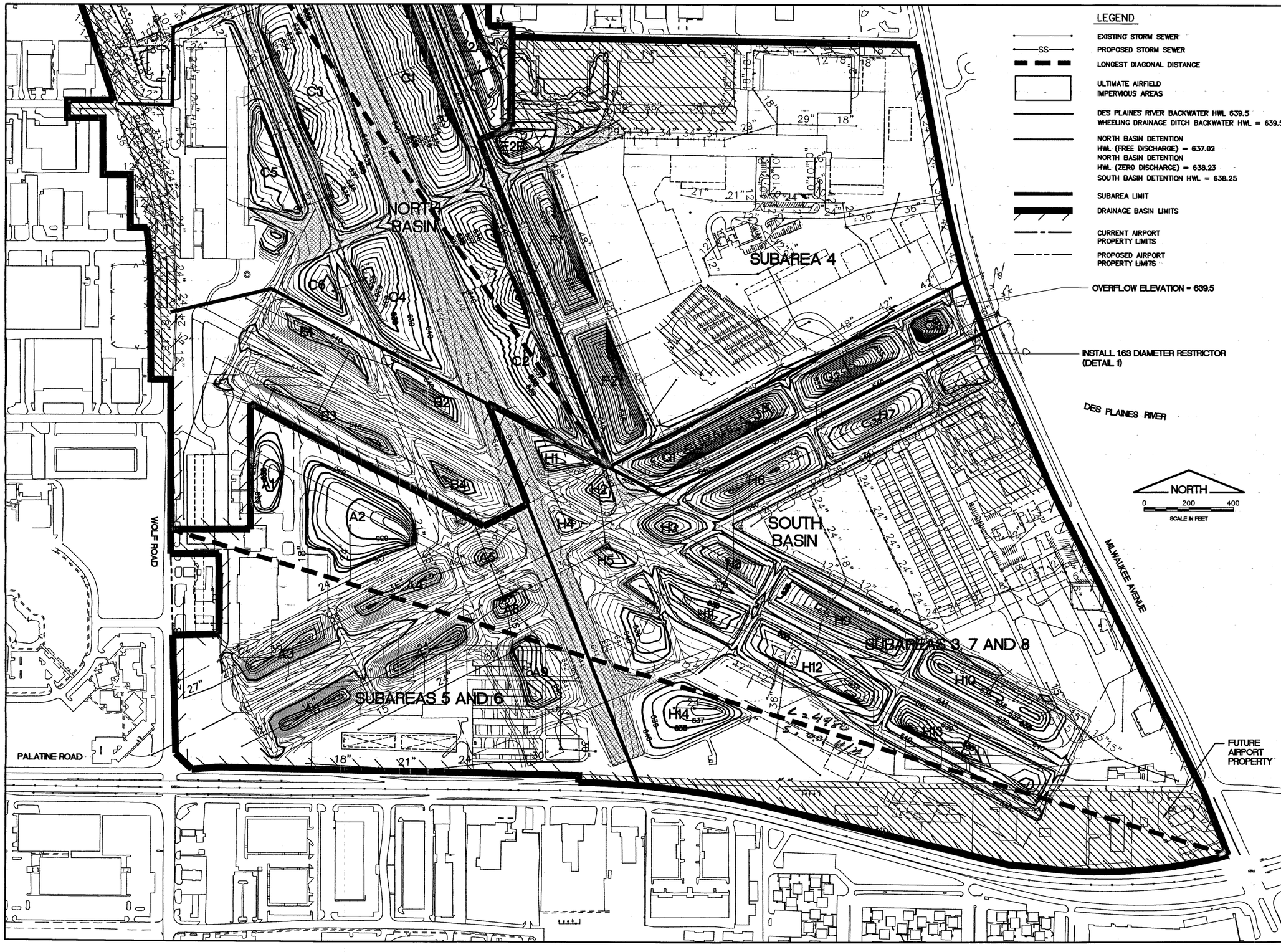
APPROVED BY:	
DATE:	09/23/03
JOB No:	02290-02-01

SHEET 5 OF 16 SHEET



LEGEND

- EXISTING STORM SEWER
- SS — PROPOSED STORM SEWER
- LONGEST DIAGONAL DISTANCE
- ULTIMATE AIRFIELD IMPERVIOUS AREAS
- DES PLAINES RIVER BACKWATER HWL 639.5
  WHEELING DRAINAGE DITCH BACKWATER HWL = 639.5
- NORTH BASIN DETENTION HWL (FREE DISCHARGE) = 637.02
  NORTH BASIN DETENTION HWL (ZERO DISCHARGE) = 638.23
  SOUTH BASIN DETENTION HWL = 638.25
- SUBAREA LIMIT
- DRAINAGE BASIN LIMITS
- CURRENT AIRPORT PROPERTY LIMITS
- PROPOSED AIRPORT PROPERTY LIMITS

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XREF DWG:
DATE: Tue 7/1/03 9:39am

REVISIONS

NUMBER	BY	DATE

0 1 2
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PROPOSED SOUTH BASIN DETAIL

PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

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APPROVED BY:	
DATE:	09/23/03
JOB No:	02290-02-01

SHEET 6 OF 16 SHEET

LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- ULTIMATE AIRFIELD PAVEMENTS
- LONGEST OVERLAND FLOW PATH
- OFFSITE AREA
- WATERSHED BOUNDARIES

NORTH
0 300 600
SCALE IN FEET

VILLAGE OF WHEELING
CITY OF PROSPECT HEIGHTS
DES PLAINES RIVER
MILWAUKEE AVENUE
HINTZ ROAD
RELOCATED WHEELING DRAINAGE DITCH
WOLF ROAD
PALATINE ROAD

SUBAREA 9
SHEET 13

SUBAREA 4
SHEET 13

SUBAREA 3A
SHEET 12

SUBAREAS 5, 7 AND 8
SHEET 14

SOUTH BASIN

SUBAREA 3
SHEET 13

NORTH BASIN

SUBAREA 5 AND 6
SHEET 14

SUBAREAS 2A AND 2B
SHEET 9

K:\Palwaukeeap\0229002\draw\exhibit\master drainage up
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LAYOUT: Layout1
UPDATE BY: johse
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Contour-all.DWG
Floodplain.dwg
Base-Alignment.DWG
Base.dwg
tbcint.dwg
tb.dwg

REVISIONS

NUMBER	BY	DATE

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (34X22).

PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

MASTER DRAINAGE STUDY

POND DETAIL - KEY MAP

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SHEET 7 OF 16 SHEETS

NORTH
0 100 200
SCALE IN FEET

INSTALL 1.68" DIAMETER RESTRICTOR PLATE IN EXISTING STRUCTURE

E1 D1 D2 D3 E2A C1 C2 C3

NORTH BASIN

SUBAREA 1

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FILE: basins.DWG
UPDATE BY: johse
SURVEY BOOK #
XREF DWG:
XREF DWG:
DATE: Tue 7/1/03 9:39am

REVISIONS

NUMBER	BY	DATE

0 1 2
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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

NORTH BASIN DETAIL SUBAREA 1

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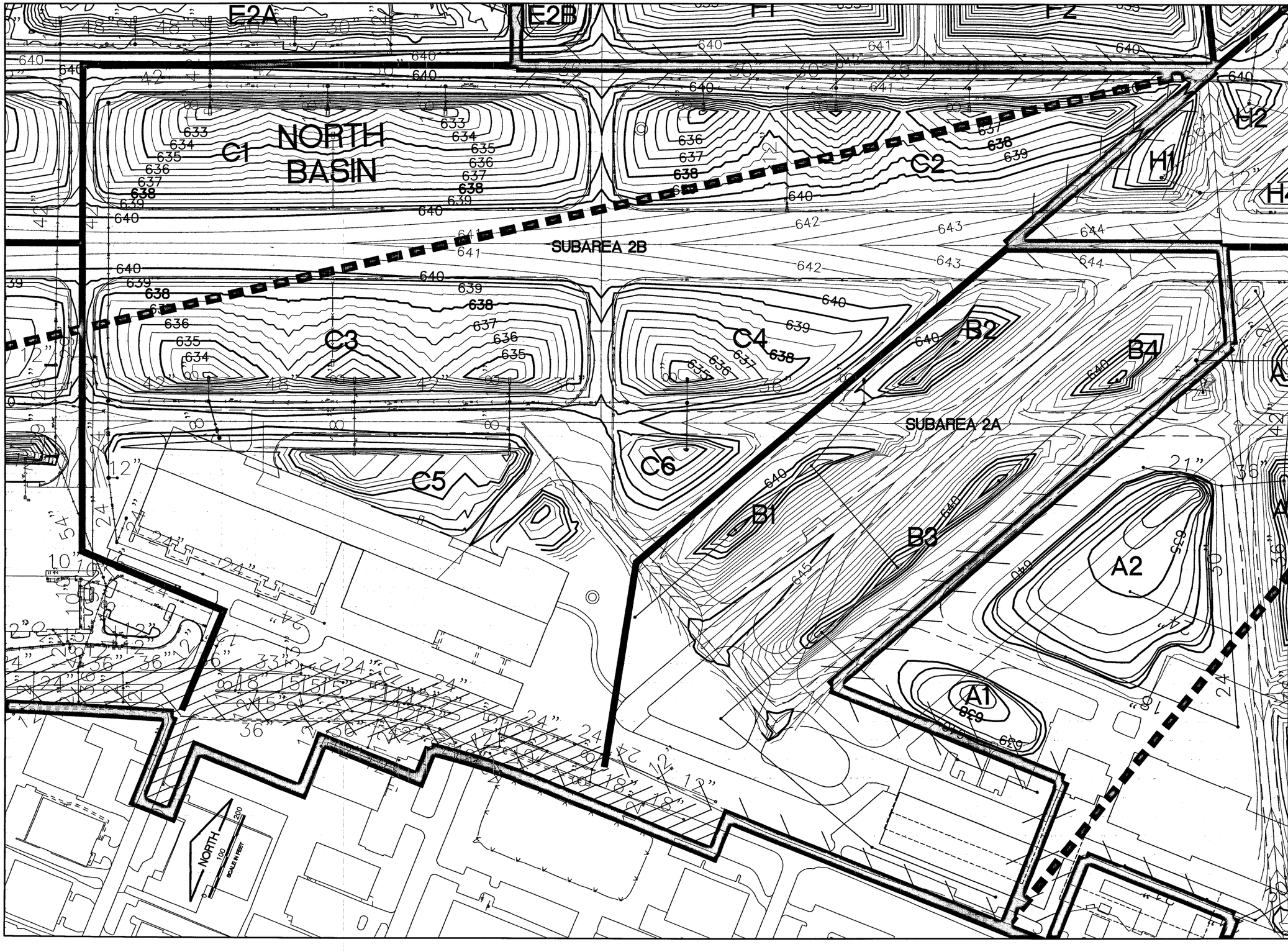
APPROVED BY:	
DATE:	07/01/03
JOB No:	02290-02

SHEET 8 OF 16 SHEET



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REVISIONS		
NUMBER	BY	DATE

0 1 2
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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

NORTH BASIN DETAIL
SUBAREAS 2A AND 2B

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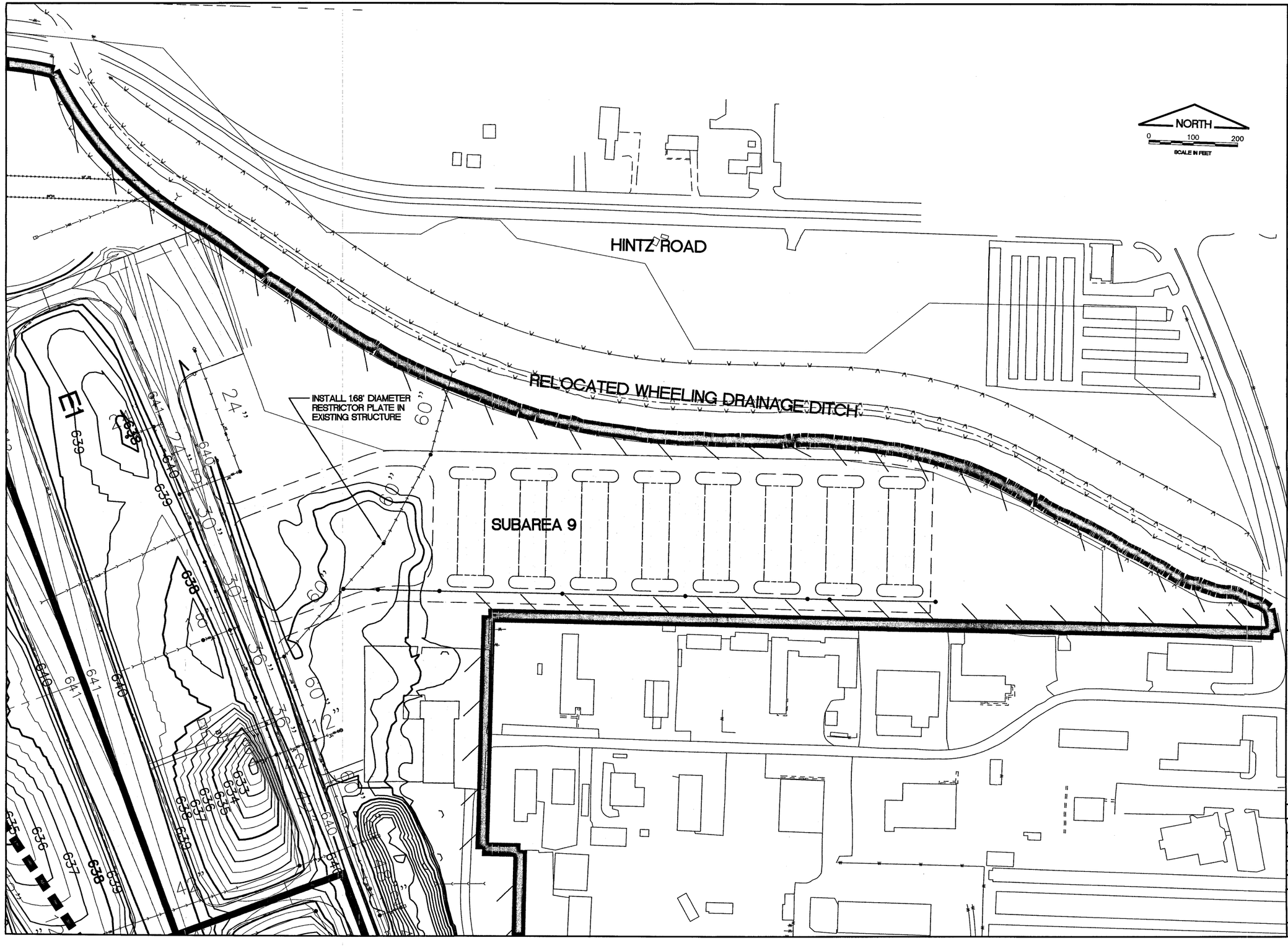
SHEET 9 OF 16 SHEET



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REVISIONS		
NUMBER	BY	DATE

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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

NORTH BASIN DETAIL
SUBAREA 9

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MILWAUKEE AVENUE

SUBAREAS 7 AND 8

NORTH

0 100 200

SCALE IN FEET

PATH: K:\0229002\master drainage bsd
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UPDATE BY: johse
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DATE: Tue 7/1/03 9:39am

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NUMBER	BY	DATE

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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

SOUTH BASIN DETAIL
SUBAREA 3, 7 AND 8

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FILE: basins.DWG
UPDATE BY: johse
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XREF DWG:
XREF DWG:
DATE: Tue 7/1/03 9:39am

REVISIONS		
NUMBER	BY	DATE

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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

SOUTH BASIN DETAIL
SUBAREAS 3A AND PARTIAL SUBAREAS 3, 7 AND 8

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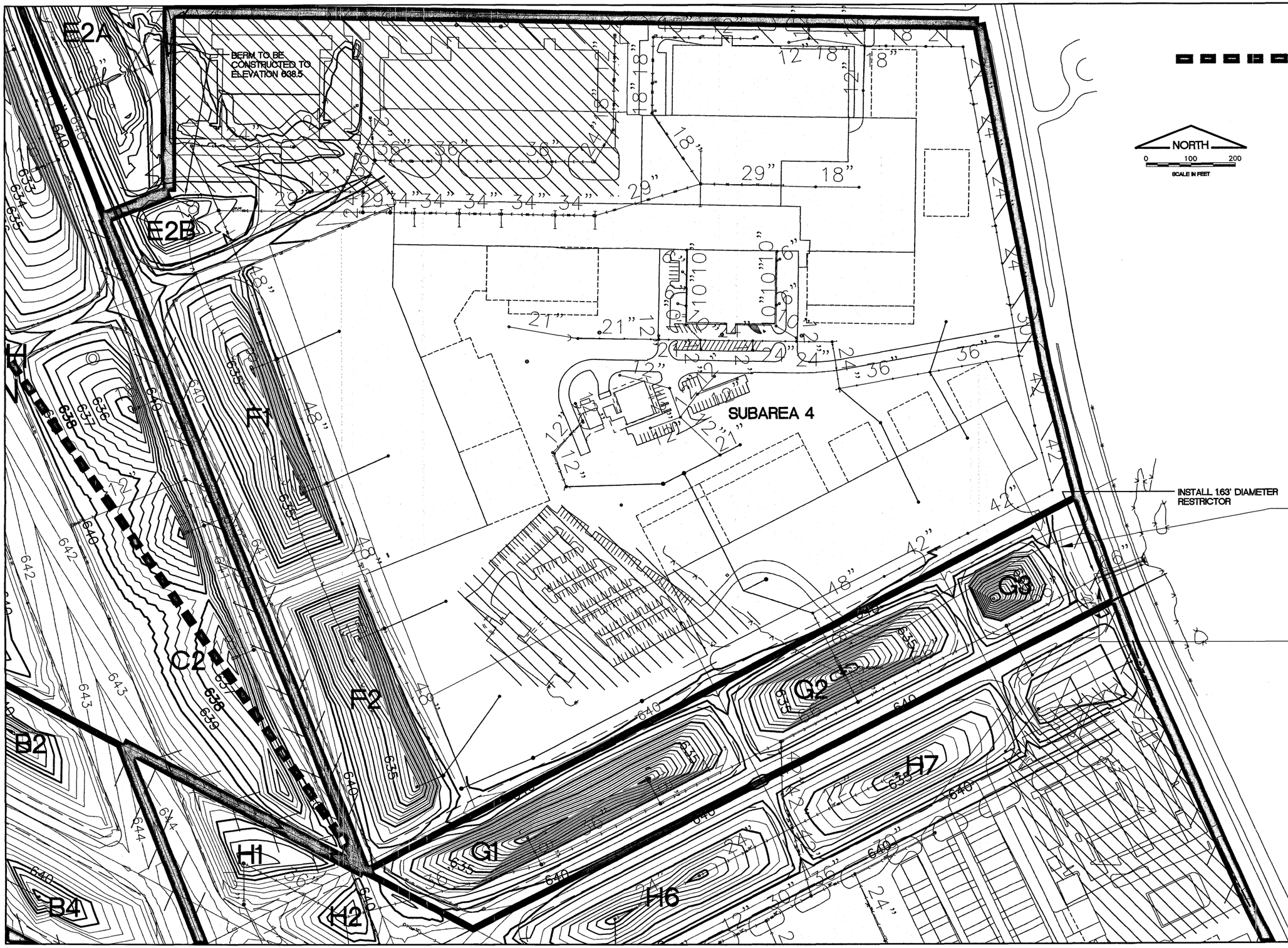
SHEET 12 OF 16 SHEET



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DATE: Tue 7/1/03 9:39am

REVISIONS		
NUMBER	BY	DATE

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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

SOUTH BASIN DETAIL
SUBAREA 4

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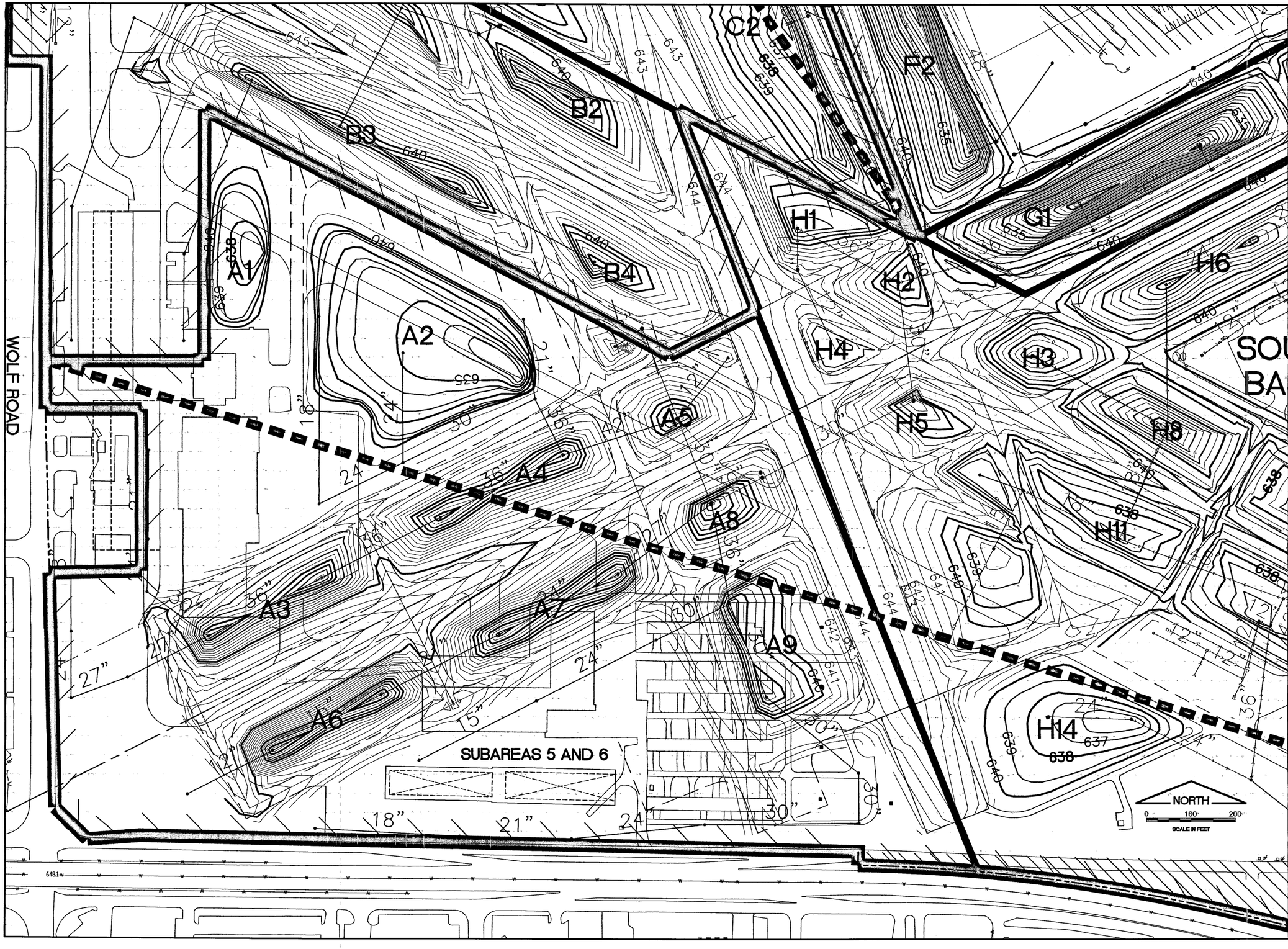
SHEET 13 OF 16 SHEET



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DATE: Tue 7/1/03 9:39am

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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

SOUTH BASIN DETAIL SUBAREAS 5 AND 6

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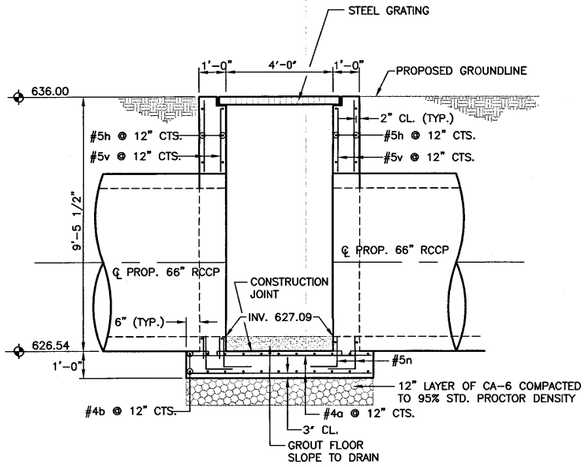
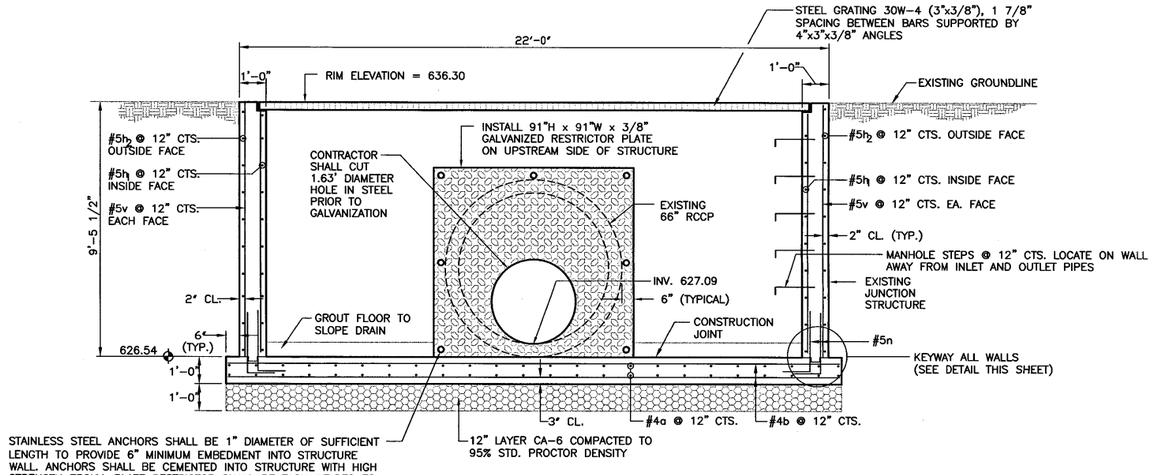


DETAIL 1
PALWAUKEE AIRPORT
SOUTH BASIN
CROSS SECTION VIEW A-A
RESTRICTOR DETAIL

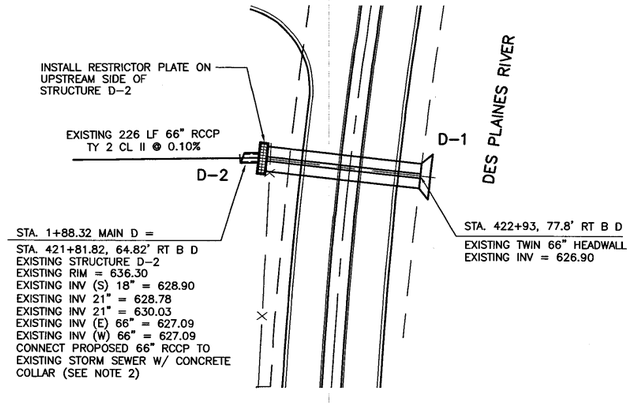
NOT TO SCALE



STAINLESS STEEL ANCHORS SHALL BE 1" DIAMETER OF SUFFICIENT LENGTH TO PROVIDE 6" MINIMUM EMBEDMENT INTO STRUCTURE WALL. ANCHORS SHALL BE CEMENTED INTO STRUCTURE WITH HIGH STRENGTH EPOXY. PLATE RESTRICTOR SHALL BE TACK WELDED TO ANCHORS.

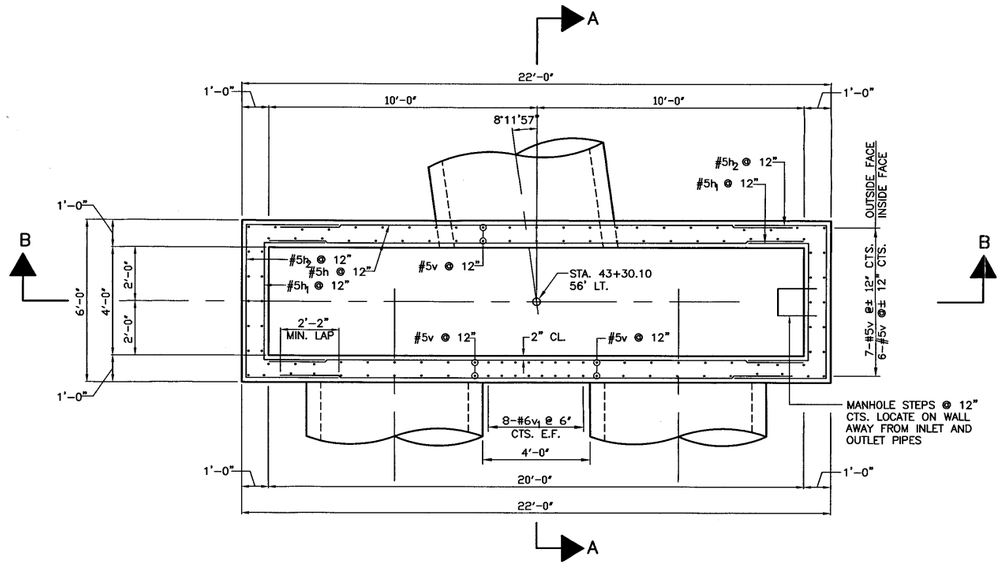
DETAIL 1
PALWAUKEE AIRPORT
SOUTH BASIN
CROSS SECTION VIEW B-B
RESTRICTOR DETAIL

NOT TO SCALE



DETAIL 1
PALWAUKEE AIRPORT
SOUTH BASIN
PLAN VIEW

NOT TO SCALE



DETAIL 1 - SOUTH BASIN
WALL REINFORCING PLAN

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FILE: detail.dwg
LAYOUT: Layout1
UPDATE BY: johse
SURVEY BOOK #
DATE: Thu 5/13/04 11:29am
XREF DWG: tbclnt.dwg
tb.dwg

REVISIONS

NUMBER	BY	DATE

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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

MASTER DRAINAGE STUDY
RESTRICTOR DETAILS

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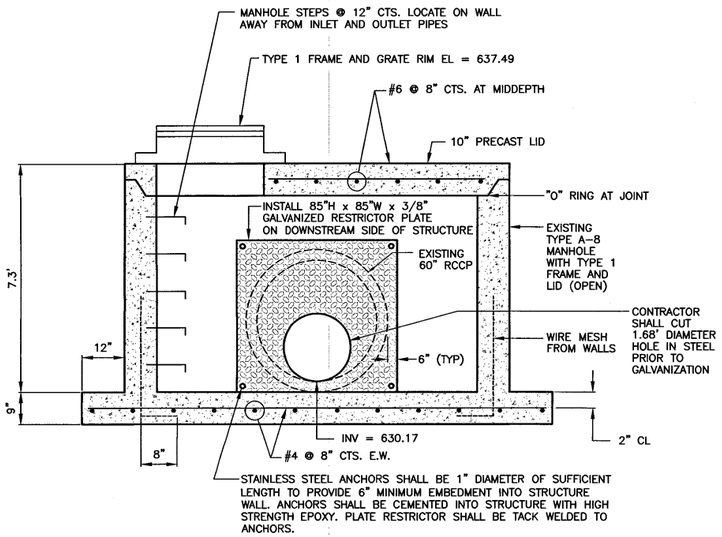
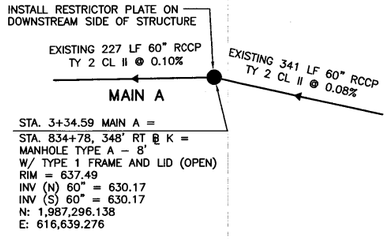
SHEET 15 OF 16 SHEETS



DETAIL 2
PALWAUKEE AIRPORT
NORTH BASIN
CROSS SECTION VIEW
RESTRICTOR DETAIL

NOT TO SCALE



DETAIL 2
PALWAUKEE AIRPORT
NORTH BASIN
PLAN VIEW

NOT TO SCALE

SUMMARY OF DETENTION AND COMPENSATORY STORAGE VOLUMES

EXISTING CONDITIONS

	MWRD Required (ac-ft)	MWRD Provided (ac-ft)	FEMA Required (ac-ft)	FEMA Provided (ac-ft)	Total (ac-ft)	MWRD HWL	FEMA HWL
North Basin	49.63	49.63		50.07	99.7	638.02	639.5
South Basin	32.86	32.86		110.04	142.9	637.81	639.5
Total	82.49	82.49	75.59	160.11	242.6		

PROPOSED CONDITIONS

	MWRD Required (ac-ft)	MWRD Provided (ac-ft)	FEMA Required (ac-ft)	FEMA Provided (ac-ft)	Total (ac-ft)	MWRD HWL	FEMA HWL
North Basin	56.72	56.72		51.38	108.1	638.23	639.5
South Basin	41.97	43.35		39.35	82.7	638.25	639.5
Total	98.69	100.07	75.59	90.73	190.8		

MWRDGC GENERAL NOTES (APPLIES TO ALL SANITARY SEWER)

1. THE MWRDGC SEWER PERMIT SECTION FIELD OFFICE MUST BE NOTIFIED AT LEAST TWO (2) DAYS PRIOR TO THE COMMENCEMENT OF WORK (CALL 708-588-4055).

2. ELEVATION DATUM IS USGS.

3. ALL FLOOR DRAINS SHALL DISCHARGE TO THE SANITARY SEWER.

4. ALL DOWNSPOUTS AND FOOTING DRAINS SHALL DISCHARGE TO THE STORM SEWER.

5. ALL SANITARY PIPE (AND STORM IN COMBINED AREAS) SHALL CONFORM TO THE FOLLOWING:
   DUCTILE IRON PIPE ASTM A-21.5
   PVC ASTM D 3034 SDR26

   JOINT SPECIFICATIONS SHALL CONFORM TO THE FOLLOWING.
   DUCTILE IRON PIPE ASTM A-21.11
   PVC ASTM D 3212

6. ALL SANITARY SEWER CONSTRUCTION (AND STORM SEWER CONSTRUCTION IN COMBINED SEWER AREAS) REQUIRES STONE BEDDING 1/4" TO 1" IN SIZE, WITH A MINIMUM BEDDING THICKNESS EQUAL TO 1/4 THE OUTSIDE DIAMETER OF THE SEWER PIPE, BUT NOT LESS THAN FOUR (4) INCHES OR MORE THAN EIGHT (8) INCHES. MATERIAL SHALL BE CA-11 OR CA-13 AND SHALL BE EXTENDED AT LEAST 12" ABOVE THE TOP OF THE PIPE WHEN USING PVC.

7. "BAND SEAL" OF SIMILAR FLEXIBLE-TYPE COUPLINGS SHALL BE USED IN THE CONNECTION OF SEWER PIPE OF DISSIMILAR MATERIALS.

8. WHEN CONNECTING TO AN EXISTING SEWER MAIN BY MEANS OTHER THAN AN EXISTING WYE, TEE, OR AN EXISTING MANHOLE, ONE OF THE FOLLOWING METHODS SHALL BE USED.
   1. CIRCULAR SAW-CUT OF SEWER MAIN BY PROPER TOOLS ("SEWER TAP" MACHINE OR SIMILAR) AND PROPER INSTALLATION OF HUB-WYE SADDLE OR HUB-TEE SADDLE.
   2. REMOVE AN ENTIRE SECTION OF PIPE (BREAKING ONLY THE TOP OF ONE BELL AND REPLACE WITH A WYE OR TEE BRANCH SECTION.
   3. WITH PIPE CUTTER, NEATLY AND ACCURATELY CUT OUT DESIRED LENGTH OF PIPE FOR INSERTION OF PROPER FITTING, USING "BAND-SEAL" OR SIMILAR COUPLINGS TO HOLD IT FIRMLY IN PLACE.

9. WHEREVER A SEWER CROSSES UNDER A WATER MAIN, THE MINIMUM VERTICAL DISTANCE FROM THE TOP OF THE SEWER TO THE BOTTOM OF THE WATER MAIN SHALL BE 18 INCHES, FURTHERMORE, A MINIMUM HORIZONTAL DISTANCE OF 10 FEET BETWEEN SANITARY SEWERS AND WATER MAINS SHALL BE MAINTAINED UNLESS: THE SEWER IS LAID IN A SEPARATE TRENCH, KEEPING A MINIMUM 18" VERTICAL SEPARATION; OR THE SEWER IS LAID IN THE SAME TRENCH WITH THE WATER MAIN LOCATED AT THE OPPOSITE SIDE ON A BENCH OF UNDISTURBED EARTH, KEEPING A MINIMUM 18" VERTICAL SEPARATION. IF EITHER THE VERTICAL OR HORIZONTAL DISTENCES DESCRIBED ABOVE CANNOT BE MAINTAINED, OR THE SEWER CROSSES ABOVE THE WATER MAIN, THE SEWER SHALL BE CONSTRUCTED TO WATER MAIN STANDARDS.

10. ALL EXISTING SEPTIC SYSTEMS ARE TO BE ABANDONED. ABANDONED ARE TANKS TO BE FILLED OR REMOVED.

11. ALL SANITARY MANHOLES, AND STORM MANHOLES IN COMBINED SEWER AREAS SHALL HAVE A MINIMUM INSIDE DIAMETER OF 48 INCHES, AND SHALL BE CAST IN PLACE OR PRE-CAST REINFORCED CONCRETE.

K:\PalwaukeeAp\0229002\draw\exhibit\master drainage upd
FILE: detail.dwg
LAYOUT: Layout1
UPDATE BY: johse
SURVEY BOOK #
DATE: Thu 5/13/04 11:29am
XREF DWG: tbclnt.dwg
tb.dwg

REVISIONS

NUMBER	BY	DATE

0 1 2
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PALWAUKEE MUNICIPAL AIRPORT
WHEELING/PROSPECT HEIGHTS, ILLINOIS

MASTER DRAINAGE STUDY
GENERAL NOTES AND RESTRICTOR DETAILS

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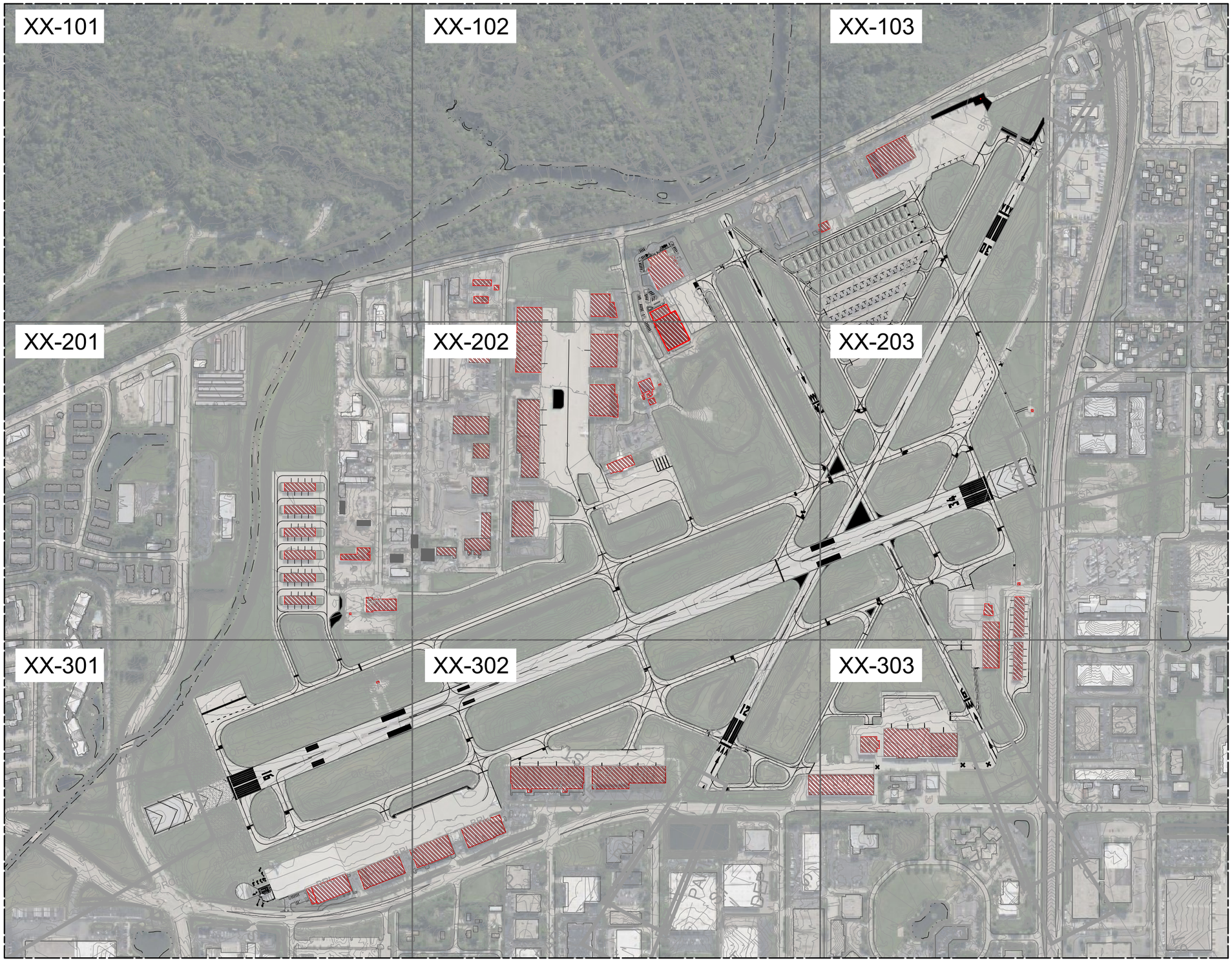
SHEET 16 OF 16 SHEETS

APPENDIX C

EXISTING CONDITIONS MODELING



Primera

CHICAGO EXECUTIVE AIRPORT

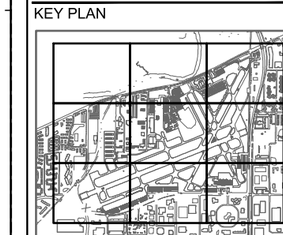
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



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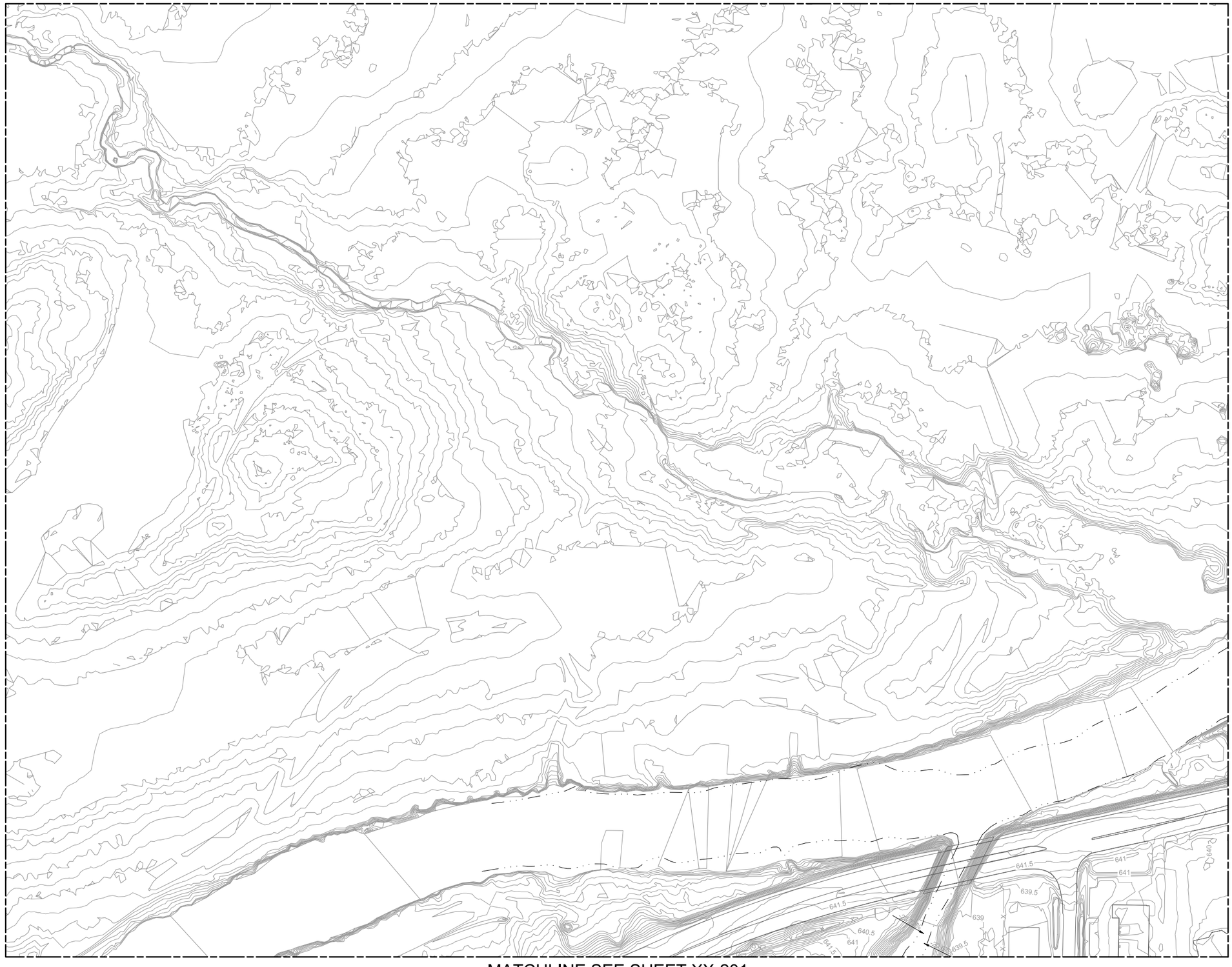

Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0415

CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

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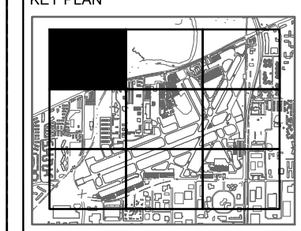

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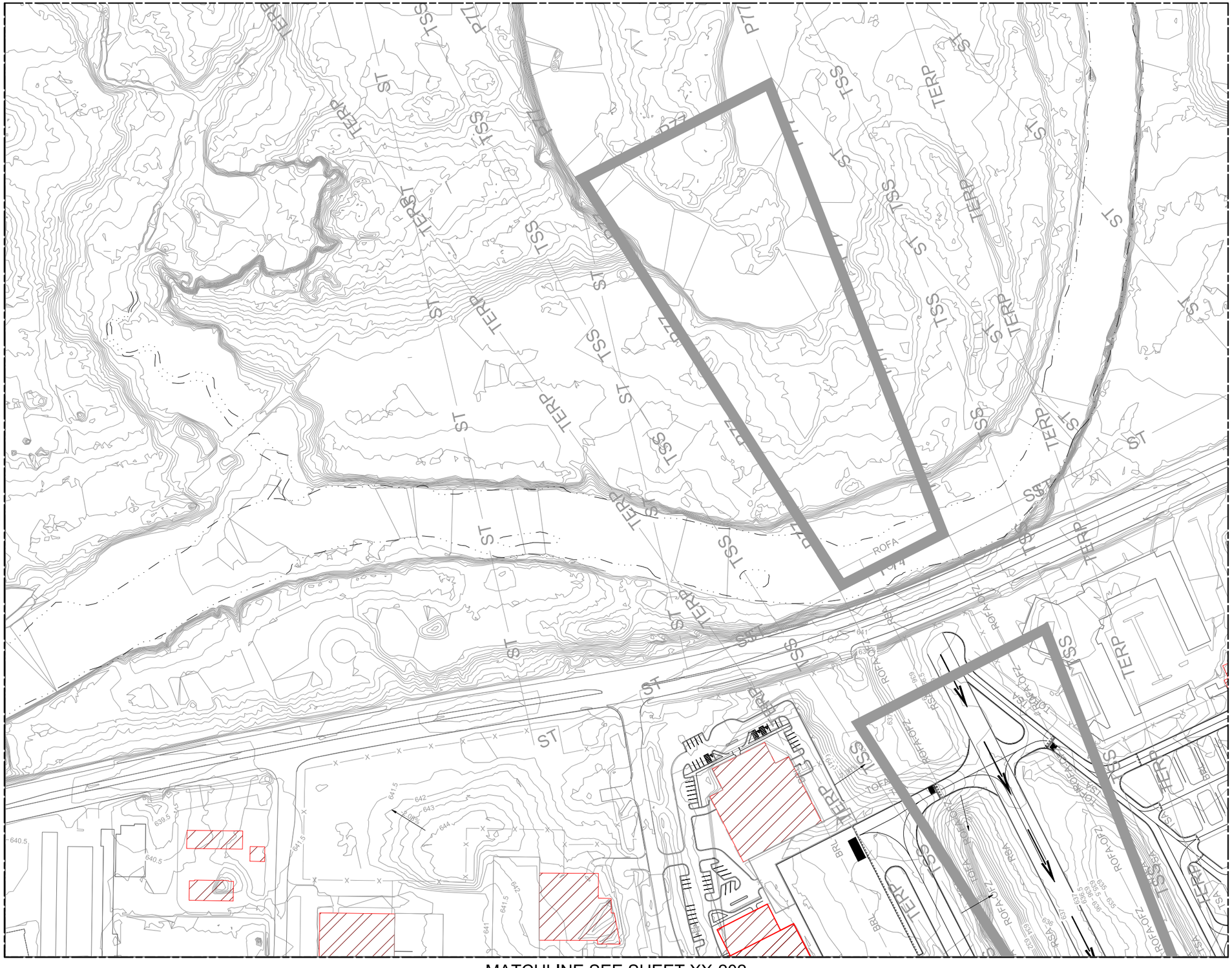

Primera

100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

CHICAGO EXECUTIVE AIRPORT

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MASTER DRAINAGE STUDY SL

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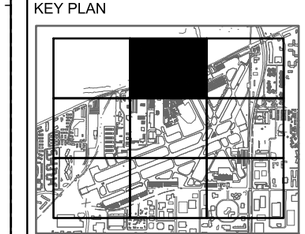

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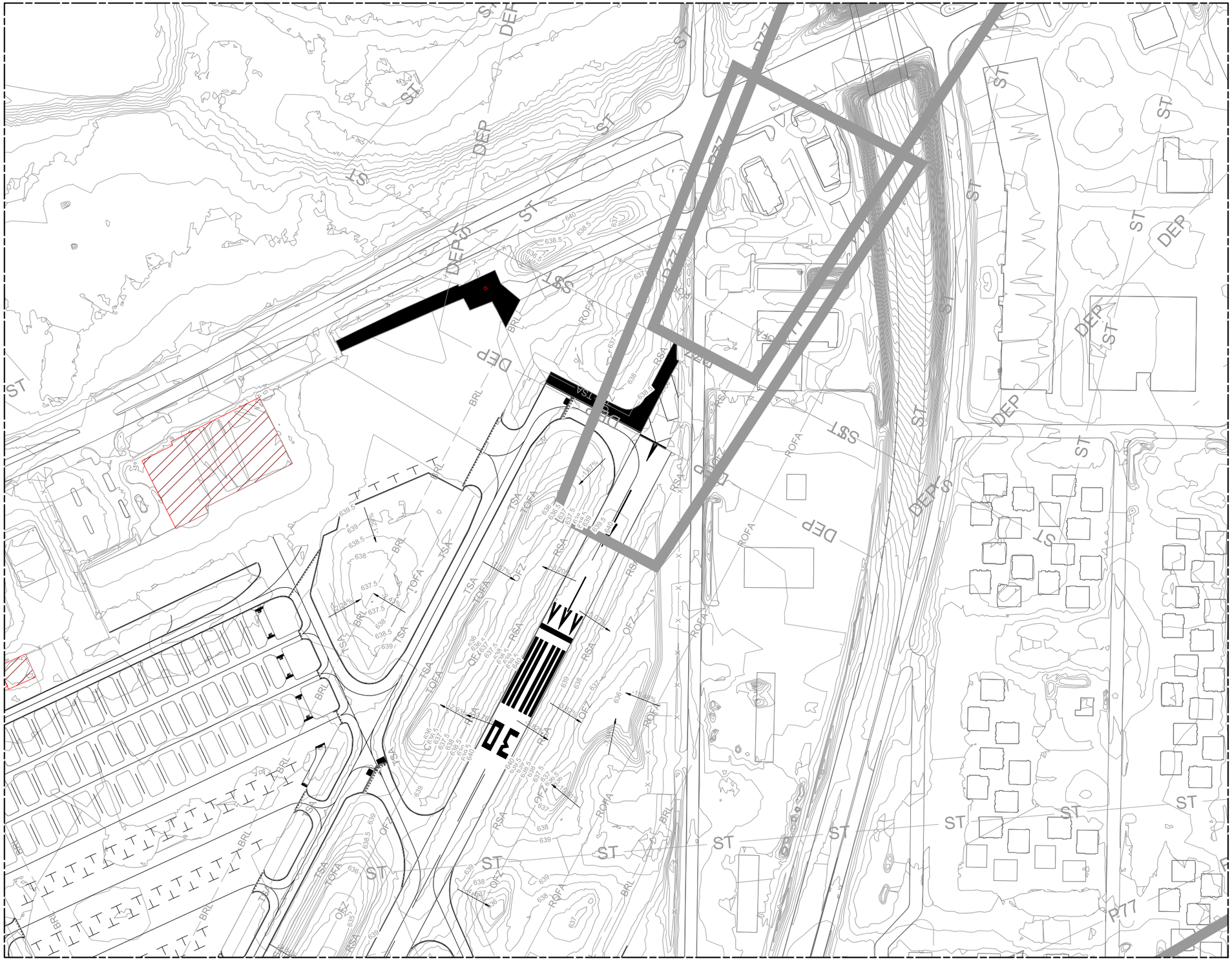

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CHICAGO EXECUTIVE AIRPORT

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MASTER DRAINAGE STUDY SL

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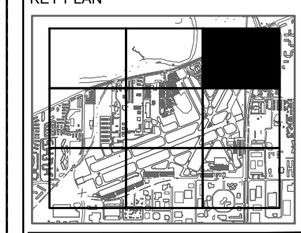

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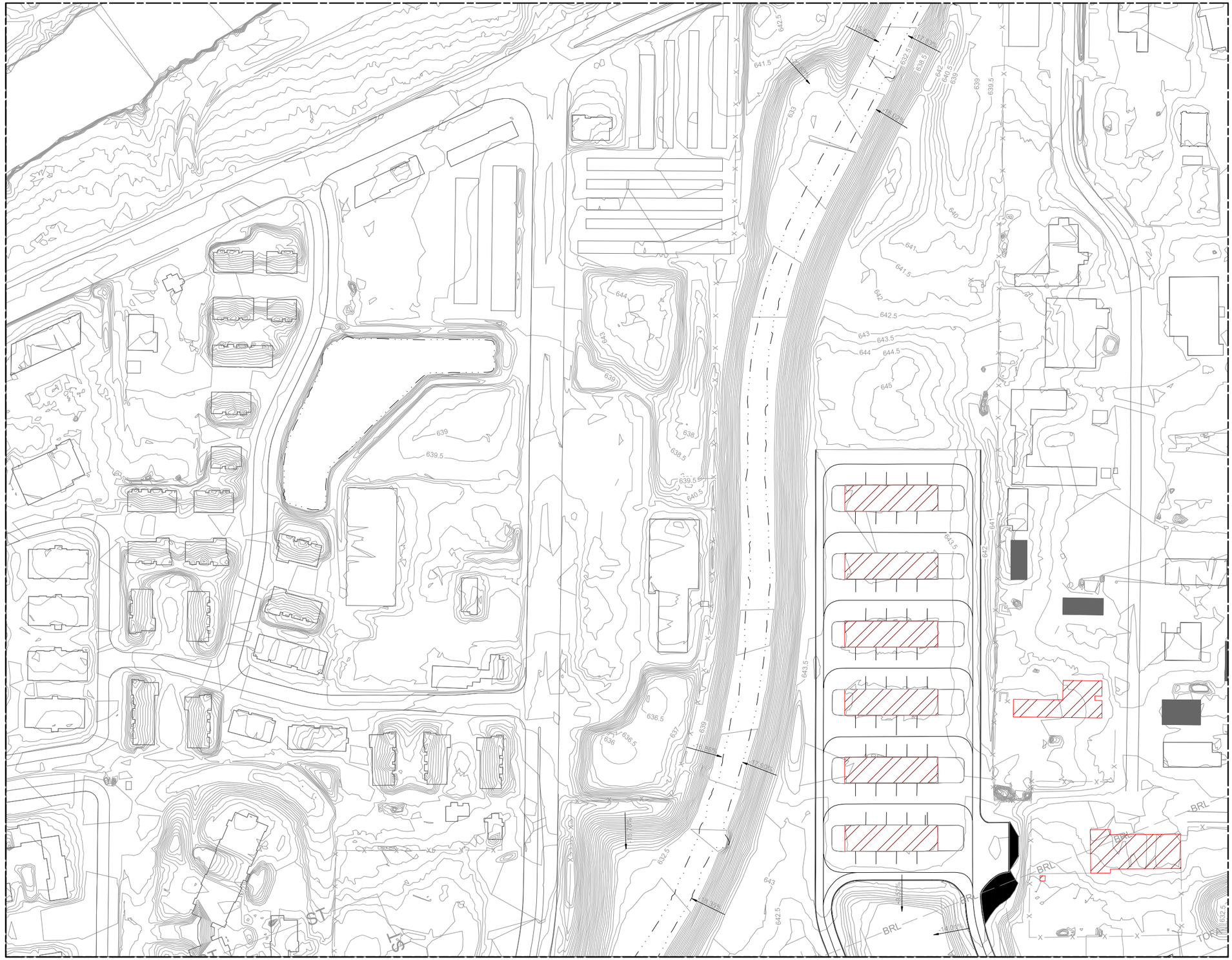

Primera

100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

CHICAGO EXECUTIVE AIRPORT

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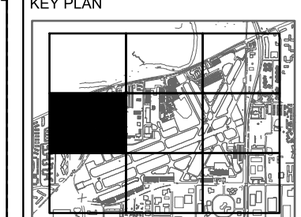

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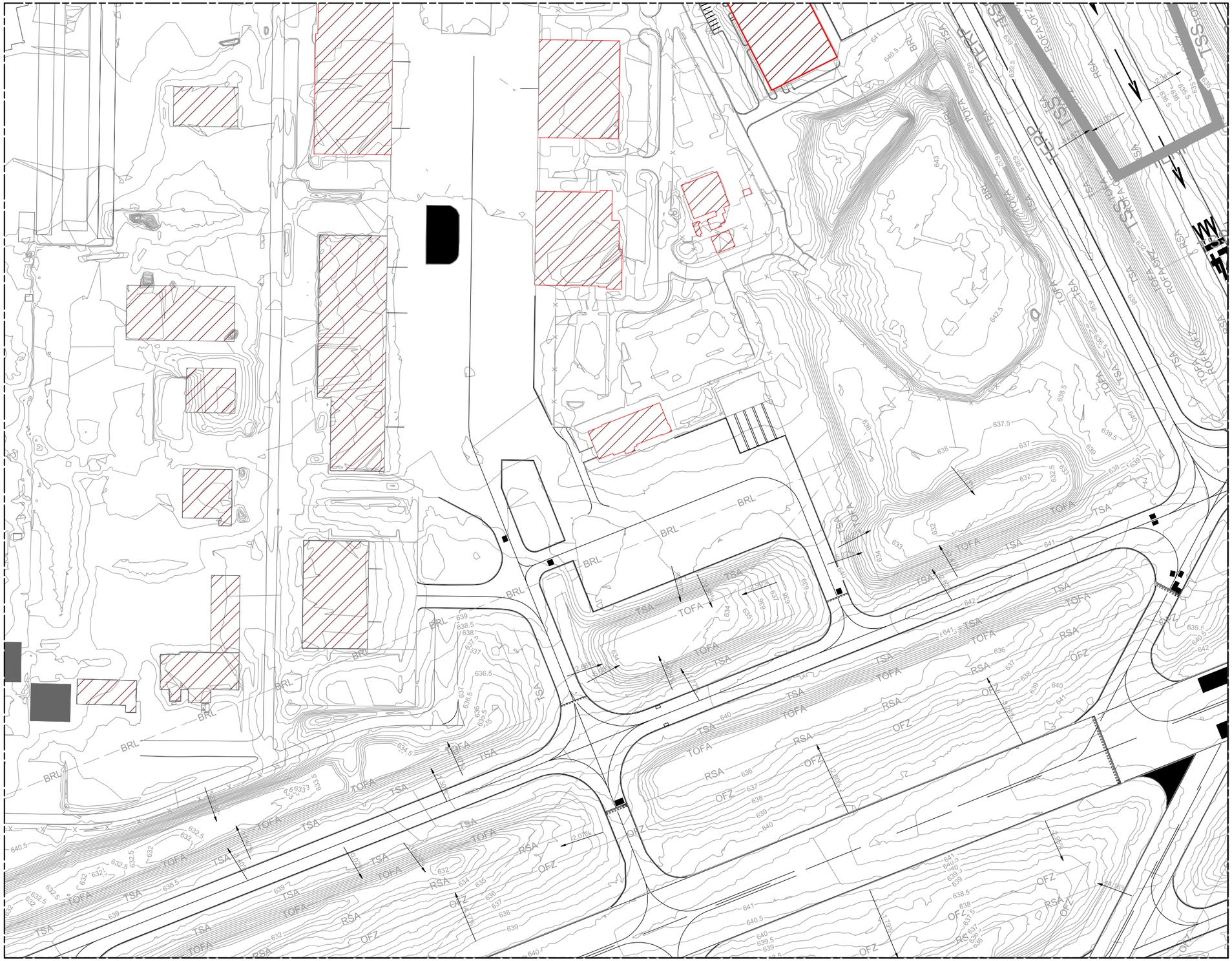

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MATCHLINE SEE SHEET XX-302

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CHICAGO EXECUTIVE AIRPORT

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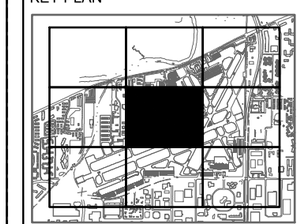

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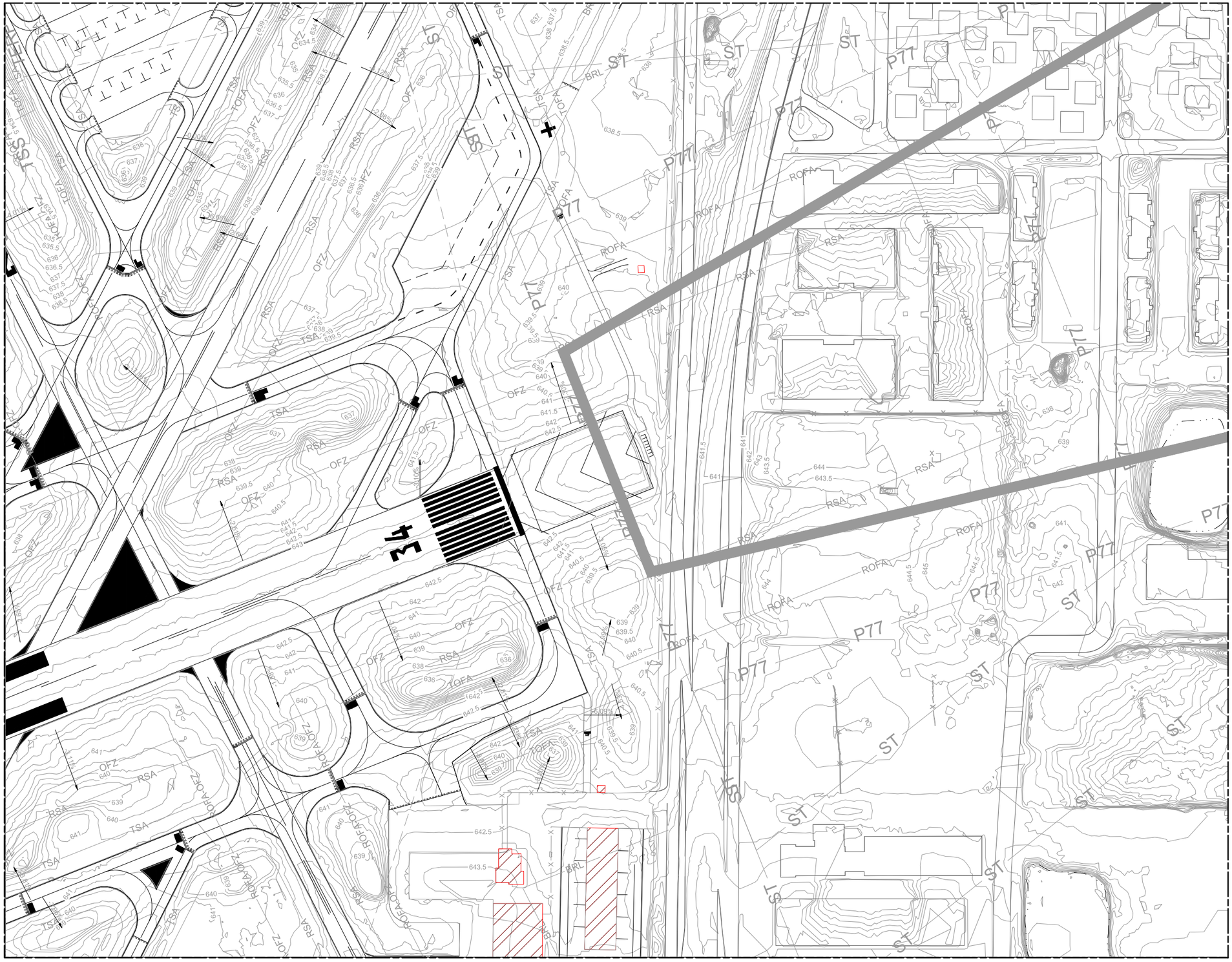

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CHICAGO EXECUTIVE AIRPORT

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Issues

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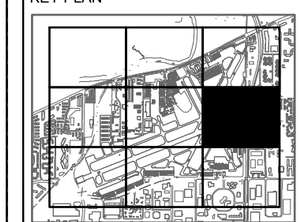

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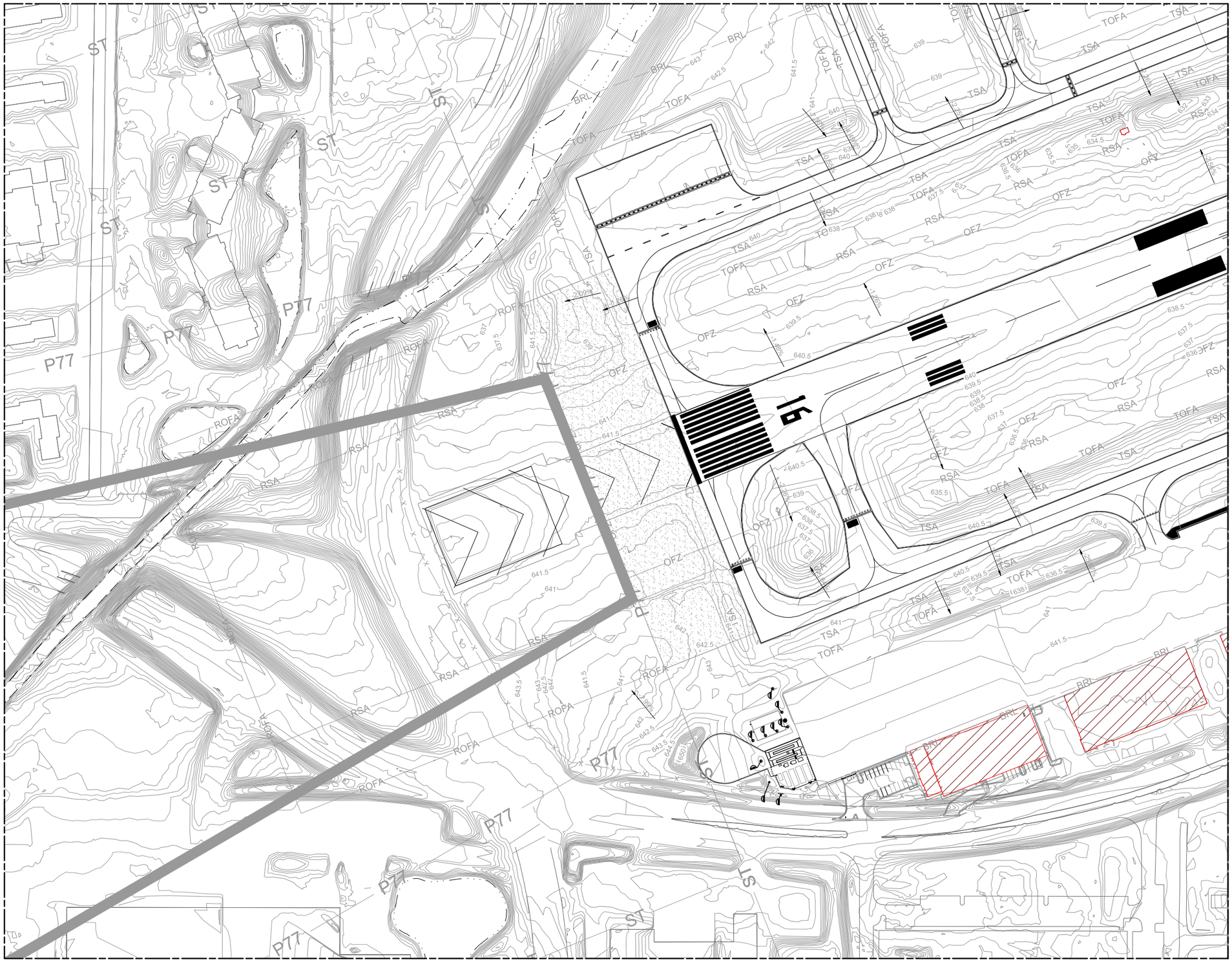


MATCHLINE SEE SHEET XX-302

0 150 300

Primera

CHICAGO EXECUTIVE AIRPORT

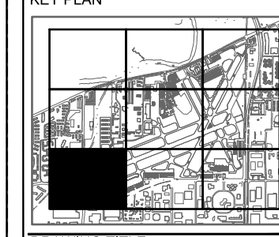
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING TOPOGRAPHY CONTOUR MAP (2023)

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
XX-301

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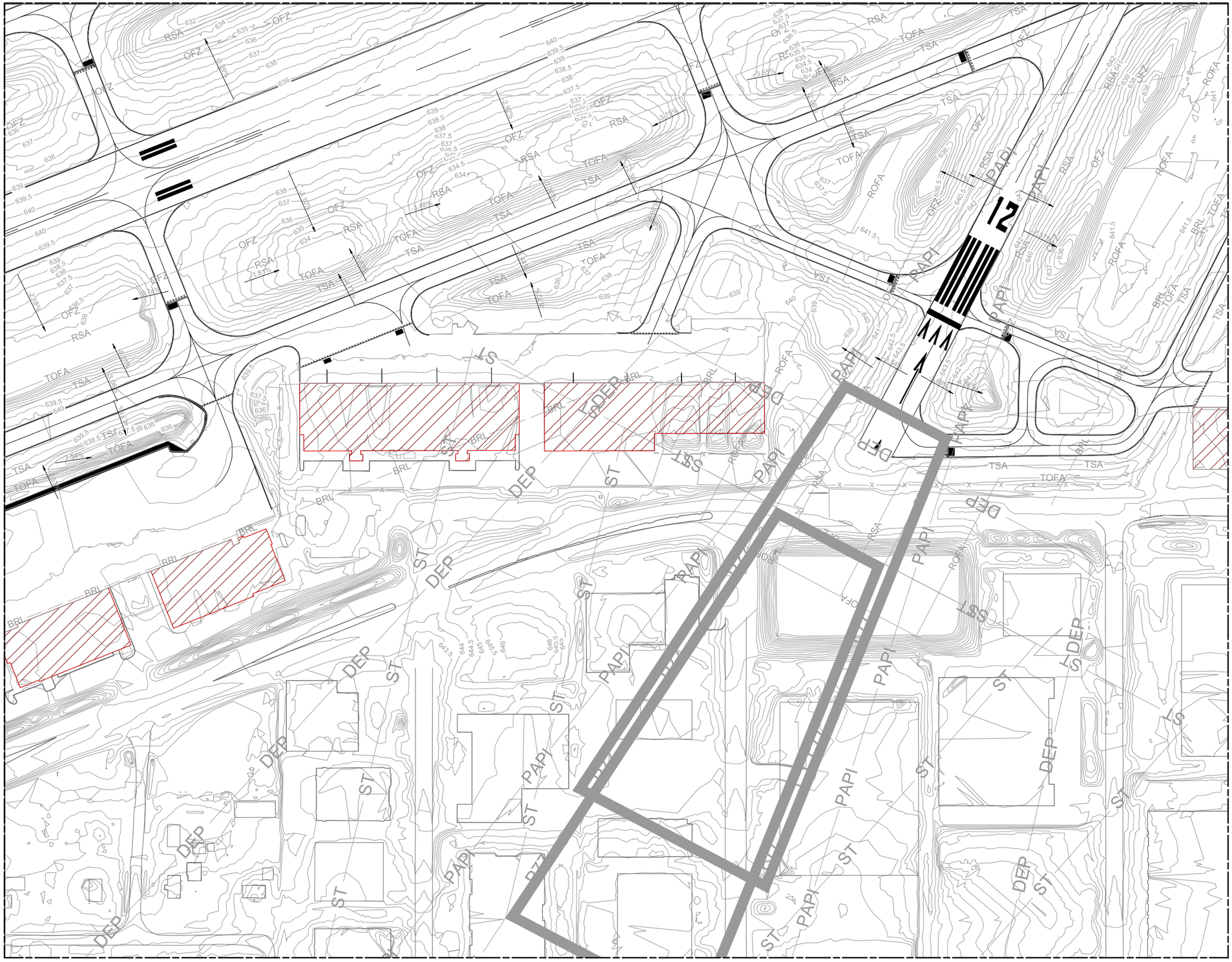
MATCHLINE SEE SHEET XX-202



0 150 300

Primera

CHICAGO EXECUTIVE AIRPORT

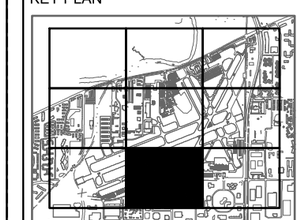
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING TOPOGRAPHY CONTOUR MAP (2023)

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
XX-302

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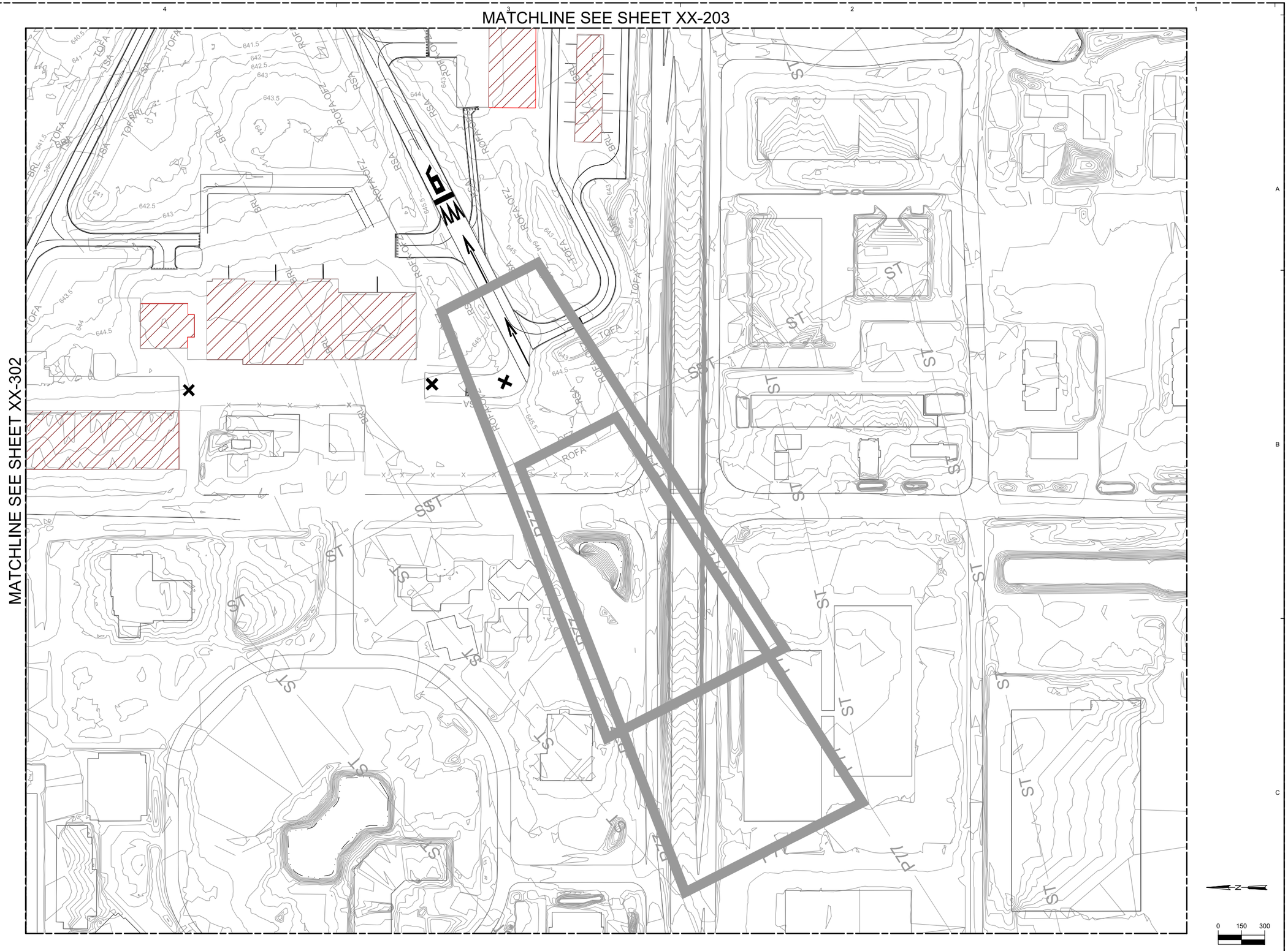


Primera

CHICAGO EXECUTIVE AIRPORT

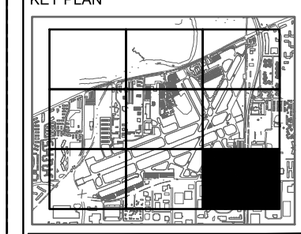
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING TOPOGRAPHY CONTOUR MAP (2023)

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
XX-303

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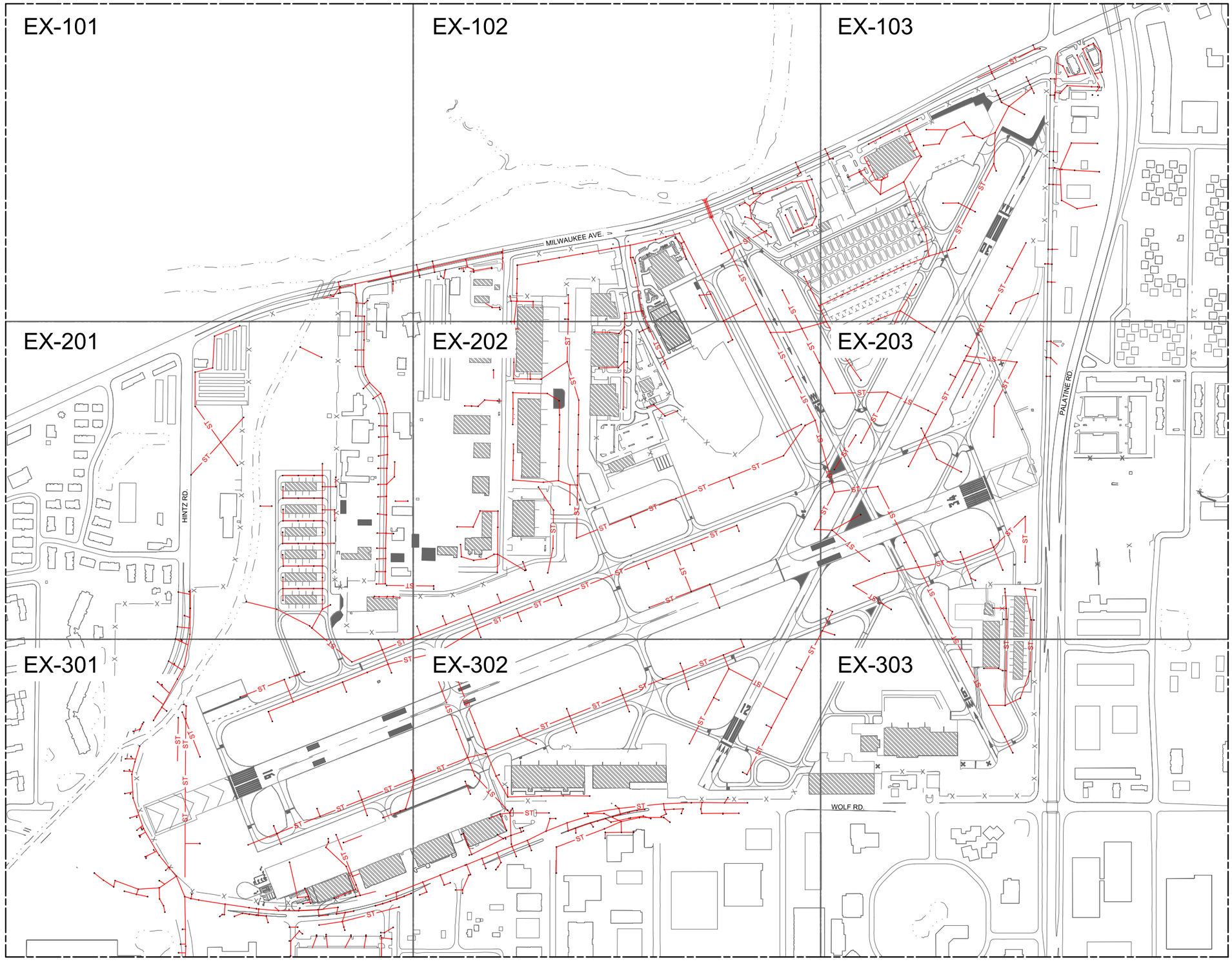


Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-496-2980 F:312-496-2975

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- ST — EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

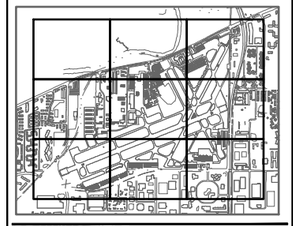
THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING AIRFIELD STORM SEWER SYSTEM MAP

SHEET NO.	PRIMERA
APPROVED	PRIMERA
CHECKED	PRIMERA
DRAWN BY	PRIMERA
DRAWING NO.	EX-100

© 2007 Primera

PLOT DEVICE: DRIVER
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DATE PRINTED 6/30/2025 11:44 AM
PRINTED BY KRIS SALVATERA
FILENAME/LOCATION P:\2022\22028645.00 CEA MASTER DRAINAGE\DRAWINGS\CURRENT DRAWING FILES\CAD SHEETS\PWK-5060-EXISTING STORM SYSTEM_PIPE NETWORK.DWG
PLOT STYLE TABLE: ___.ctb
PLOTTED BY: Kris Salvatera on 6/30/2025 - 11:44 AM
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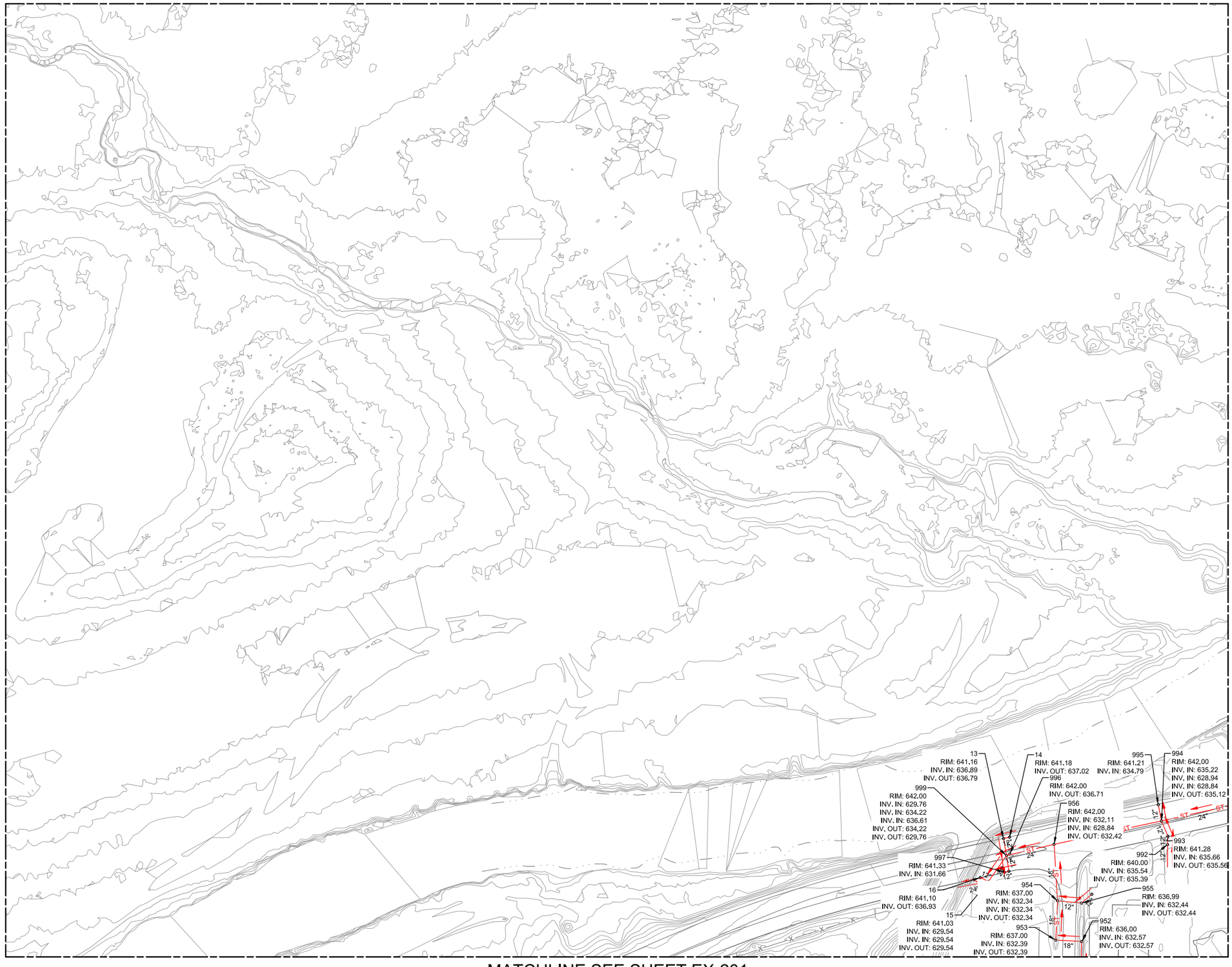

© 2007 Primera

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PLOT DEVICE DRIVER F:\CAD\AutoCAD\Shared Resources\Support\Plotters\PWK-5060 plotter.pc3
PLOT STYLE TABLE ctb

Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- ST — EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

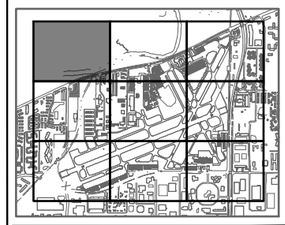
THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING AIRFIELD STORM SEWER SYSTEM MAP

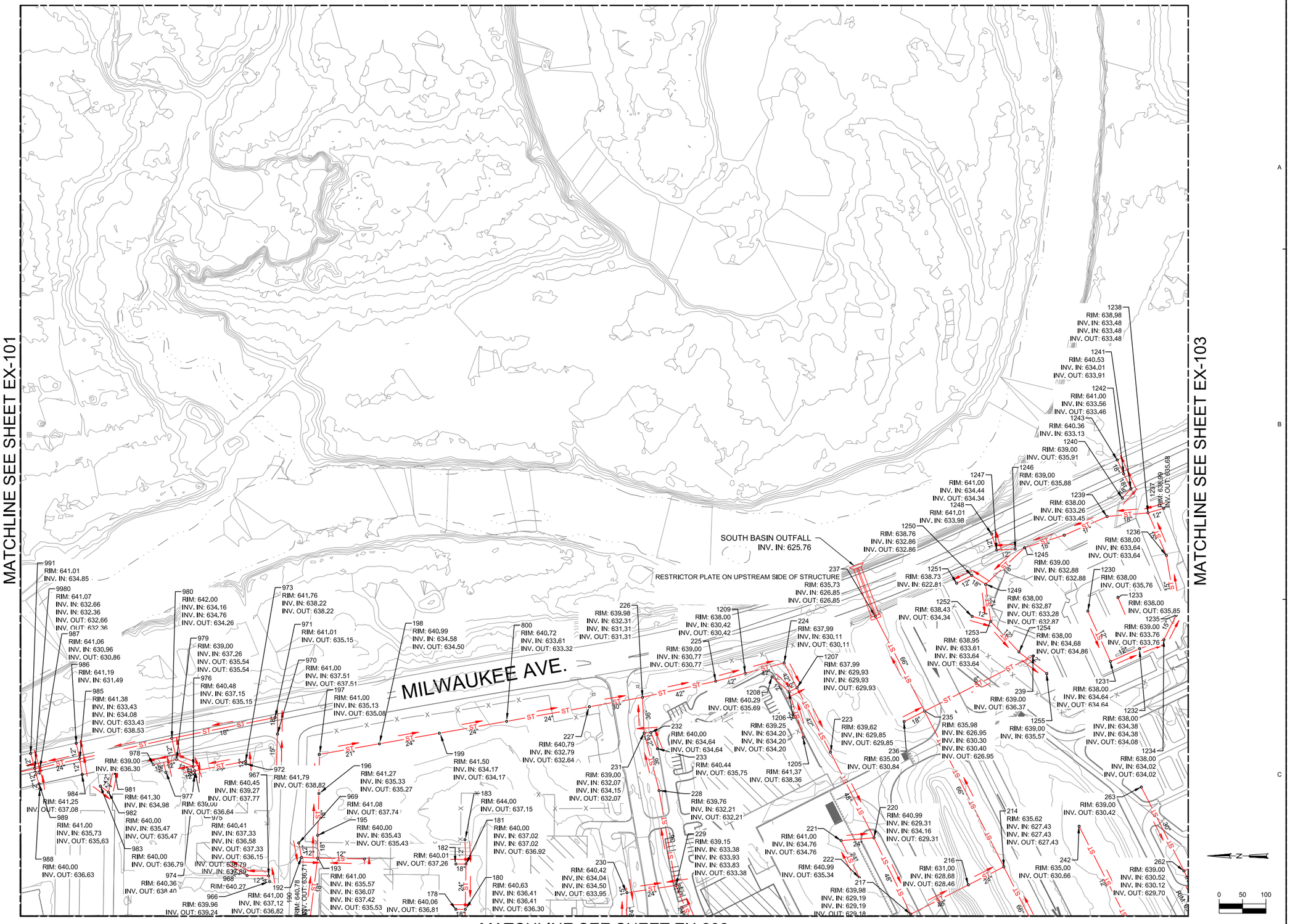
SHEET NO. **PRIMERA**

APPROVED **PRIMERA**

CHECKED **PRIMERA**

DRAWN BY

DRAWING NO. **EX-101**



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Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3300 F:312-466-3315

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- ST — EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

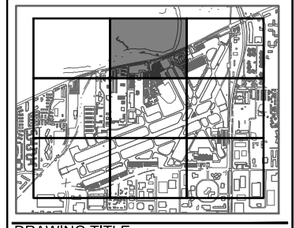
THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING AIRFIELD STORM SEWER SYSTEM MAP

SHEET NO.
PRIMERA

APPROVED
PRIMERA

DRAWING NO.
EX-102

CHECKED
PRIMERA

DRAWN BY

FILE SAVED 6/30/2025 10:56 AM
DATE PLOTTED 6/30/2025 11:47 AM
PLOTTED BY KRIS SALVATERA
FILENAME/LOCATION: P:\2021\21229845.00 CEA MASTER DRAINAGE\DRAWINGS\CURRENT DRAWING FILES\CAD SHEETS\PWK-5060-EXISTING STORM SYSTEM_PPE NETWORK.DWG T:\CAD\AutoCAD\Shared Resources\Support\Plotters\ANSI B (11.00 x 17.00) plotter.pc3
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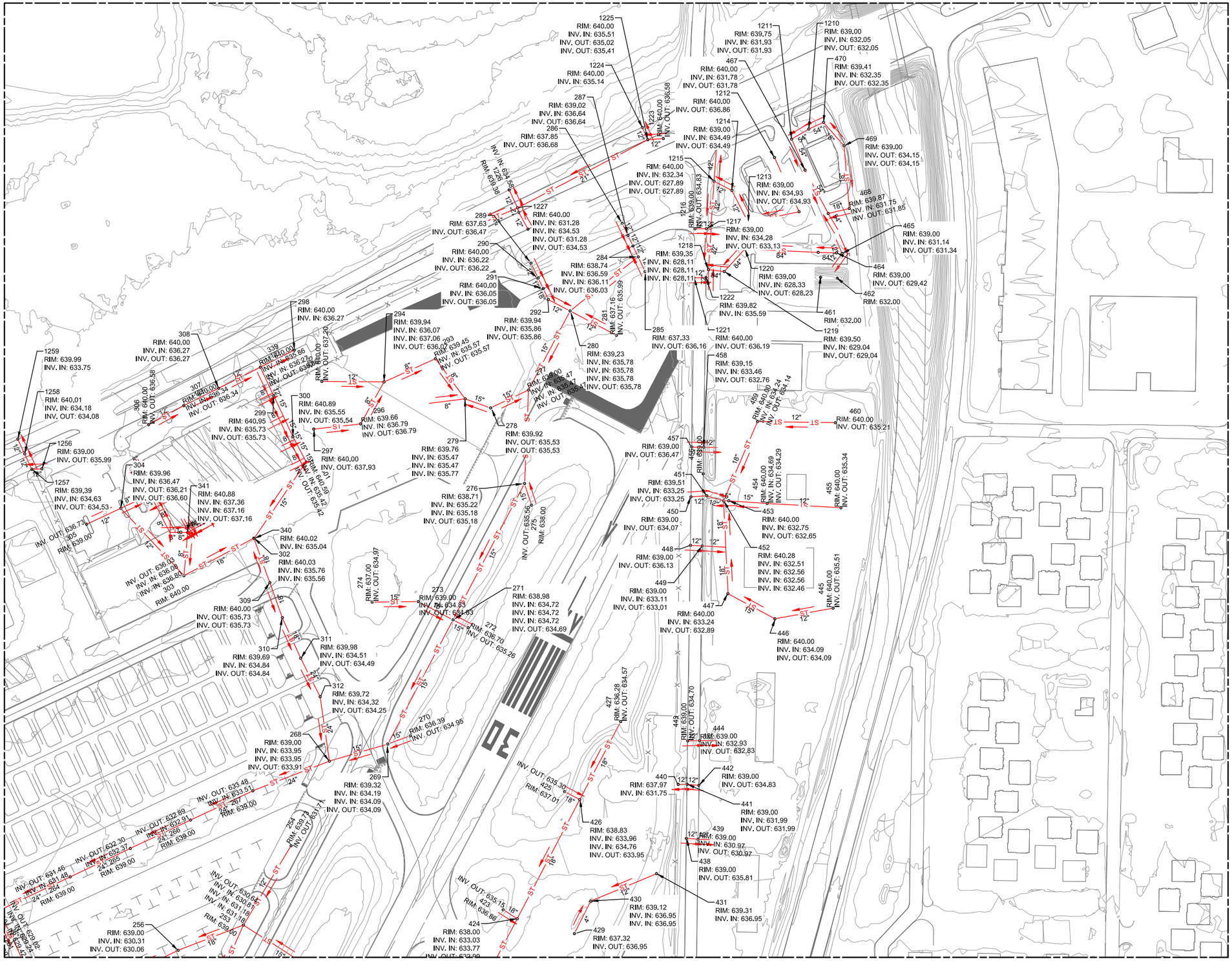


Primera

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

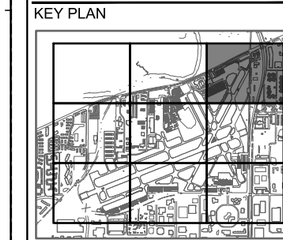
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING AIRFIELD STORM SEWER SYSTEM MAP

SHEET NO. PRIMERA

APPROVED PRIMERA

CHECKED PRIMERA

DRAWN BY

DRAWING NO. **EX-103**

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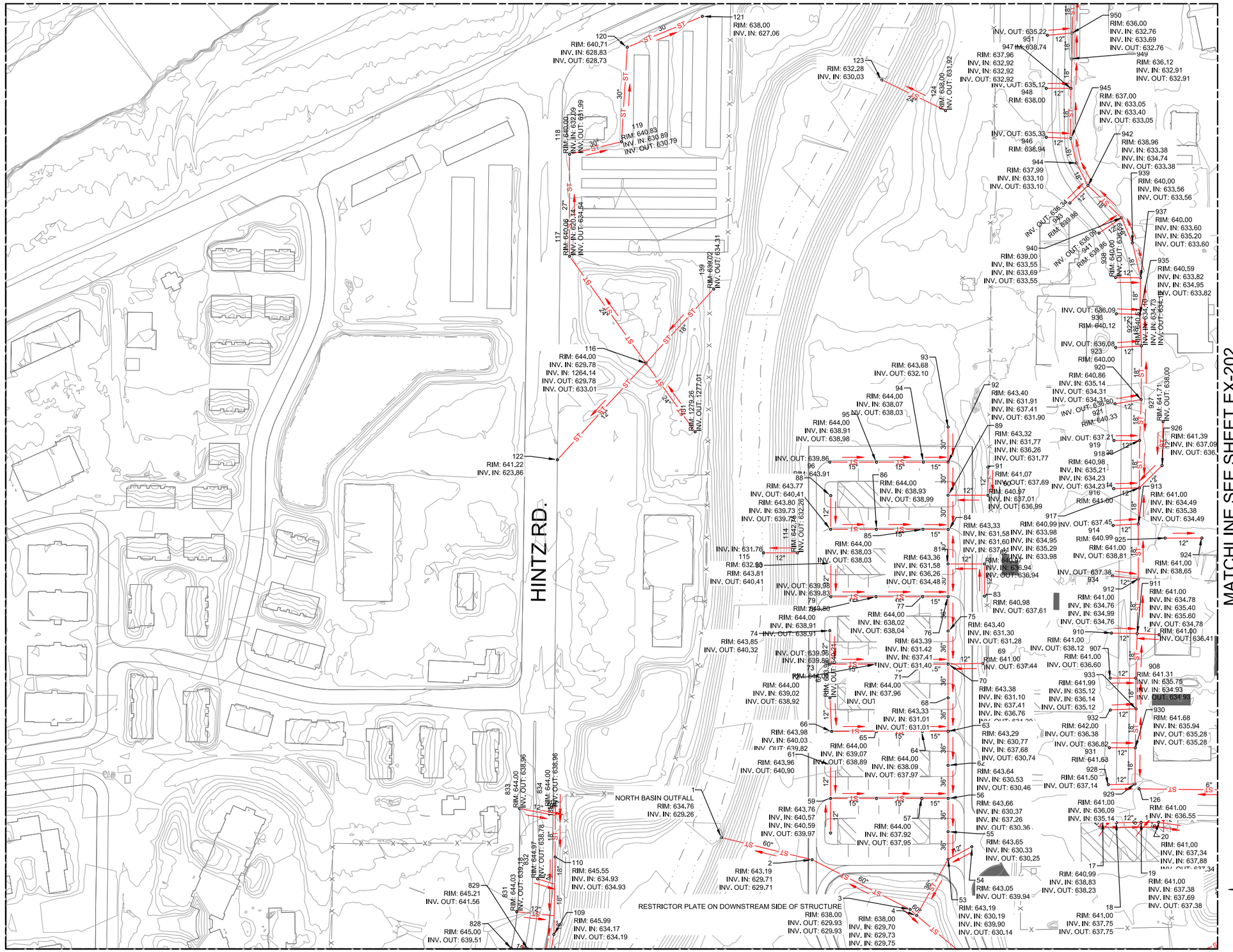
MATCHLINE SEE SHEET EX-101


HINTZ RD.
NORTH BASIN OUTFALL
RIM: 634.76
INV. IN: 629.26
RESTRICTOR PLATE ON DOWNSTREAM SIDE OF STRUCTURE
RIM: 638.00
INV. OUT: 629.93
INV. IN: 629.93
INV. IN: 629.70
INV. IN: 629.73
INV. IN: 629.75
RIM: 638.00
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RIM: 645.21
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INV. IN: 633.82
INV. IN: 634.95
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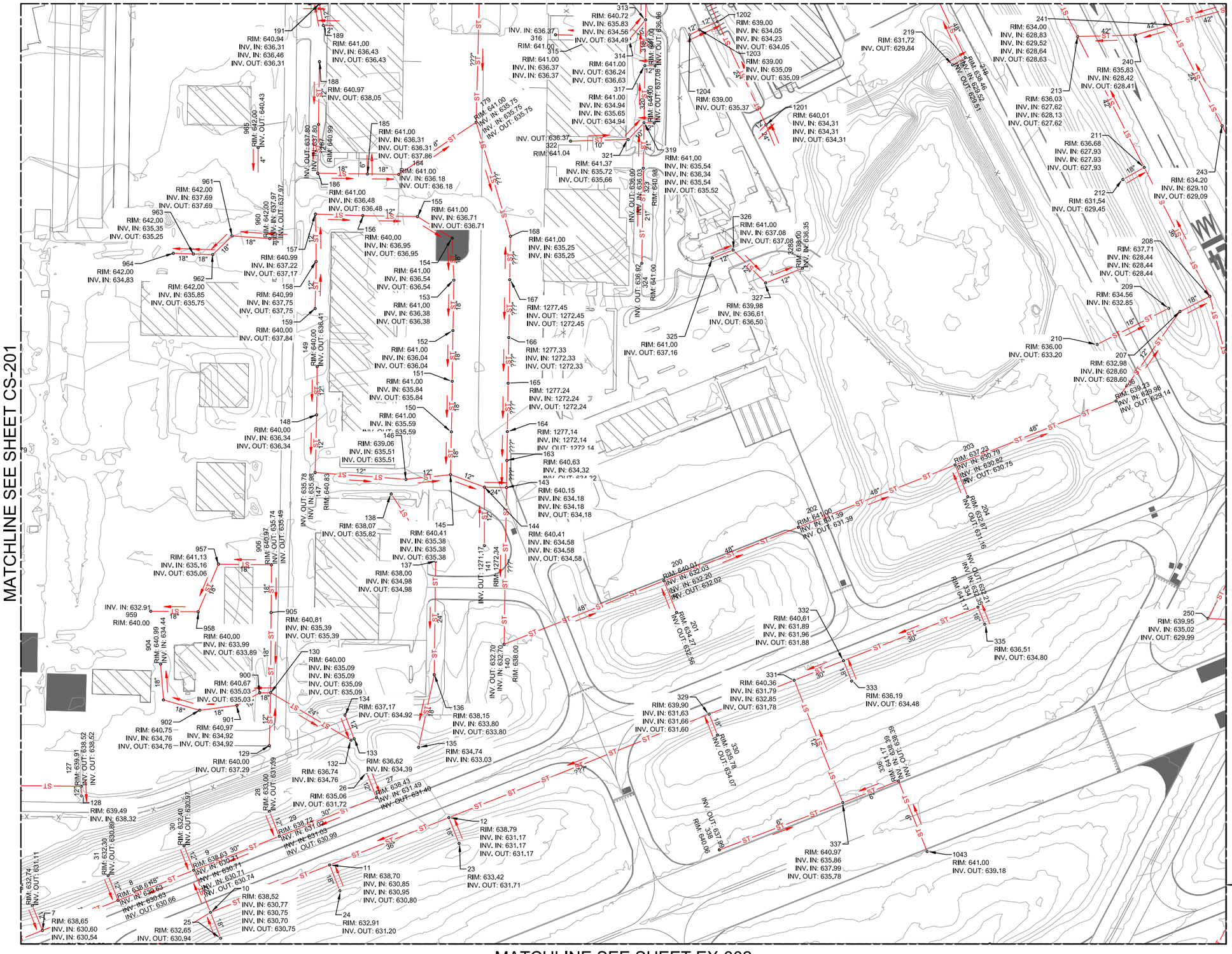
MATCHLINE SEE SHEET CS-102

MATCHLINE SEE SHEET CS-201

MATCHLINE SEE SHEET EX-203

MATCHLINE SEE SHEET EX-302



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Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

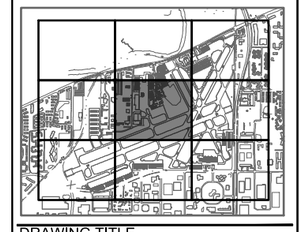
THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING AIRFIELD STORM SEWER SYSTEM MAP

SHEET NO. **PRIMERA**

APPROVED **PRIMERA**

CHECKED **PRIMERA**

DRAWN BY

DRAWING NO. **EX-202**

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PRINTED BY: KRIS SALVATERA
DATE PRINTED: 6/30/2025 11:45 AM
FILE SAVED: 6/30/2025 10:58 AM

MATCHLINE SEE SHEET CS-103

MATCHLINE SEE SHEET CS-202

MATCHLINE SEE SHEET EX-303

PALATINE RD.

257 RIM: 639.00 INV. IN: 629.90 INV. OUT: 629.89
258 RIM: 639.00 INV. IN: 629.58 INV. OUT: 629.35 INV. OUT: 630.91
259 RIM: 639.00 INV. IN: 630.88 INV. IN: 631.94
260 RIM: 636.00 INV. OUT: 632.95
252 RIM: 634.00 INV. IN: 631.17 INV. OUT: 631.17
238 RIM: 638.83 INV. OUT: 636.37
INV. OUT: 631.65 255 RIM: 638.00
245 RIM: 634.00 INV. IN: 630.10 INV. IN: 630.19 INV. OUT: 630.09
244 RIM: 634.00 INV. IN: 629.41 INV. OUT: 629.31
INV. OUT: 630.87 INV. IN: 630.86 409 RIM: 638.10 INV. IN: 631.02 INV. IN: 630.96 INV. OUT: 630.94
RIM: 637.00
INV. OUT: 632.65 404 RIM: 637.00
247 RIM: 638.00 INV. IN: 634.66
246 RIM: 636.00 INV. OUT: 632.47
405 RIM: 639.70 INV. IN: 631.21 INV. IN: 631.53 INV. IN: 631.21 INV. OUT: 631.21
248 RIM: 639.62 INV. OUT: 637.13
249 RIM: 637.00 INV. IN: 629.60 INV. IN: 629.48 INV. OUT: 629.18
403 RIM: 637.00 INV. OUT: 631.76
406 RIM: 637.00 INV. IN: 631.78 INV. OUT: 631.57
407 RIM: 641.00 INV. OUT: 632.18
402 RIM: 638.00 INV. IN: 629.90 INV. OUT: 629.96
401 RIM: 642.00 INV. OUT: 638.51
419 RIM: 637.36 INV. IN: 632.08 INV. IN: 633.76 INV. OUT: 632.04
INV. OUT: 635.72 416 RIM: 637.43
417 RIM: 637.00 INV. IN: 631.89 INV. IN: 631.87 INV. OUT: 631.87
412 RIM: 636.92 INV. IN: 631.83 INV. IN: 632.38 INV. OUT: 631.81
414 RIM: 638.65 INV. IN: 633.54 INV. OUT: 633.54
INV. OUT: 634.76 410 RIM: 636.47
411 RIM: 637.41 INV. IN: 633.58 INV. IN: 631.59 INV. OUT: 631.57
INV. OUT: 634.57 INV. IN: 634.50 415 RIM: 639.00
INV. OUT: 636.05 416 RIM: 639.44
420 RIM: 638.00 INV. IN: 632.75 INV. OUT: 632.67
421 RIM: 639.00 INV. IN: 633.39 INV. OUT: 633.49
422 RIM: 638.00 INV. OUT: 633.82
INV. OUT: 636.59 436 RIM: 639.05
437 RIM: 639.10 INV. IN: 632.80 INV. OUT: 632.80
434 RIM: 639.00 INV. OUT: 634.18
435 RIM: 639.00 INV. IN: 632.73 INV. OUT: 632.73
432 RIM: 639.20 INV. OUT: 636.88
433 RIM: 639.34 INV. IN: 634.38
501 RIM: 1265.00 INV. OUT: 637.72
503 RIM: 639.00 INV. IN: 632.10 INV. OUT: 631.86
504 RIM: 640.00 INV. IN: 631.40 INV. OUT: 631.40
571 RIM: 638.47 INV. OUT: 636.76
572 RIM: 640.55 INV. IN: 635.38 INV. OUT: 635.42
574 RIM: 640.94 INV. IN: 634.83 INV. IN: 635.11 INV. OUT: 634.83
573 RIM: 639.51 INV. OUT: 637.80
502 RIM: 641.00 INV. OUT: 632.65
509 RIM: 638.23 INV. IN: 632.79 INV. OUT: 632.75
507 RIM: 641.51 INV. OUT: 632.52
508 RIM: 641.50 INV. IN: 631.85 INV. IN: 630.76 INV. OUT: 630.76
506 RIM: 640.51 INV. IN: 631.02 INV. OUT: 631.02
505 RIM: 639.00 INV. IN: 631.63 INV. IN: 631.27 INV. OUT: 631.63 INV. OUT: 631.73
567 RIM: 636.71 INV. OUT: 635.00
568 RIM: 641.85 INV. IN: 631.26 INV. IN: 631.41 INV. IN: 637.61 INV. IN: 634.61
569 RIM: 642.03 INV. IN: 637.89 INV. OUT: 637.89
570 RIM: 641.00 INV. OUT: 639.66
565 RIM: 637.72 INV. OUT: 636.01
564 RIM: 641.68 INV. IN: 632.32 INV. IN: 636.32 INV. IN: 639.72 INV. OUT: 632.32
563 RIM: 638.00 INV. IN: 632.46 INV. OUT: 632.46
562 RIM: 638.00 INV. OUT: 632.58
566 RIM: 637.92 INV. OUT: 636.75
INV. OUT: 638.93 532 RIM: 642.00
519 RIM: 641.75 INV. IN: 638.63 INV. OUT: 638.8
531 RIM: 642.00 INV. OUT: 638.76
533 RIM: 642.00 INV. IN: 638.82 INV. OUT: 638.80
535 RIM: 643.03 INV. OUT: 640.00
534 RIM: 642.47 INV. IN: 638.61 INV. IN: 639.61 INV. OUT: 638.61
518 RIM: 642.99 INV. IN: 638.23 INV. IN: 638.23 INV. OUT: 638.23
517 RIM: 643.00 INV. OUT: 638.43
536 RIM: 642.99 INV. OUT: 638.69
537 RIM: 642.99 INV. IN: 638.49 INV. IN: 638.48 INV. OUT: 638.49

0 50 100

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Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P.312-466-3900 F.312-466-3915

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- ST — EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

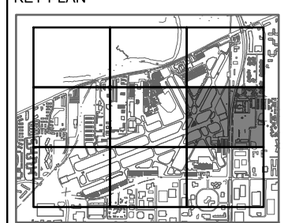
THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

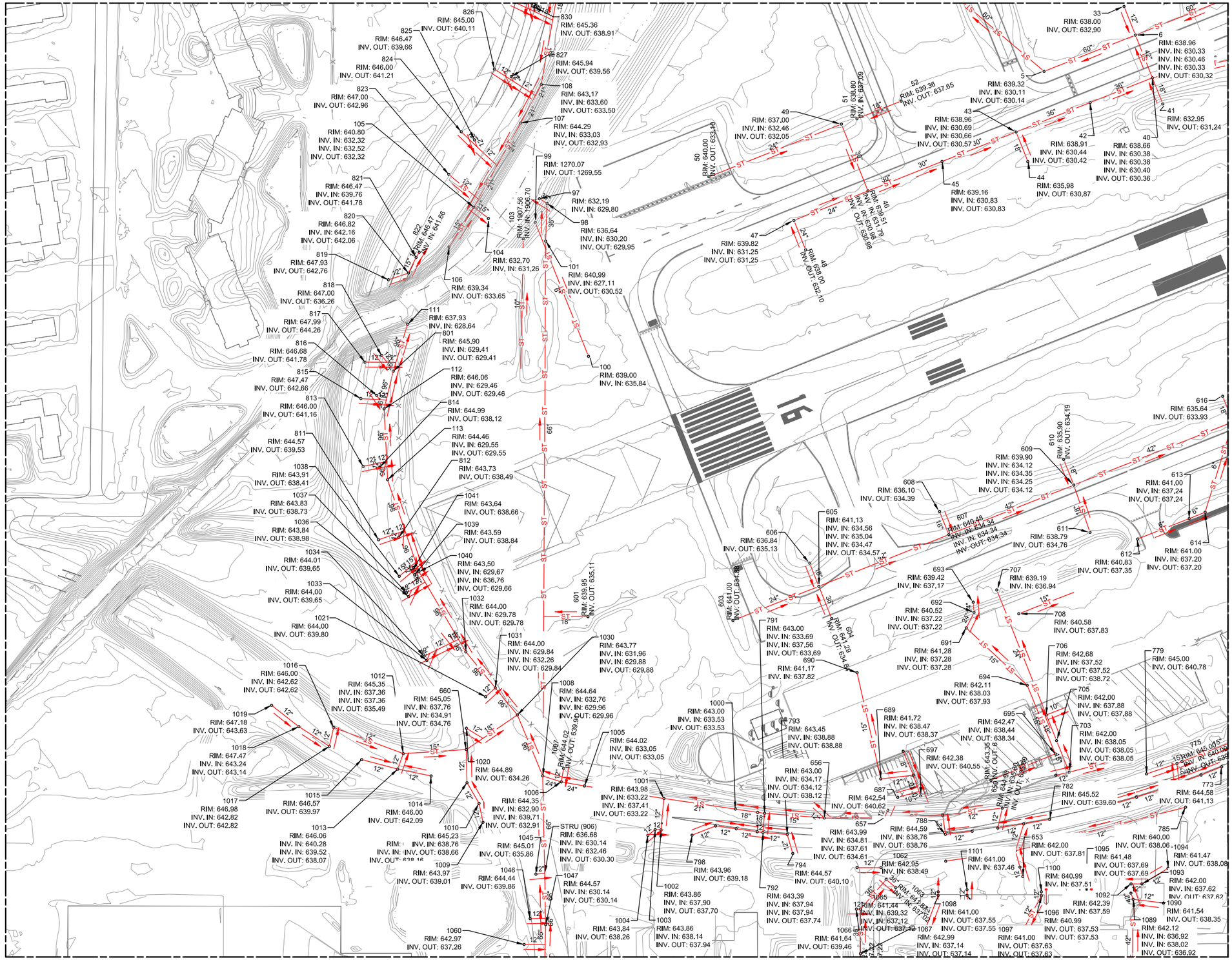
EXISTING AIRFIELD STORM SEWER SYSTEM MAP

SHEET NO.	PRIMERA
APPROVED	PRIMERA
CHECKED	PRIMERA
DRAWN BY	
DRAWING NO.	**EX-203**

PLOT DEVICE: DRIVER
FILENAME/LOCATION: P:\2022\22220845.00 IDA MASTER DRAINAGE\DRAWINGS\CURRENT DRAWING FILES\CAD SHEETS\PWK-5060-EXISTING STORM SYSTEM_PIPE NETWORK.DWG
PRINTED BY: KRIS SALVATIPA
DATE PRINTED: 6/30/2025 11:46 AM
FILE SAVED: 6/30/2025 10:58 AM

MATCHLINE SEE SHEET CS-201

MATCHLINE SEE SHEET EX-302



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Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3300 F:312-466-3315

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- ST — EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

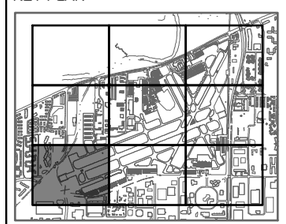
THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EX-301

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

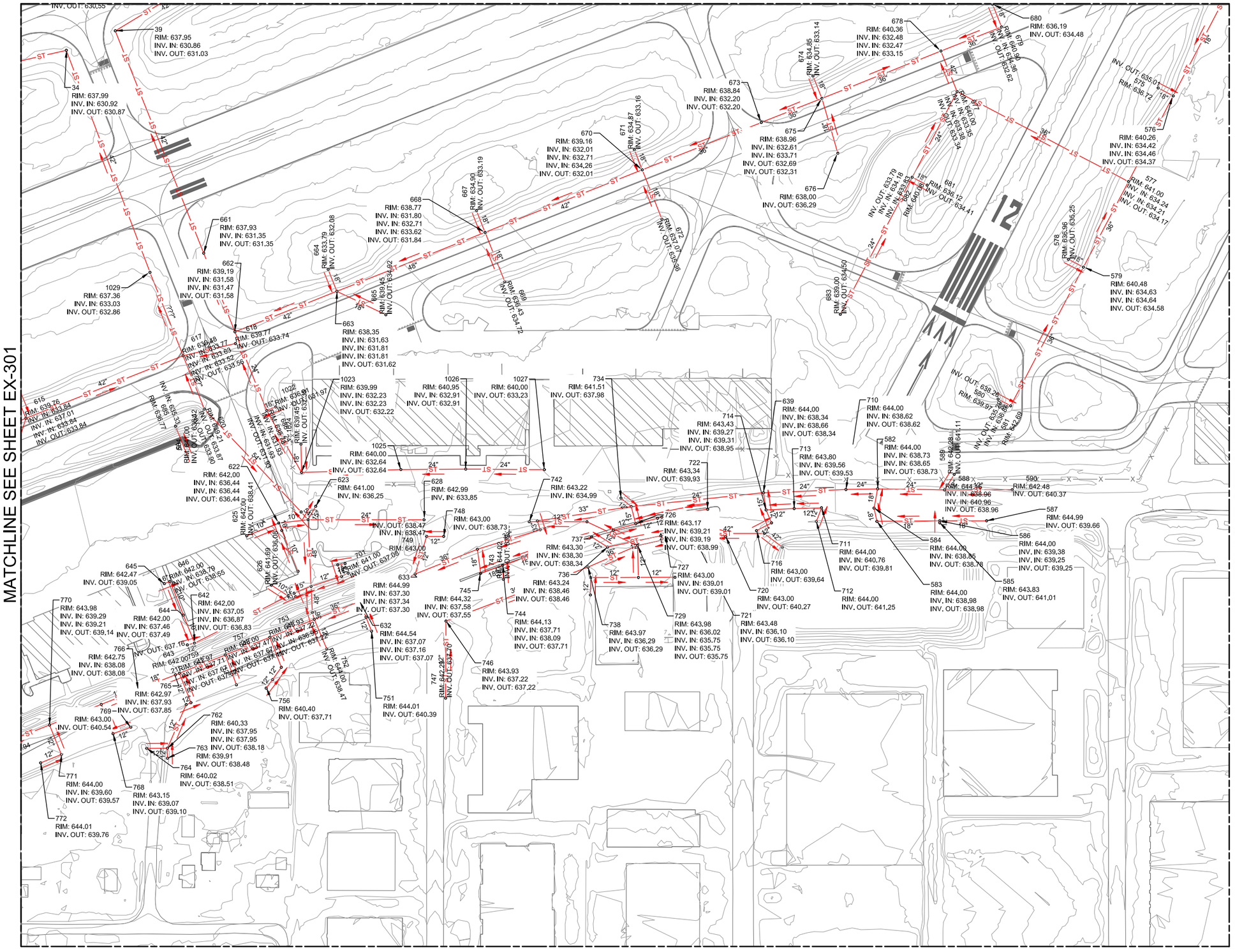
DRAWING NO.
EX-301

FILE_SAVED 6/20/2025 10:56 AM
DATE_PRINTED 6/20/2025 11:45 AM
PRINTED_BY KRS SALVATIERA
FILENAME/LOCATION: P:\2022\22029845.00 CEA MASTER DRAINAGE\DRAWINGS\CURRENT DRAWING FILES\CADD SHEETS\PWK-5060-EXISTING STORM SYSTEM_PIPE NETWORK.DWG
PLOT_DEVICE_DRIVER P:\CADD\AutoCAD\Shared Resources\Support\Plotters\PWK-5060 plotter.pc3
PLOT_STYLE_TABLE___CTB

MATCHLINE SEE SHEET EX-202

MATCHLINE SEE SHEET EX-301

MATCHLINE SEE SHEET EX-303



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100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

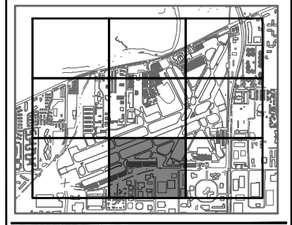
THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING AIRFIELD STORM SEWER SYSTEM MAP

SHEET NO.	PRIMERA
APPROVED	PRIMERA
CHECKED	PRIMERA
DRAWN BY	
DRAWING NO.	EX-302

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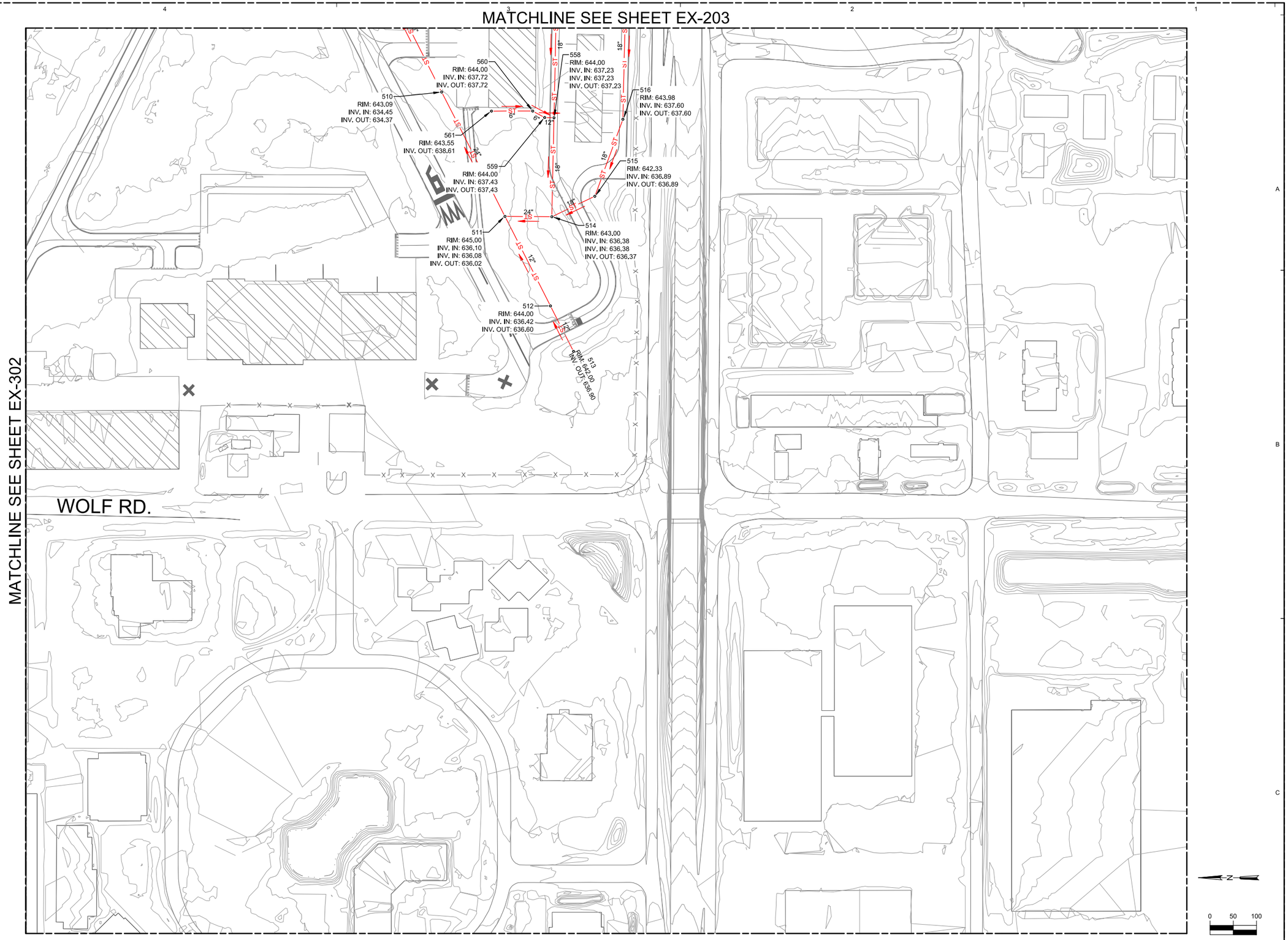
PLOT DEVICE: DWG To PDF.pc3
FILENAME: P:\2022\2022084.00 CIA MASTER DRAINAGE\DRAWINGS\CURRENT DRAWING FILES\LOAD SHEETS\PWK-5060-EXISTING STORM SYSTEM_PIPE NETWORK.DWG
PLOTTED BY: KRIS SALVATERA
DATE PLOTTED: 6/30/2025 11:46 AM
FILE SAVED: 6/30/2025 10:56 AM



Primera

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- ST — EX. STORM SEWER
- EX. DIRECTION OF FLOW

NOTE:

THE INFORMATION ON THESE PLANS HAVE BEEN OBTAINED FROM AVAILABLE RECORDS. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY TO THE ACCURACY OF INFORMATION PROVIDED AND THERE IS NO GUARANTEE THE INFORMATION IS REPRESENTATIVE OF THE CONDITIONS FOUND IN THE FIELD. IT IS THE RESPONSIBILITY OF THE DESIGNER/CONTRACTOR TO CONDUCT THEIR OWN DATA COLLECTION FOR VERIFICATION OF THE FIELD CONDITIONS.

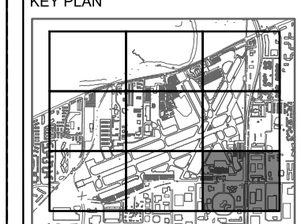
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING AIRFIELD STORM SEWER SYSTEM MAP

SHEET NO.
PRIMERA

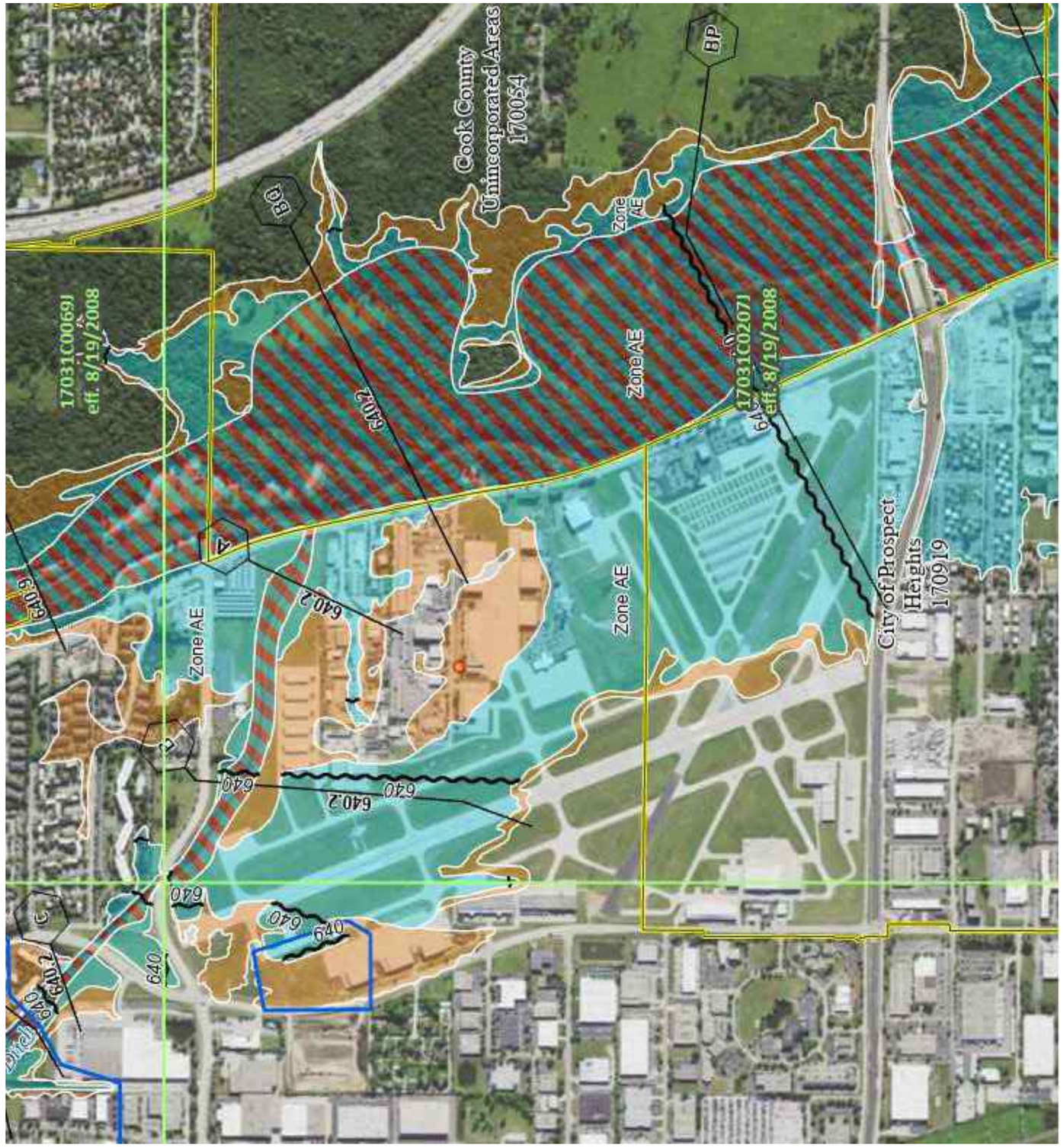
APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-303

© 2007 Primera



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/17/2023 at 8:55 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Primera

CHICAGO EXECUTIVE AIRPORT

100-YEAR STORM OR 1% ANNUAL CHANCE FLOOD HAZARD

500-YEAR STORM OR 0.2% ANNUAL CHANCE FLOOD HAZARD

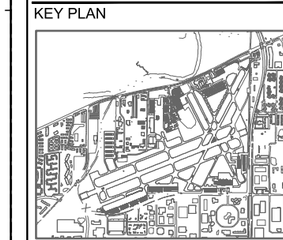
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

FEMA FLOODPLAIN MAP

SHEET NO. EXHIBIT

APPROVED SM

CHECKED KS

DRAWN BY JVJ

DRAWING NO. **EXHIBIT**

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EXHIBIT 2-7 - EXISTING FLOODPLAIN EXHIBIT

February 28, 2024 – 13:57 Dwg Name: P:\Priwhil01\dwg\StormWater\Exhibits\Existing Floodplain Exhibit.dwg Updated By: KCasillas

REGULATORY CROSS SECTION B
100 YR BFE ELEV.=640.2

REGULATORY CROSS SECTION BQ
100 YR BFE ELEV.=640.2

REGULATORY CROSS SECTION BP
100 YR BFE ELEV.=640

N

0 125 250 500
SCALE: 1"=250'

LEGEND

- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 100 YR FLOODPLAIN BOUNDARY
- REGULATORY CROSS SECTIONS

E HINTZ ROAD
WHEELING DRAIN DITCH
DES PLAINES RIVER
S WOLF ROAD
S MILWAUKEE AVE
E PALATINE ROAD
PALATINE FRONTAGE ROAD

Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0415

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SHEET 1 OF 1
PRI.WHIL01

PROJ. MGR.: DEB
PROJ. ASSOC.: KMS
DRAWN BY: KPC
DATE: 02/27/24
SCALE: 1"=250'

CHICAGO EXECUTIVE AIRPORT
VILLAGE OF WHEELING AND CITY OF PROSPECT HEIGHTS, ILLINOIS
EXISTING FLOODPLAIN EXHIBIT

Manhard CONSULTING
333 East Butterfield Road, Suite 600, Lombard, IL 60148 ph:630.691.8500 fx:630.691.8585 manhard.com
Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
Construction Managers • Environmental Scientists • Landscape Architects • Planners

DATE	REVISIONS	DRAWN BY



0 100 200 400
SCALE: 1"=200'

LEGEND

2-YEAR INUNDATION AREAS

Manhard CONSULTING

CHICAGO EXECUTIVE AIRPORT

VILLAGE OF WHEELING, ILLINOIS

2-YEAR INUNDATION MAP

PROJ. MGR.: DEB
PROJ. ASSOC.: KMS
DRAWN BY: ARD
DATE: 08/09/23
SCALE: 1"=200'

SHEET 1 OF 4

PRI.WHIL01

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0 100 200 400
SCALE: 1"=200'

LEGEND

5-YEAR INUNDATION AREAS

Manhard CONSULTING

CHICAGO EXECUTIVE AIRPORT

VILLAGE OF WHEELING, ILLINOIS

5-YEAR INUNDATION MAP

PROJ. MGR.: DEB
PROJ. ASSOC.: KMS
DRAWN BY: ARD
DATE: 08/09/23
SCALE: 1"=200'

SHEET 2 OF 4

PRI.WHIL01

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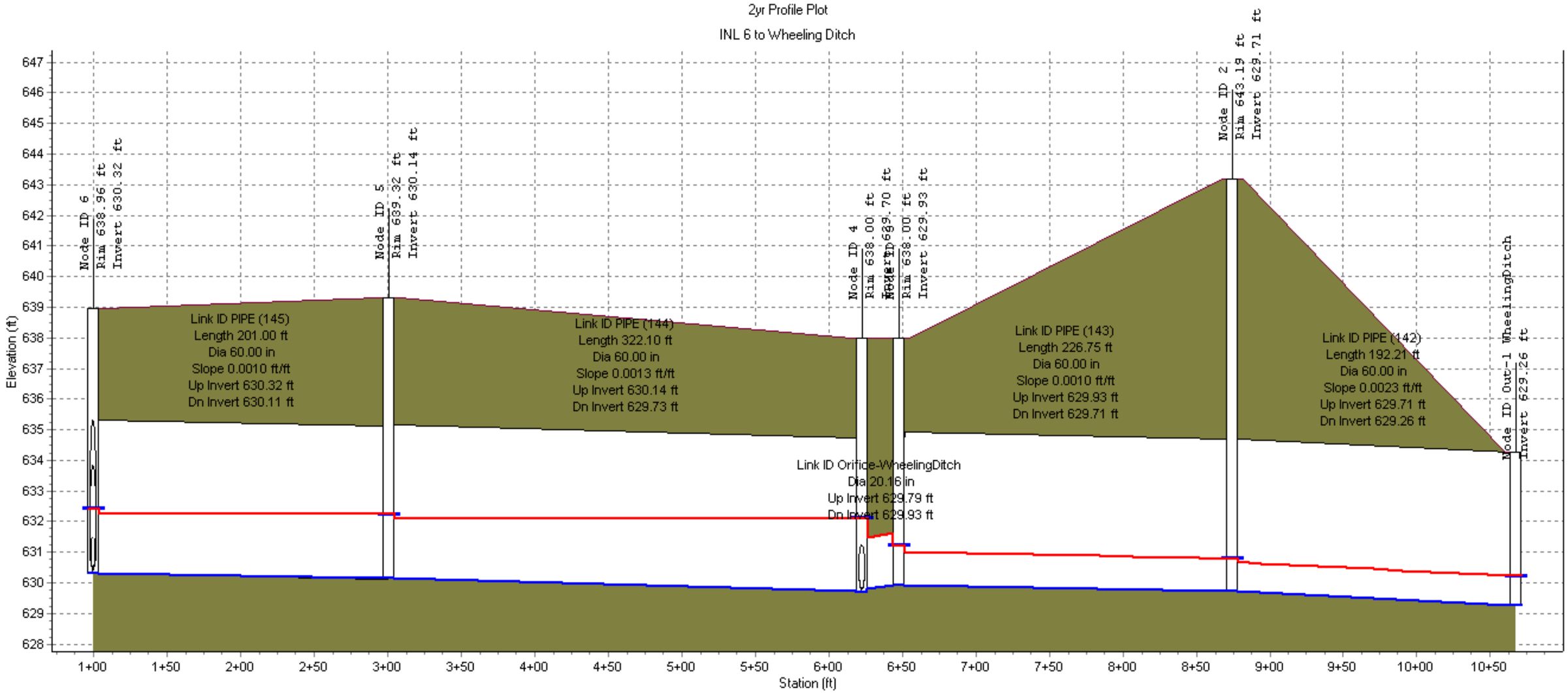

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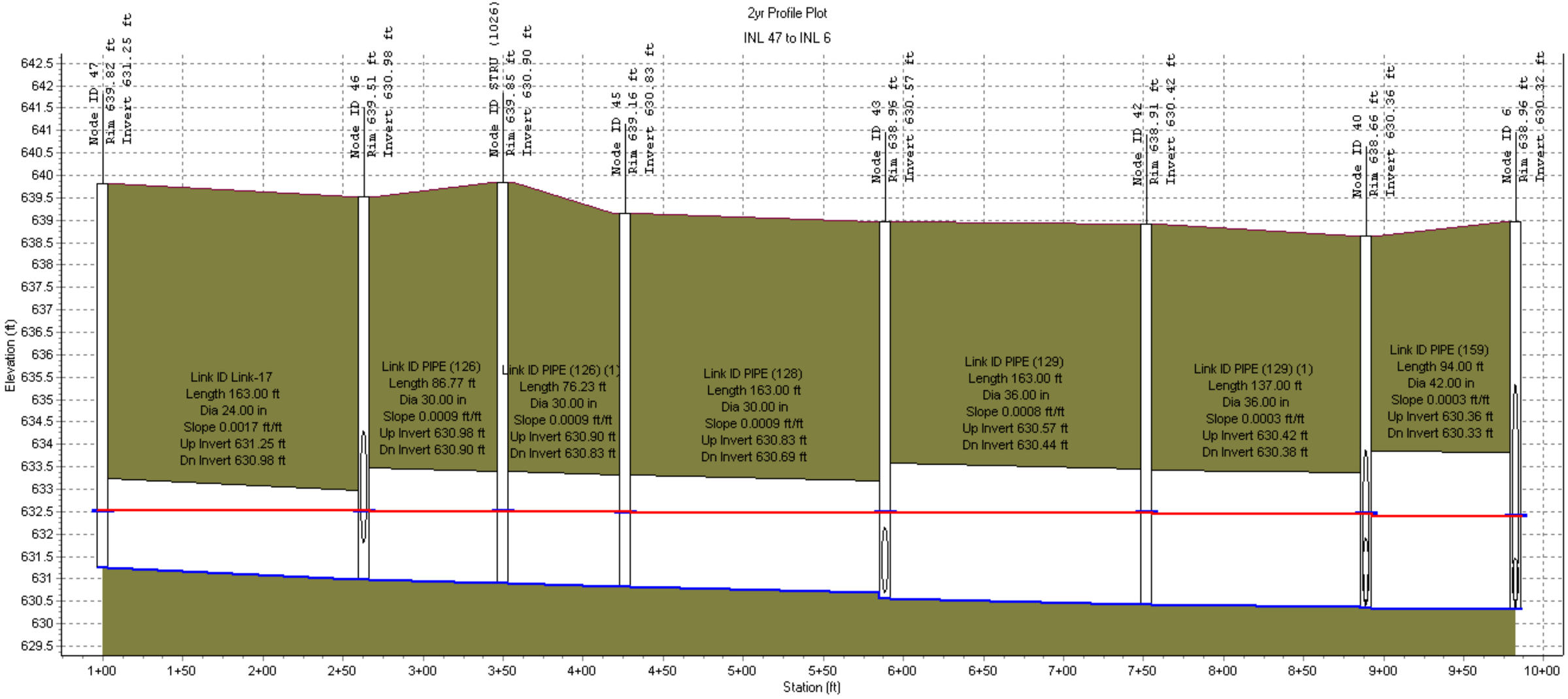
Invert (ft):	630.32	630.14	629.70	629.93	629.71	629.26
Min Pipe Cover (ft):				0.00		
Max HGL (ft):	632.40	632.23	632.09	631.20	630.78	630.22

Link ID:	PIPE (145)	PIPE (144)	Orifice-WheelingDitch	PIPE (143)	PIPE (142)
Length (ft):	201.00	322.10		226.75	192.21
Dia (in):	60.00	60.00	20.16	60.00	60.00
Slope (ft/ft):	0.0010	0.0013		0.0010	0.0023
Up Invert (ft):	630.32	630.14	629.79	629.93	629.71
Dn Invert (ft):	630.11	629.73	629.93	629.71	629.26
Max Q (cfs):	18.80	18.93	10.26	10.26	10.26
Max Vel (ft/s):	2.73	2.77	0.00	2.92	3.58
Max Depth (ft):	2.09	2.23	0.00	1.17	1.02



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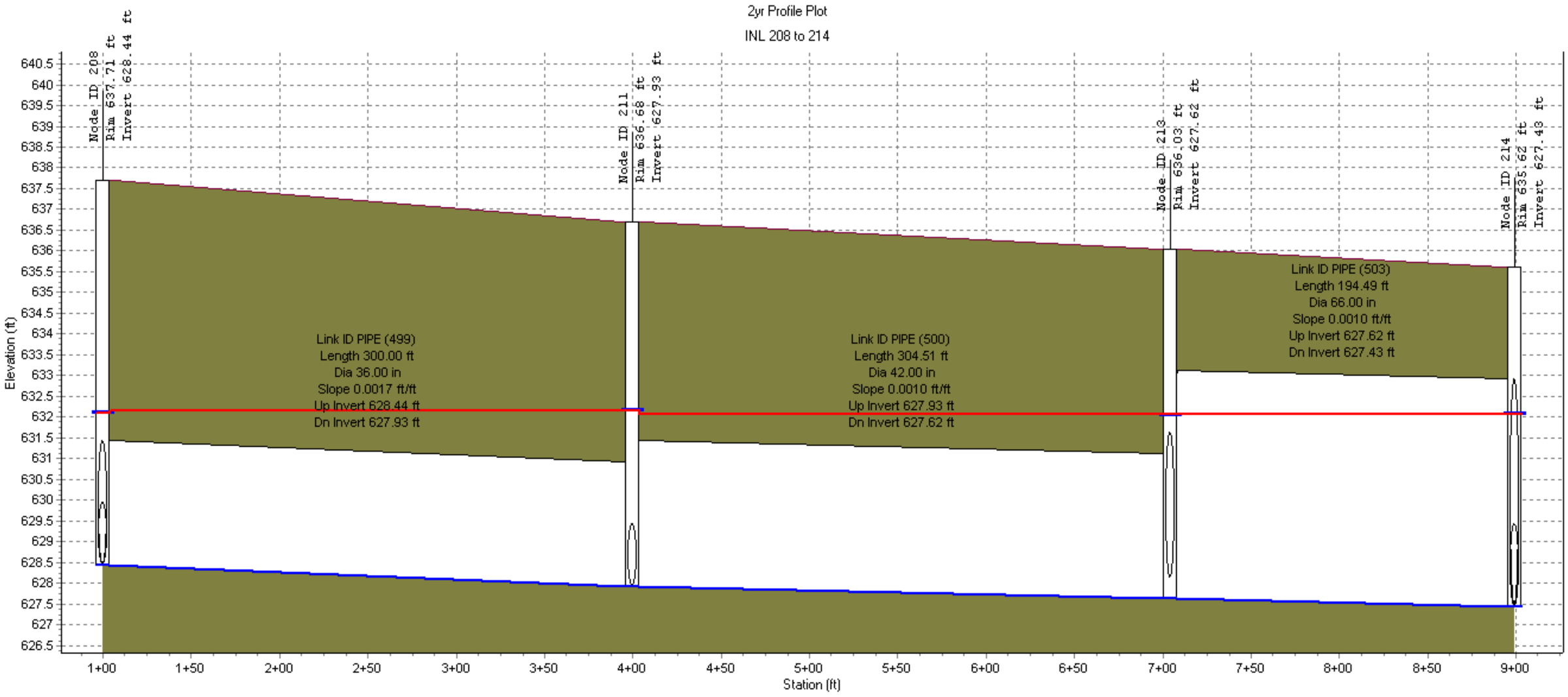
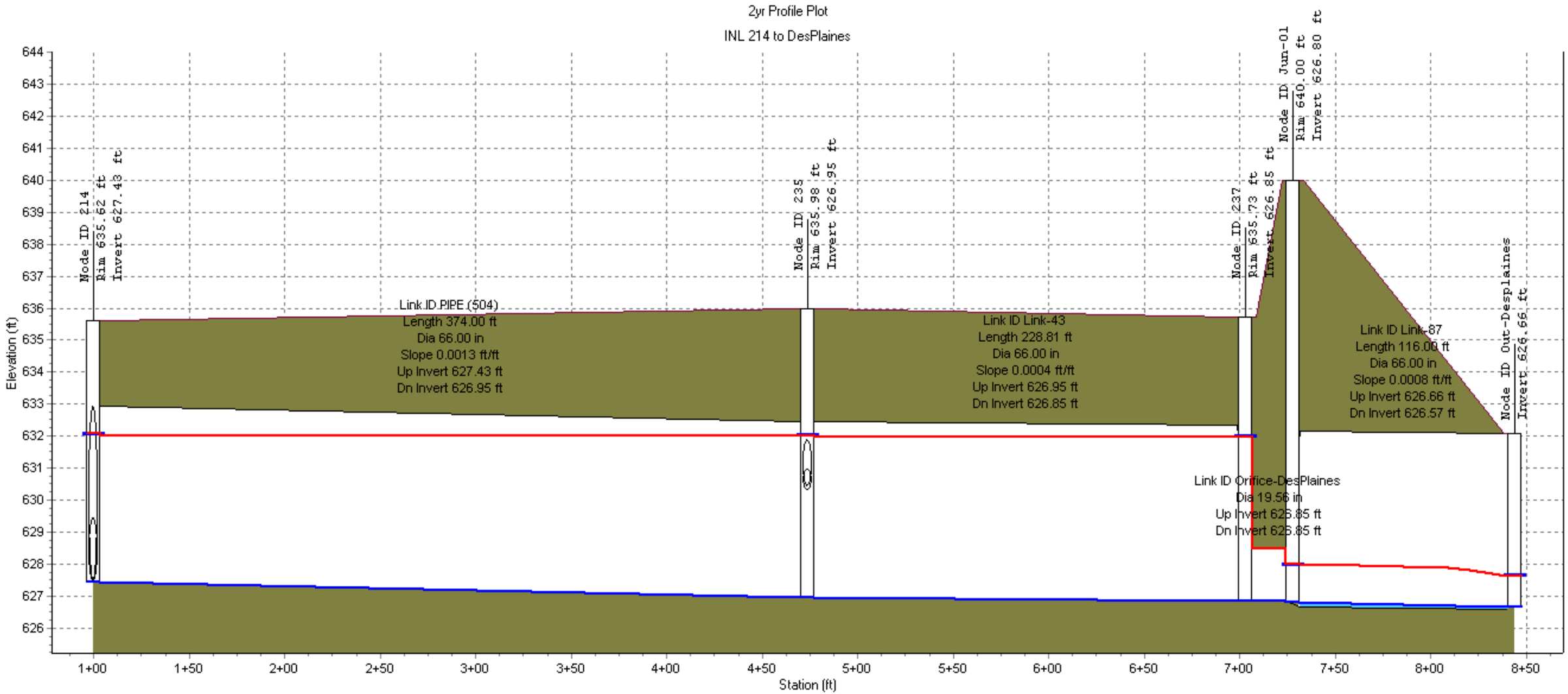
Rim (ft):	639.82	639.51	639.85	639.16	638.96	638.91	638.66	638.96
Invert (ft):	631.25	630.98	630.90	630.83	630.57	630.42	630.36	630.32
Min Pipe Cover (ft):			6.45					
Max HGL (ft):	632.51	632.51	632.50	632.49	632.48	632.47	632.46	632.40

Link ID:	Link-17	PIPE (126)	PIPE (126) (1)	PIPE (128)	PIPE (129)	PIPE (129) (1)	PIPE (159)
Length (ft):	163.00	86.77	76.23	163.00	163.00	137.00	94.00
Dia (in):	24.00	30.00	30.00	30.00	36.00	36.00	42.00
Slope (ft/ft):	0.0017	0.0009	0.0009	0.0009	0.0008	0.0003	0.0003
Up Invert (ft):	631.25	630.98	630.90	630.83	630.57	630.42	630.36
Dn Invert (ft):	630.98	630.90	630.83	630.69	630.44	630.38	630.33
Max Q (cfs):	0.26	3.28	3.17	2.98	4.30	4.14	10.36
Max Vel (ft/s):	0.55	1.40	1.29	1.14	1.20	1.22	2.21
Max Depth (ft):	1.40	1.57	1.63	1.73	1.97	2.06	2.08



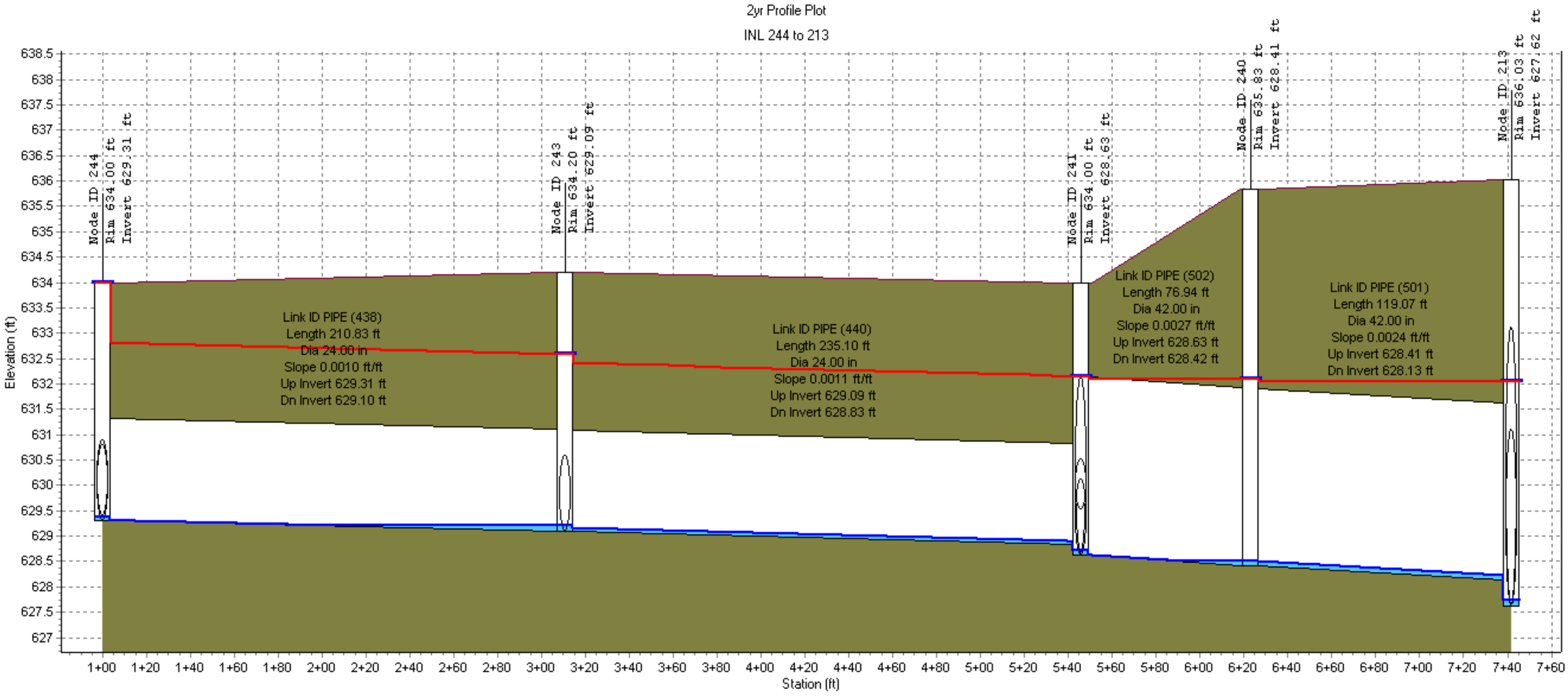
Node ID:	208	211	213	214
Rim (ft):	637.71	636.68	636.03	635.62
Invert (ft):	628.44	627.93	627.62	627.43
Min Pipe Cover (ft):				
Max HGL (ft):	632.10	632.16	632.06	632.07

Link ID:	PIPE (499)	PIPE (500)	PIPE (503)
Length (ft):	300.00	304.51	194.49
Dia (in):	36.00	42.00	66.00
Slope (ft/ft):	0.0017	0.0010	0.0010
Up Invert (ft):	628.44	627.93	627.62
Dn Invert (ft):	627.93	627.62	627.43
Max [illegible]	9.61	8.96	20.27
Max Vel (ft/s):	1.92	1.32	2.04
Max Depth (ft):	3.00	3.50	4.54



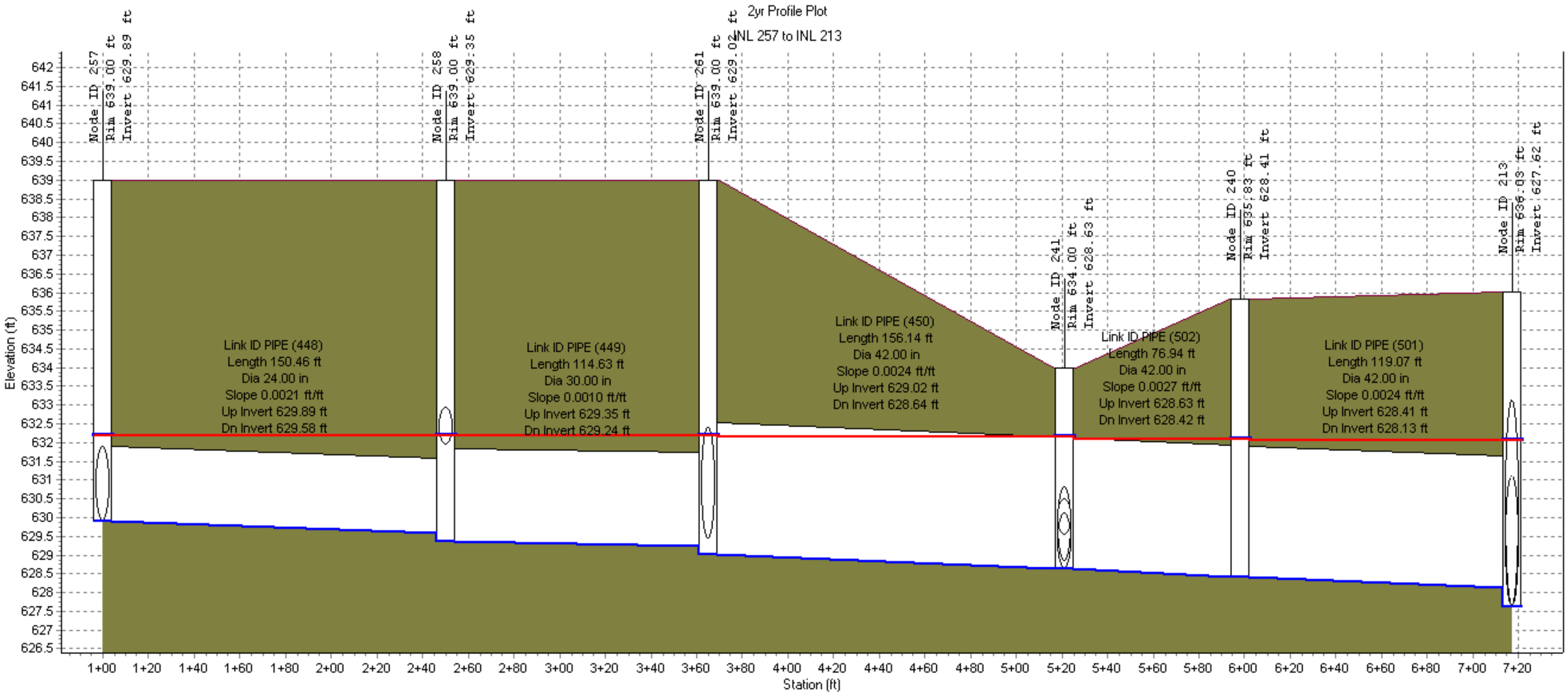
Node ID:	214	235	237	Jun-01	Out-Desplaines
Rim (ft):	635.62	635.98	635.73	640.00	
Invert (ft):	627.43	626.95	626.85	626.80	626.66
Min Pipe Cover (ft):				0.00	
Max HGL (ft):	632.07	632.01	631.99	627.99	627.65

Link ID:	PIPE (504)	Link-43	Orifice-DesPlaines	Link-87
Length (ft):	374.00	228.81		116.00
Dia (in):	66.00	66.00	19.56	66.00
Slope (ft/ft):	0.0013	0.0004		0.0008
Up Invert (ft):	627.43	626.95	626.85	626.66
Dn Invert (ft):	626.95	626.85	626.85	626.57
Max Q (ft/s):	21.72	21.24	20.64	20.62
Max Vel (ft/s):	3.06	2.56	0.00	3.10
Max Depth (ft):	4.85	5.10	0.00	1.09



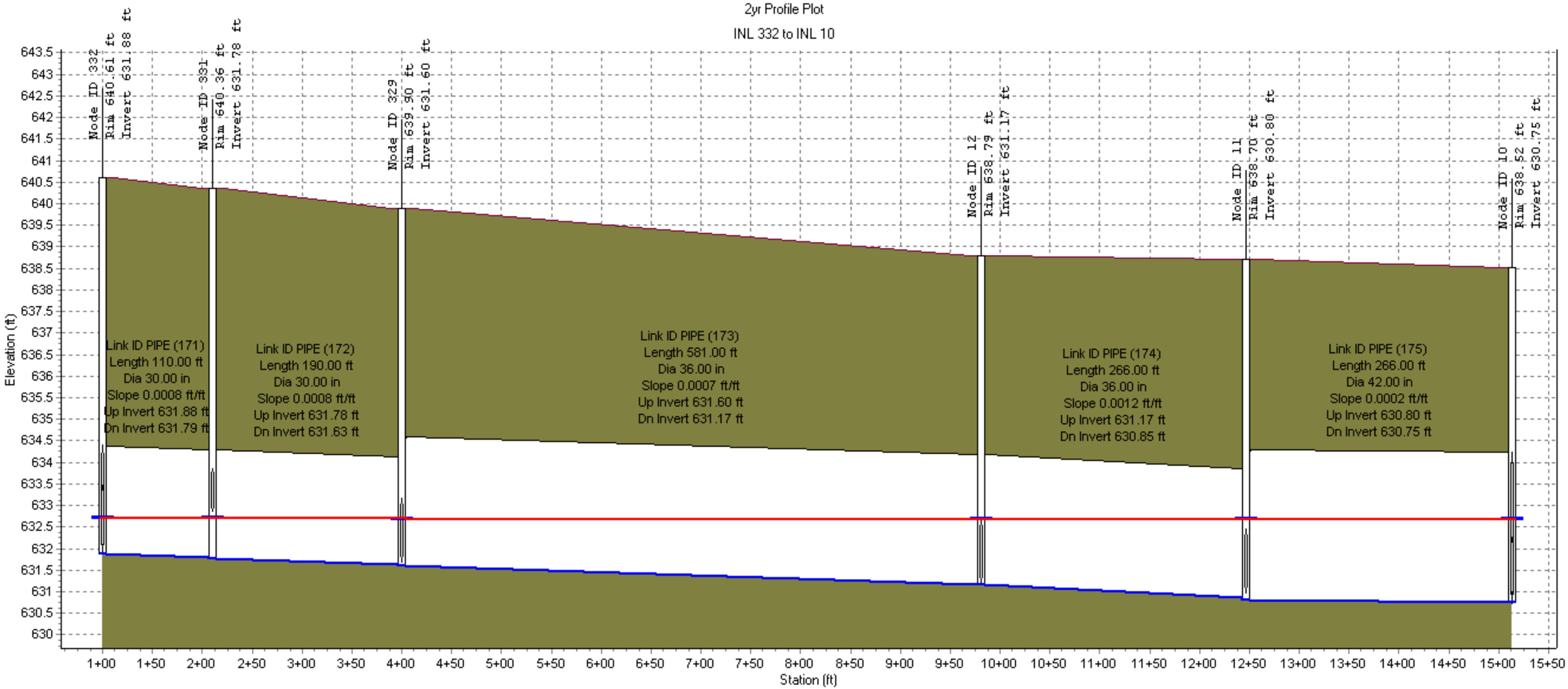
Node ID:	244	243	241	240	213
Rim (ft):	634.00	634.20	634.00	635.83	636.03
Invert (ft):	629.31	629.09	628.63	628.41	627.62
Min Pipe Cover (ft):					
Max HGL (ft):	634.00	632.59	632.15	632.10	632.06

Link ID:	PIPE (438)	PIPE (440)	PIPE (502)	PIPE (501)
Length (ft):	210.83	235.10	76.94	119.07
Dia (in):	24.00	24.00	42.00	42.00
Slope (ft/ft):	0.0010	0.0011	0.0027	0.0024
Up Invert (ft):	629.31	629.09	628.63	628.41
Dn Invert (ft):	629.10	628.83	628.42	628.13
Max Q (cfs):	6.88	7.88	17.08	17.11
Max Vel (ft/s):	2.27	2.79	3.50	4.11
Max Depth (ft):	2.00	2.00	3.50	3.50



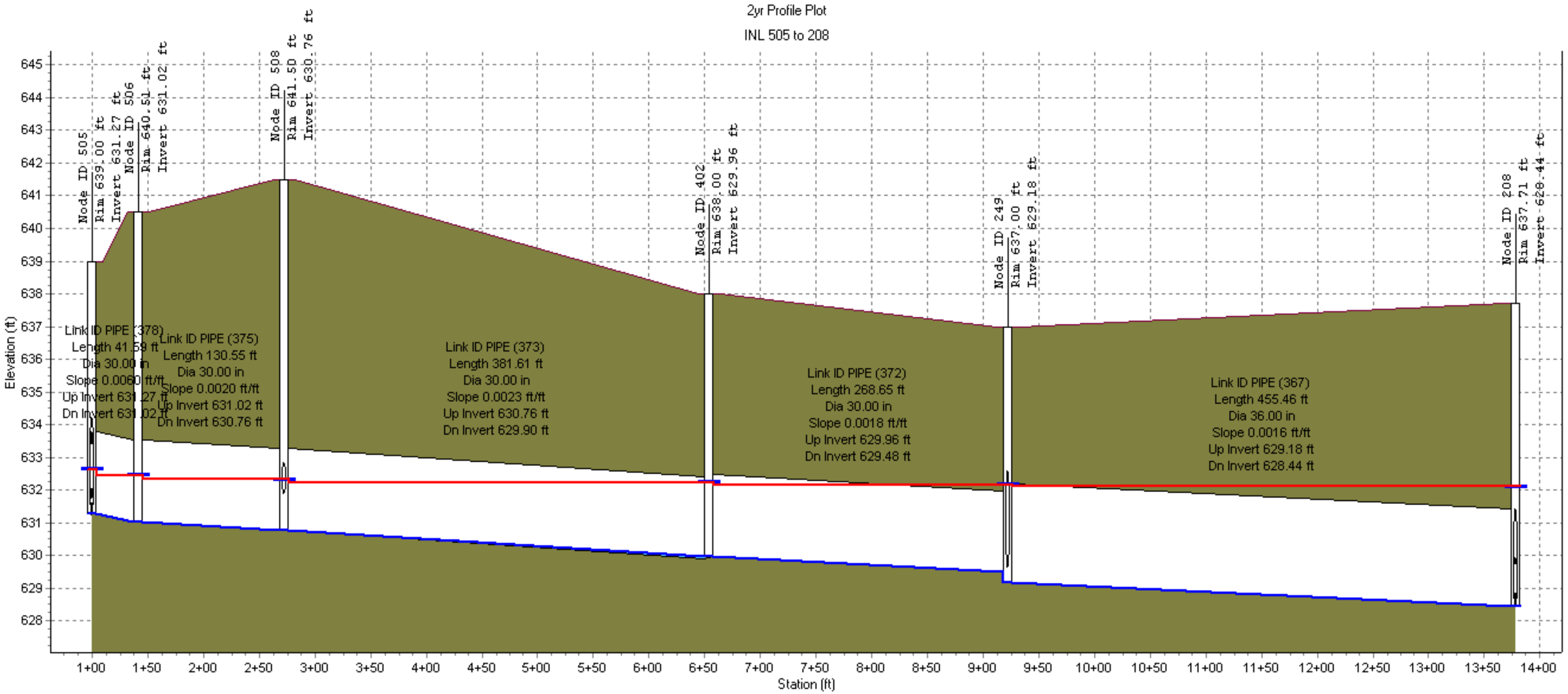
Node ID:	257	258	261	241	240	213
Rim (ft):	639.00	639.00	639.00	634.00	635.83	636.03
Invert (ft):	629.89	629.35	629.02	628.63	628.41	627.62
Min Pipe Cover (ft):						
Max HGL (ft):	632.19	632.18	632.19	632.15	632.10	632.06

Link ID:	PIPE (448)	PIPE (449)	PIPE (450)	PIPE (502)	PIPE (501)
Length (ft):	150.46	114.63	156.14	76.94	119.07
Dia (in):	24.00	30.00	42.00	42.00	42.00
Slope (ft/ft):	0.0021	0.0010	0.0024	0.0027	0.0024
Up Invert (ft):	629.89	629.35	629.02	628.63	628.41
Dn Invert (ft):	629.58	629.24	628.64	628.42	628.13
Max Q (cfs):	1.88	2.85	11.63	17.08	17.11
Max Vel (ft/s):	2.40	1.14	2.14	3.50	4.11
Max Depth (ft):	2.00	2.50	3.33	3.50	3.50



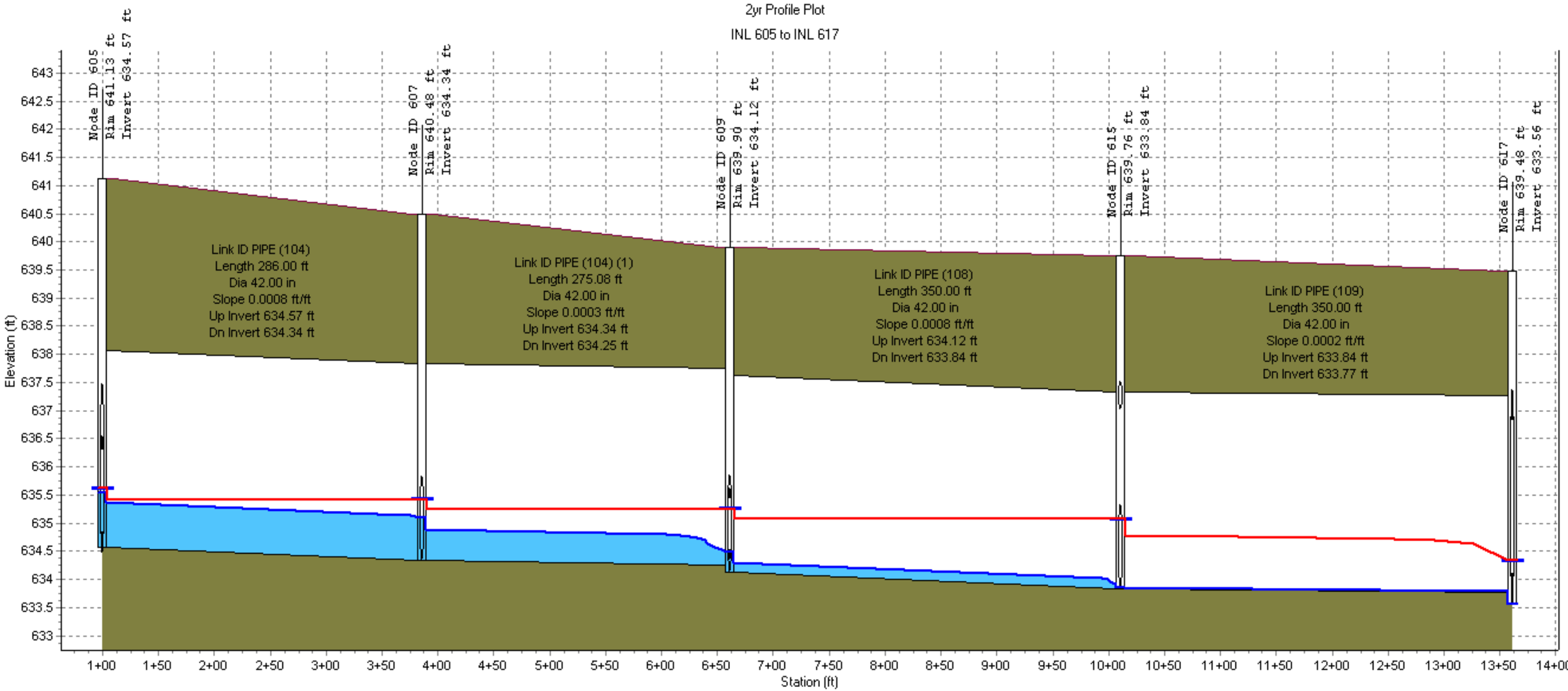
Node ID:	332	331	329	12	11	10
Rim (ft):	640.61	640.36	639.90	638.79	638.70	638.52
Invert (ft):	631.88	631.78	631.60	631.17	630.80	630.75
Min Pipe Cover (ft):						
Max HGL (ft):	632.70	632.70	632.69	632.68	632.68	632.67

Link ID:	PIPE (171)	PIPE (172)	PIPE (173)	PIPE (174)	PIPE (175)
Length (ft):	110.00	190.00	581.00	266.00	266.00
Dia (in):	30.00	30.00	36.00	36.00	42.00
Slope (ft/ft):	0.0008	0.0008	0.0007	0.0012	0.0002
Up Invert (ft):	631.88	631.78	631.60	631.17	630.80
Dn Invert (ft):	631.79	631.63	631.17	630.85	630.75
Max [illegible]		0.74	1.29	1.67	2.48
Max Vel (ft/s):	1.07	0.94	1.07	0.92	0.89
Max Depth (ft):	0.87	0.99	1.30	1.67	1.90



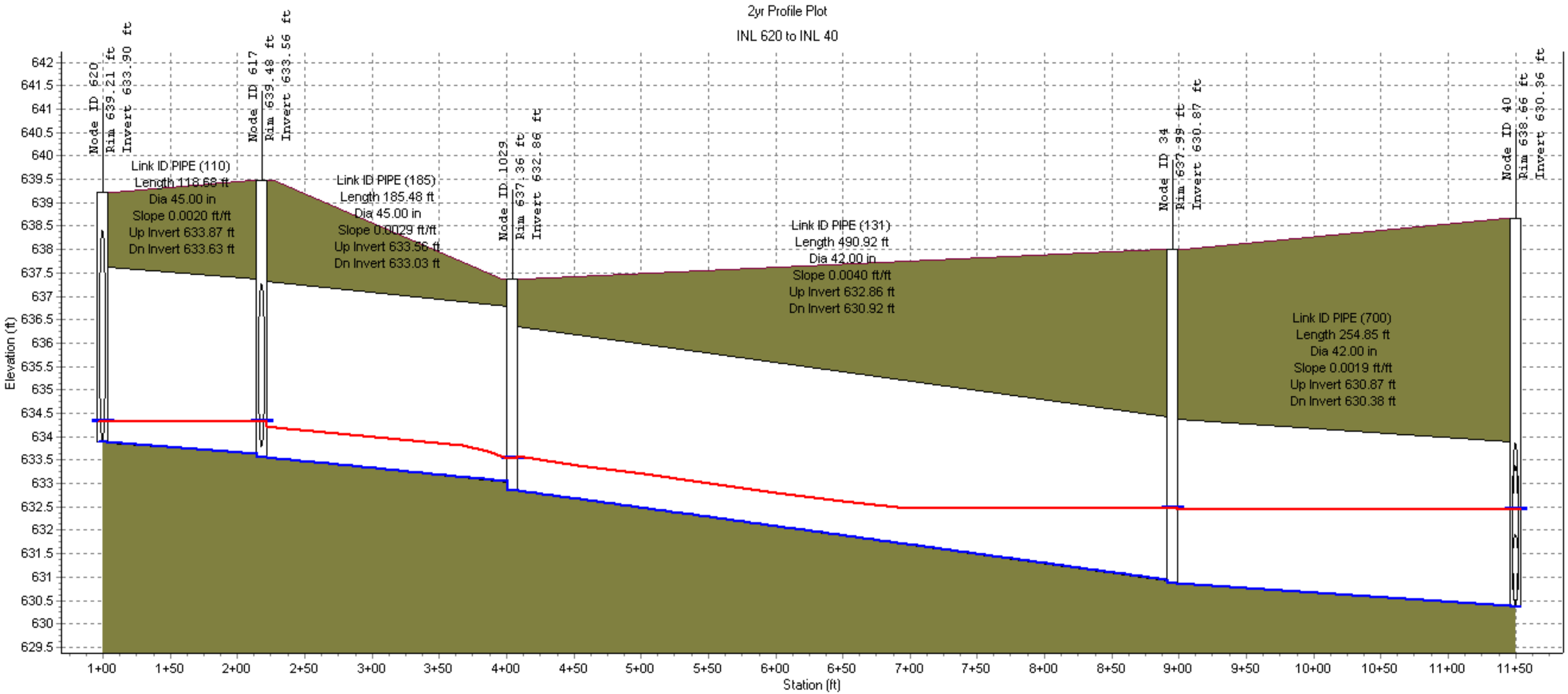
Node ID:	505	506	508	402	249	208
Rim (ft):	639.00	640.51	641.50	638.00	637.00	637.71
Invert (ft):	631.27	631.02	630.76	629.96	629.18	628.44
Min Pipe Cover (ft):						
Max HGL (ft):	632.64	632.44	632.32	632.23	632.16	632.10

Link ID:	PIPE (378)	PIPE (375)	PIPE (373)	PIPE (372)	PIPE (367)
Length (ft):	41.59	130.55	381.61	268.65	455.46
Dia (in):	30.00	30.00	30.00	30.00	36.00
Slope (ft/ft):	0.0060	0.0020	0.0023	0.0018	0.0016
Up Invert (ft):	631.27	631.02	630.76	629.96	629.18
Dn Invert (ft):	631.02	630.76	629.90	629.48	628.44
Max Q (cfs):	[illegible]	[illegible]	8.92	8.81	9.84
Max Vel (ft/s):	3.18	3.27	3.45	3.85	2.58
Max Depth (ft):	1.39	1.48	1.92	2.39	2.99



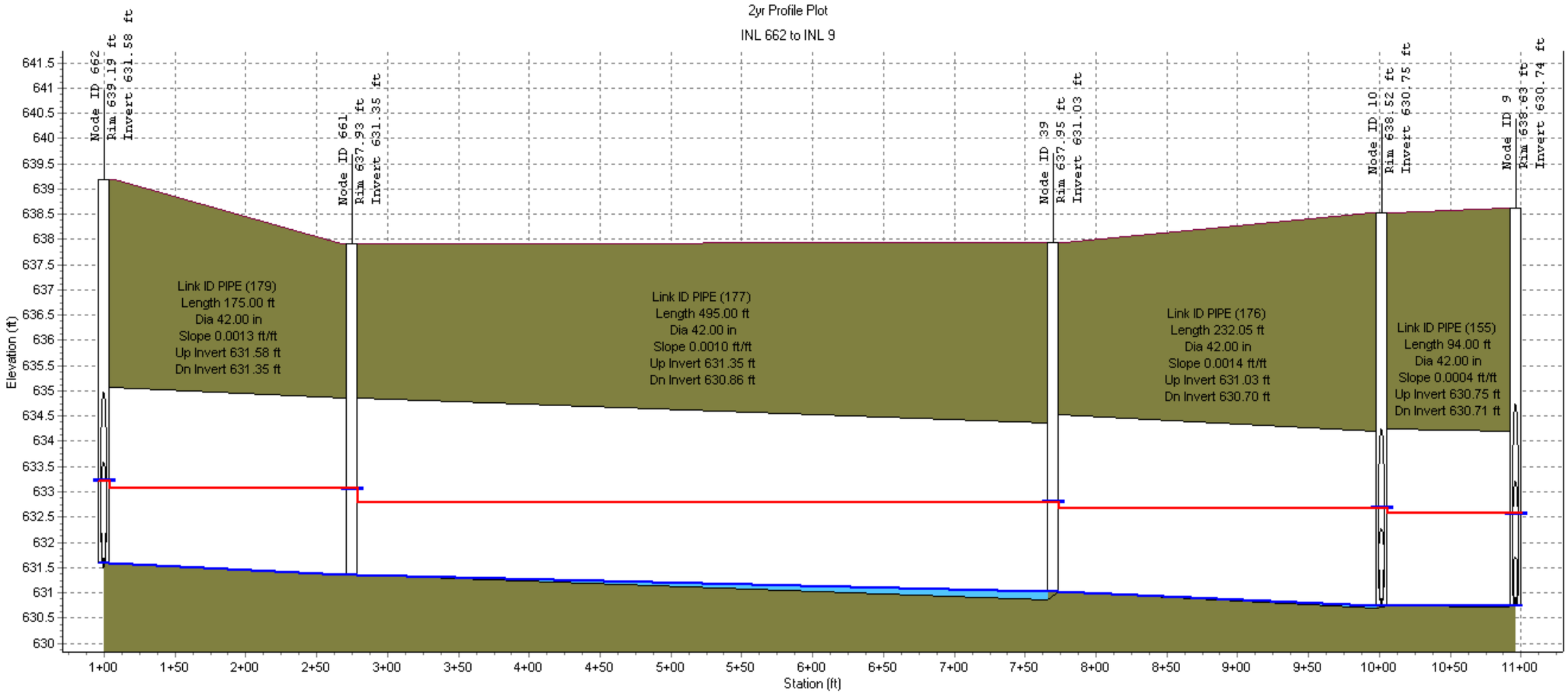
Node ID:	605	607	609	615	617
Rim (ft):	641.13	640.48	639.90	639.76	639.48
Invert (ft):	634.57	634.34	634.12	633.84	633.56
Min Pipe Cover (ft):					
Max HGL (ft):	635.62	635.42	635.25	635.07	634.33

Link ID:	PIPE (104)	PIPE (104) (1)	PIPE (108)	PIPE (109)
Length (ft):	286.00	275.08	350.00	350.00
Dia (in):	42.00	42.00	42.00	42.00
Slope (ft/ft):	0.0008	0.0003	0.0008	0.0002
Up Invert (ft):	634.57	634.34	634.12	633.84
Dn Invert (ft):	634.34	634.25	633.84	633.77
Max [illegible]	5.57	4.54	5.73	5.43
Max Vel (ft/s):	3.70	2.16	2.91	2.52
Max Depth (ft):	1.07	1.04	1.18	0.96



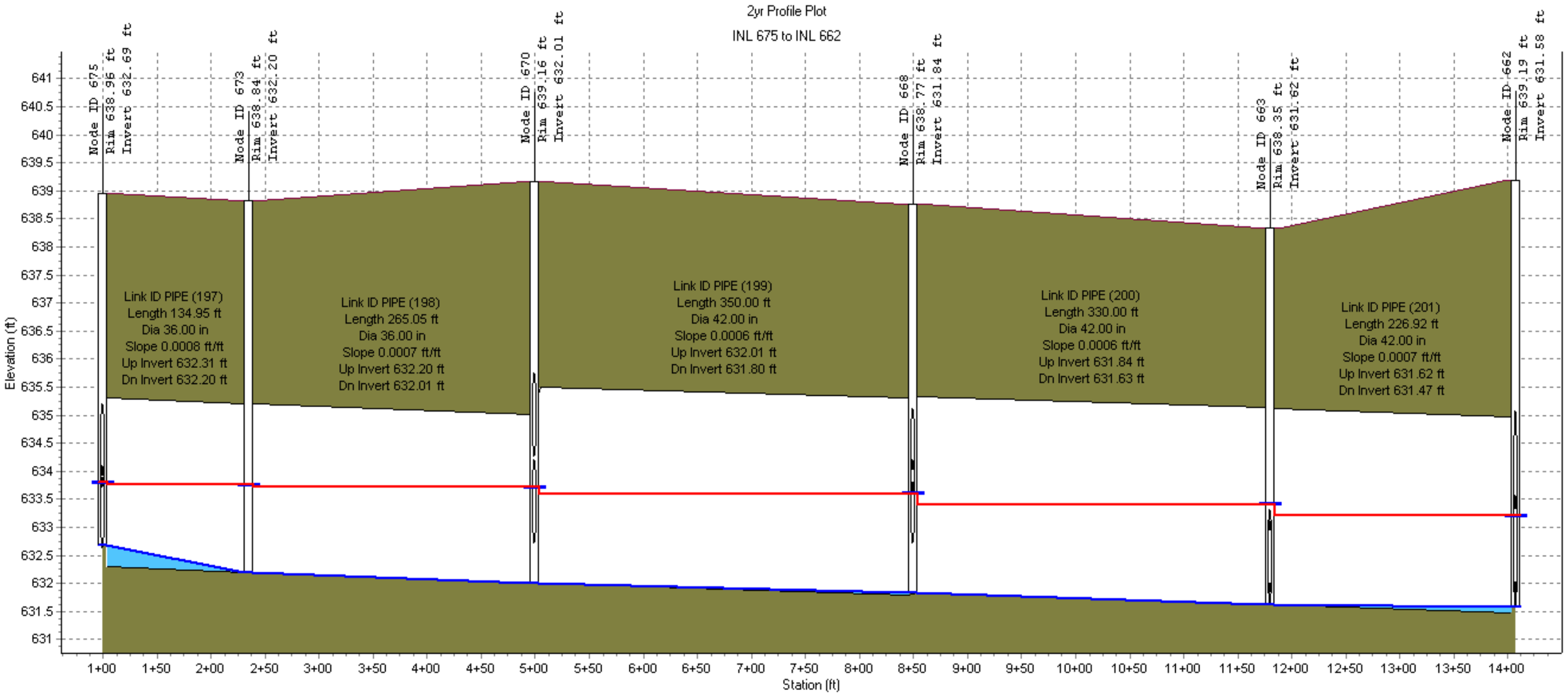
Node ID:	620	617	1029	34	40
Rim (ft):	639.21	639.48	637.36	637.99	638.66
Invert (ft):	633.90	633.56	632.86	630.87	630.36
Min Pipe Cover (ft):					
Max HGL (ft):	634.33	634.33	633.54	632.48	632.46

Link ID:	PIPE (110)	PIPE (185)	PIPE (131)	PIPE (700)	
Length (ft):	118.68	185.48	490.92	254.85	
Dia (in):	45.00	45.00	42.00	42.00	
Slope (ft/ft):	0.0020	0.0029	0.0040	0.0019	
Up Invert (ft):	633.87	633.56	632.86	630.87	
Dn Invert (ft):	633.63	633.03	630.92	630.38	
Max [illegible]		5.20	5.18	4.86	
Max Vel (ft/s):	1.16	3.48	3.42	2.41	
Max Depth (ft):	0.57	0.72	1.09	1.84	



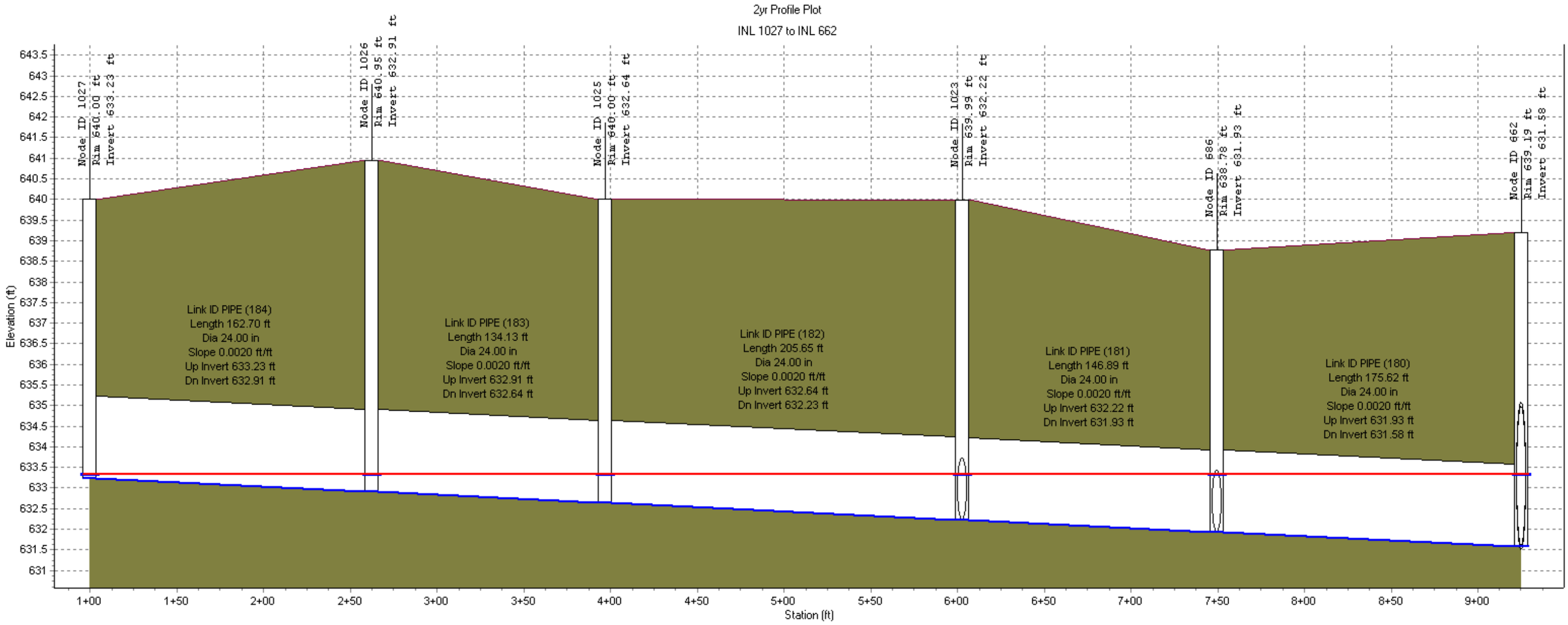
Node ID:	662	661	39	10	9
Rim (ft):	639.19	637.93	637.95	638.52	638.63
Invert (ft):	631.58	631.35	631.03	630.75	630.74
Min Pipe Cover (ft):					
Max HGL (ft):	633.21	633.06	632.79	632.67	632.57

Link ID:	PIPE (179)	PIPE (177)	PIPE (176)	PIPE (155)
Length (ft):	175.00	495.00	232.05	94.00
Dia (in):	42.00	42.00	42.00	42.00
Slope (ft/ft):	0.0013	0.0010	0.0014	0.0004
Up Invert (ft):	631.58	631.35	631.03	630.75
Dn Invert (ft):	631.35	630.86	630.70	630.71
Max Capacity (cfs):	10.28	10.21	10.13	10.36
Max Vel (ft/s):	2.30	2.19	2.02	1.98
Max Depth (ft):	1.67	1.73	1.84	1.88



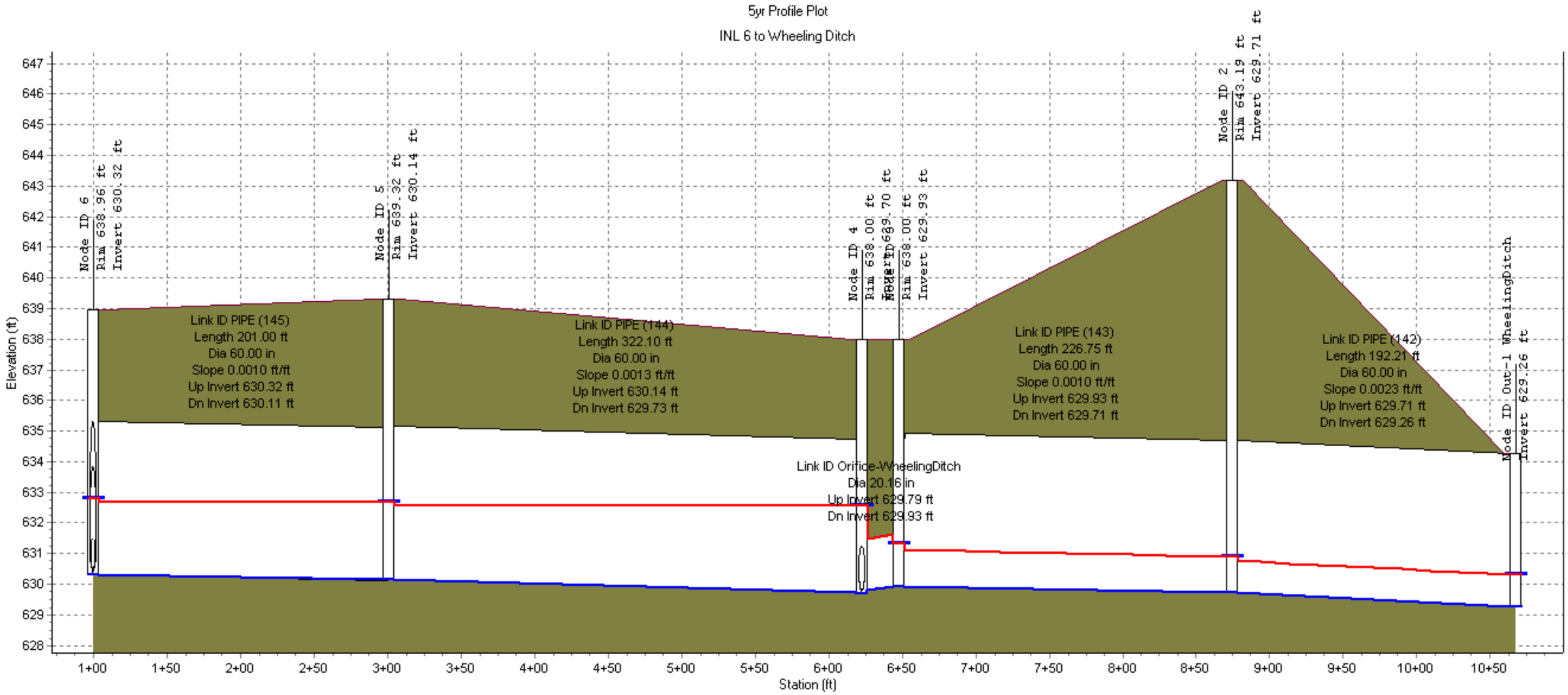
Node ID:	675	673	670	668	663	662
Rim (ft):	638.96	638.84	639.16	638.77	638.35	639.19
Invert (ft):	632.69	632.20	632.01	631.84	631.62	631.58
Min Pipe Cover (ft):						
Max HGL (ft):	633.80	633.76	633.71	633.60	633.41	633.21

Link ID:	PIPE (197)	PIPE (198)	PIPE (199)	PIPE (200)	PIPE (201)
Length (ft):	134.95	265.05	350.00	330.00	226.92
Dia (in):	36.00	36.00	42.00	42.00	42.00
Slope (ft/ft):	0.0008	0.0007	0.0006	0.0006	0.0007
Up Invert (ft):	632.31	632.20	632.01	631.84	631.62
Dn Invert (ft):	632.20	632.01	631.80	631.63	631.47
Max [illegible]		5.02	7.60	10.56	10.45
Max Vel (ft/s):	2.52	1.92	1.92	2.95	2.40
Max Depth (ft):	1.34	1.63	1.73	1.77	1.71



Node ID:	1027	1026	1025	1023	686	662
Rim (ft):	640.00	640.95	640.00	639.99	638.78	639.19
Invert (ft):	633.23	632.91	632.64	632.22	631.93	631.58
Min Pipe Cover (ft):						
Max HGL (ft):	633.32	633.32	633.32	633.32	633.32	633.32

Link ID:	PIPE (184)	PIPE (183)	PIPE (182)	PIPE (181)	PIPE (180)
Length (ft):	162.70	134.13	205.65	146.89	175.62
Dia (in):	24.00	24.00	24.00	24.00	24.00
Slope (ft/ft):	0.0020	0.0020	0.0020	0.0020	0.0020
Up Invert (ft):	633.23	632.91	632.64	632.22	631.93
Dn Invert (ft):	632.91	632.64	632.23	631.93	631.58
Max Q (cfs):	0.04	0.24	0.46	0.88	1.36
Max Vel (ft/s):	0.23	0.66	0.78	1.03	0.96
Max Depth (ft):	0.25	0.54	0.88	1.24	1.56

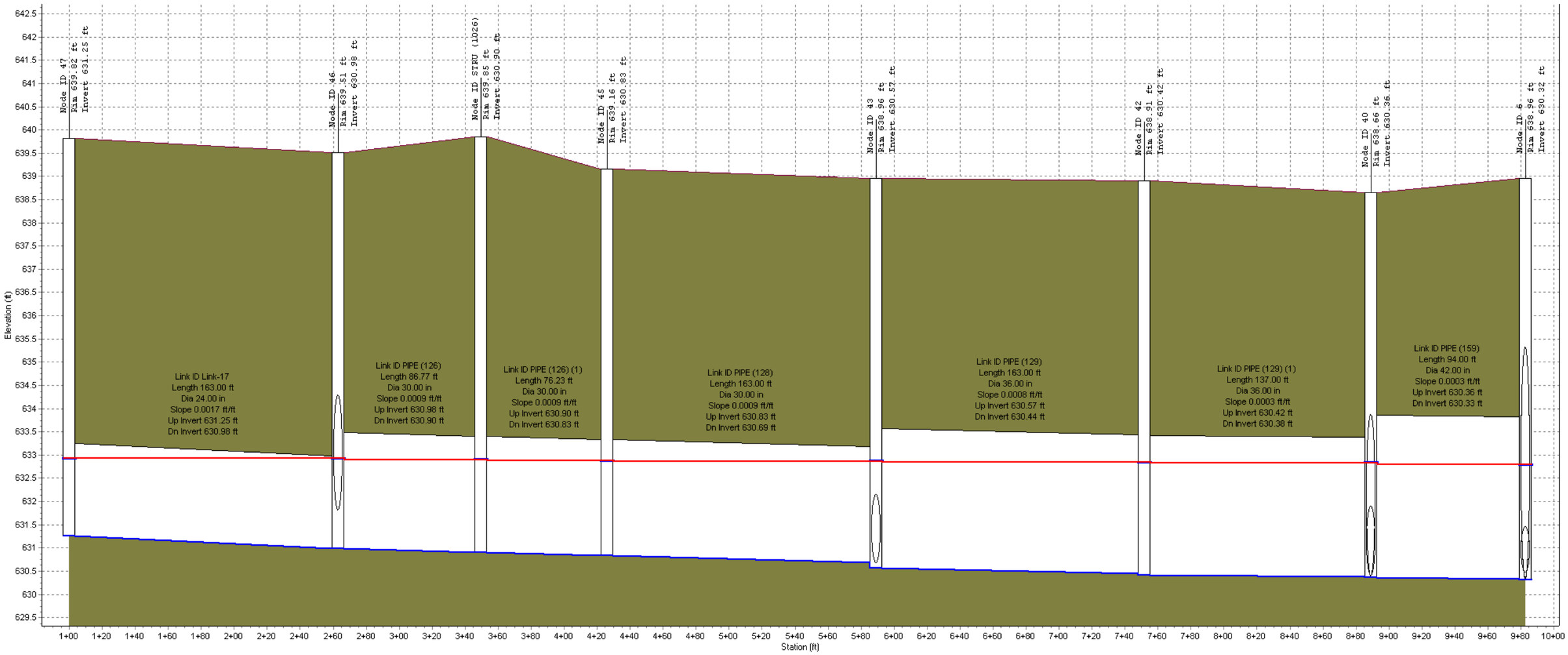


Node ID:	6	5	4	3	2	
Rim (ft):	638.96	639.32	638.00	638.00	643.19	
Invert (ft):	630.32	630.14	629.70	629.93	629.71	629.26
Min Pipe Cover (ft):				0.00		
Max HGL (ft):	632.79	632.67	632.56	631.32	630.89	630.31

Link ID:	PIPE (145)	PIPE (144)	Orifice-WheelingDitch	PIPE (143)	PIPE (142)
Length (ft):	201.00	322.10		226.75	192.21
Dia (in):	60.00	60.00	20.16	60.00	60.00
Slope (ft/ft):	0.0010	0.0013		0.0010	0.0023
Up Invert (ft):	630.32	630.14	629.79	629.93	629.71
Dn Invert (ft):	630.11	629.73	629.93	629.71	629.26
Max Q (cfs):	24.13	23.96	12.18	12.18	12.17
Max Vel (ft/s):	2.98	2.97	0.00	3.06	3.74
Max Depth (ft):	2.50	2.68	0.00	1.28	1.11

5yr Profile Plot

INL 47 to INL 6

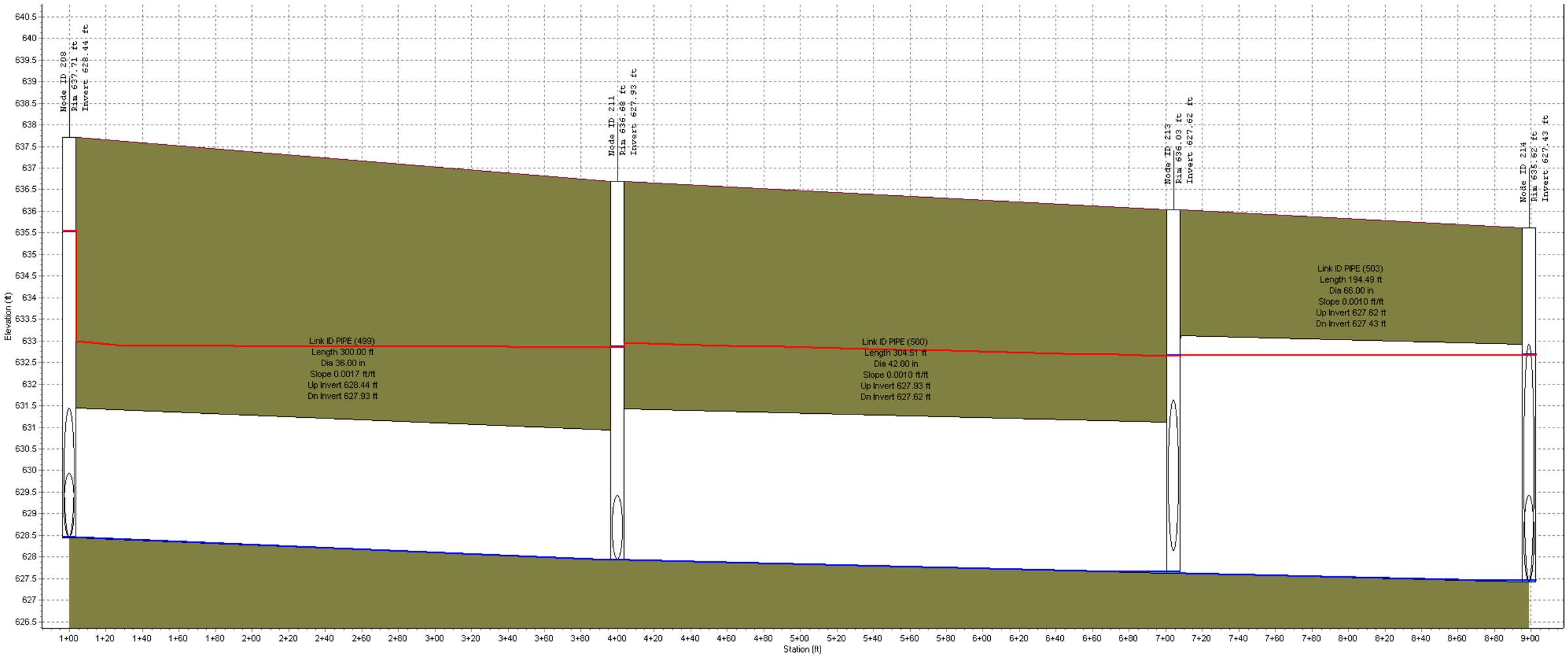


Node ID:	47	46	STRU (1026)	45	43	42	40	6
Rim (ft):	639.82	639.51	639.85	639.16	638.96	638.91	638.66	638.96
Invert (ft):	631.25	630.98	630.90	630.83	630.57	630.42	630.36	630.32
Min Pipe Cover (ft):			6.45					
Max HGL (ft):	632.93	632.93	632.91	632.88	632.87	632.84	632.83	632.79

Link ID:	Link-17	PIPE (126)	PIPE (126) (1)	PIPE (128)	PIPE (129)	PIPE (129) (1)	PIPE (159)
Length (ft):	163.00	86.77	76.23	163.00	163.00	137.00	94.00
Dia (in):	24.00	30.00	30.00	30.00	36.00	36.00	42.00
Slope (ft/ft):	0.0017	0.0009	0.0009	0.0009	0.0008	0.0003	0.0003
Up Invert (ft):	631.25	630.98	630.90	630.83	630.57	630.42	630.36
Dn Invert (ft):	630.98	630.90	630.83	630.69	630.44	630.38	630.33
Max Q (cfs):	0.55	6.11	6.03	6.00	7.16	6.69	14.65
Max Vel (ft/s):	0.65	1.83	1.74	1.58	1.52	1.37	2.21
Max Depth (ft):	1.81	1.96	2.02	2.10	2.35	2.43	2.46

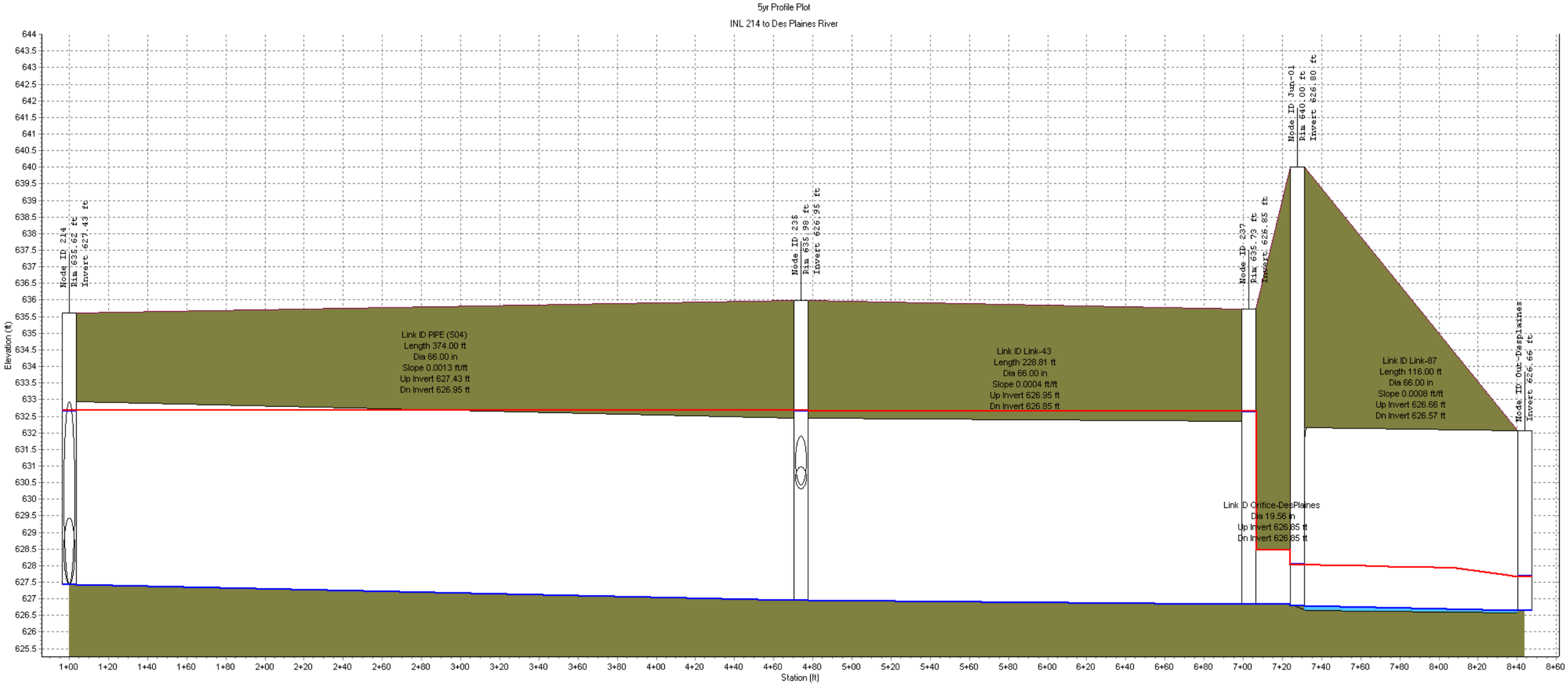
5yr Profile Plot

INL 208 to INL 214



Node ID:	208	211	213	214
Rim (ft):	637.71	636.68	636.03	635.62
Invert (ft):	628.44	627.93	627.62	627.43
Min Pipe Cover (ft):				
Max HGL (ft):	635.54	632.85	632.65	632.67

Link ID:	PIPE (499)	PIPE (500)	PIPE (503)
Length (ft):	300.00	304.51	194.49
Dia (in):	36.00	42.00	66.00
Slope (ft/ft):	0.0017	0.0010	0.0010
Up Invert (ft):	628.44	627.93	627.62
Dn Invert (ft):	627.93	627.62	627.43
Max Q (cfs):	13.42	13.67	25.87
Max Vel (ft/s):	1.90	1.42	2.33
Max Depth (ft):	3.00	3.50	5.12

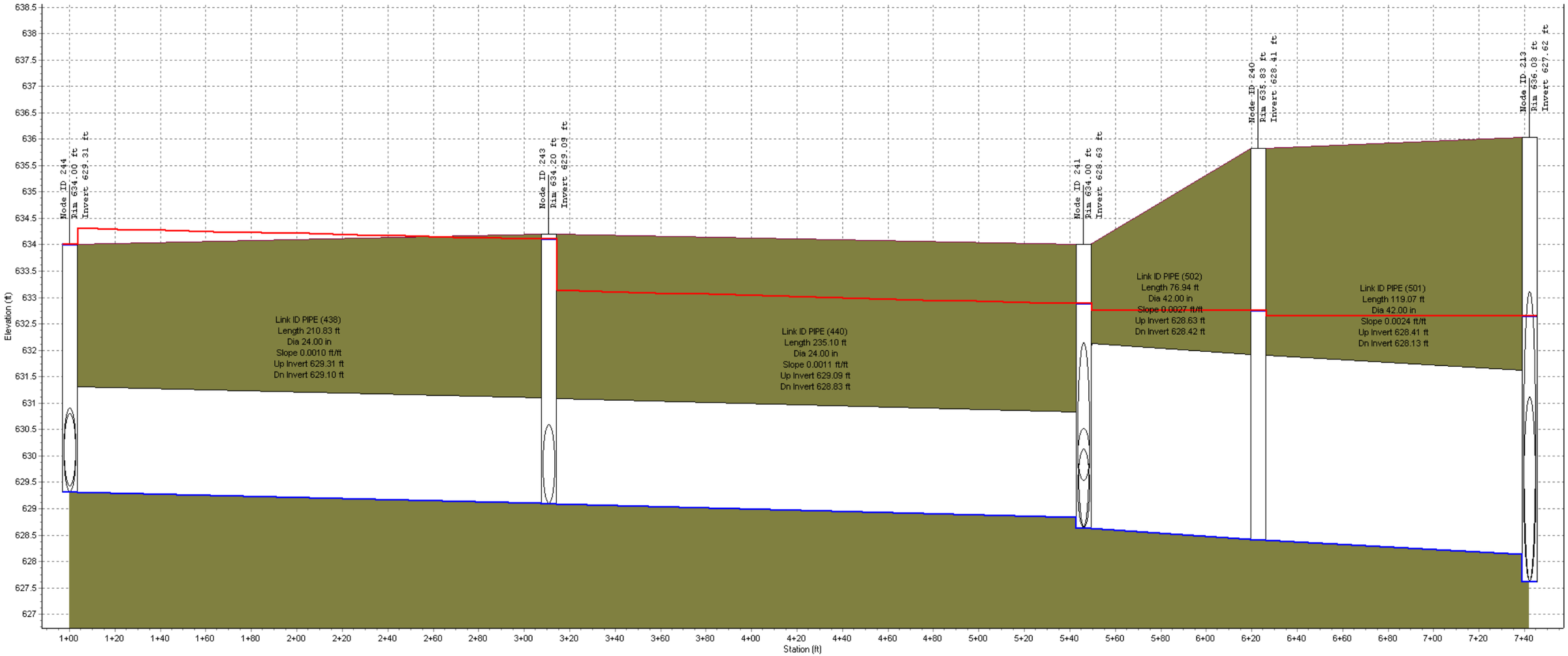


Node ID:	214	235	237	Jun-01	Out-Desplaines
Rim (ft):	635.62	635.98	635.73	640.00	
Invert (ft):	627.43	626.95	626.85	626.80	626.66
Min Pipe Cover (ft):				0.00	
Max HGL (ft):	632.67	632.67	632.64	628.03	627.67

Link ID:	PIPE (504)	Link-43	Orifice-DesPlaines	Link-87
Length (ft):	374.00	228.81		116.00
Dia (in):	66.00	66.00	19.56	66.00
Slope (ft/ft):	0.0013	0.0004		0.0008
Up Invert (ft):	627.43	626.95	626.85	626.66
Dn Invert (ft):	626.95	626.85	626.85	626.57
Max Q (cfs):	24.73	22.47	22.15	22.13
Max Vel (ft/s):	3.18	2.85	0.00	3.19
Max Depth (ft):	5.37	5.50	0.00	1.12

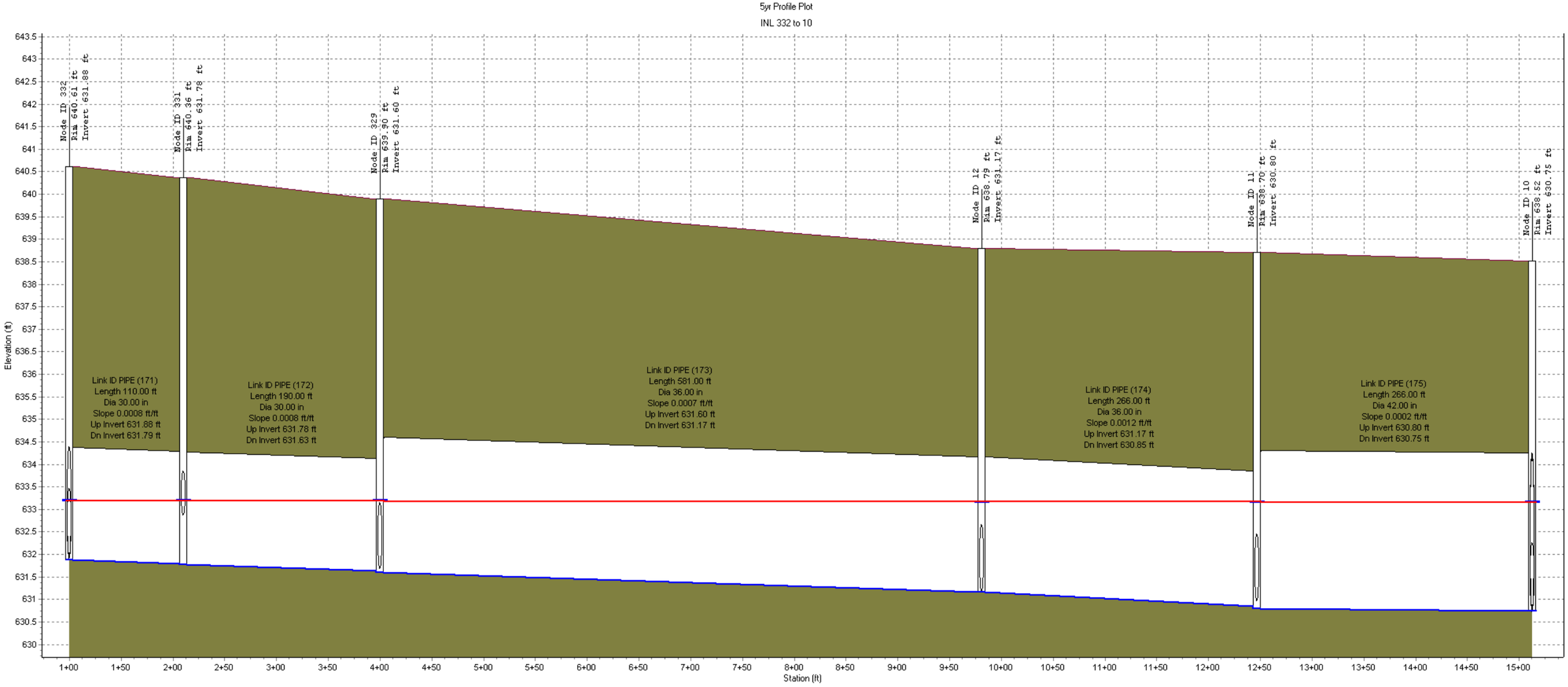
5yr Profile Plot

INL 244 to 213



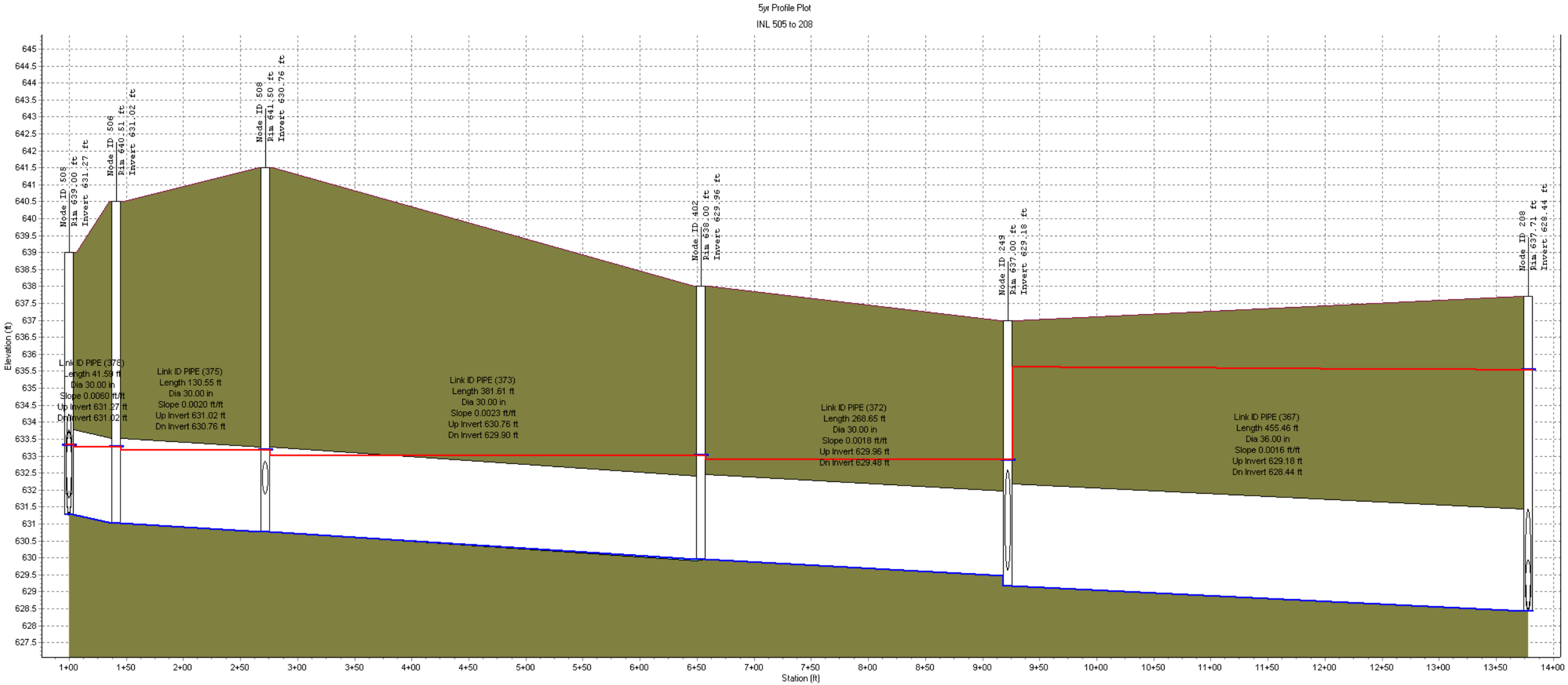
Node ID:	244	243	241	240	213
Rim (ft):	634.00	634.20	634.00	635.83	636.03
Invert (ft):	629.31	629.09	628.63	628.41	627.62
Min Pipe Cover (ft):					
Max HGL (ft):	634.00	634.11	632.89	632.75	632.65

Link ID:	PIPE (438)	PIPE (440)	PIPE (502)	PIPE (501)
Length (ft):	210.83	235.10	76.94	119.07
Dia (in):	24.00	24.00	42.00	42.00
Slope (ft/ft):	0.0010	0.0011	0.0027	0.0024
Up Invert (ft):	629.31	629.09	628.63	628.41
Dn Invert (ft):	629.10	628.83	628.42	628.13
Max Q (cfs):	8.06	10.18	25.27	23.89
Max Vel (ft/s):	2.56	3.24	3.81	4.48
Max Depth (ft):	2.00	2.00	3.50	3.50



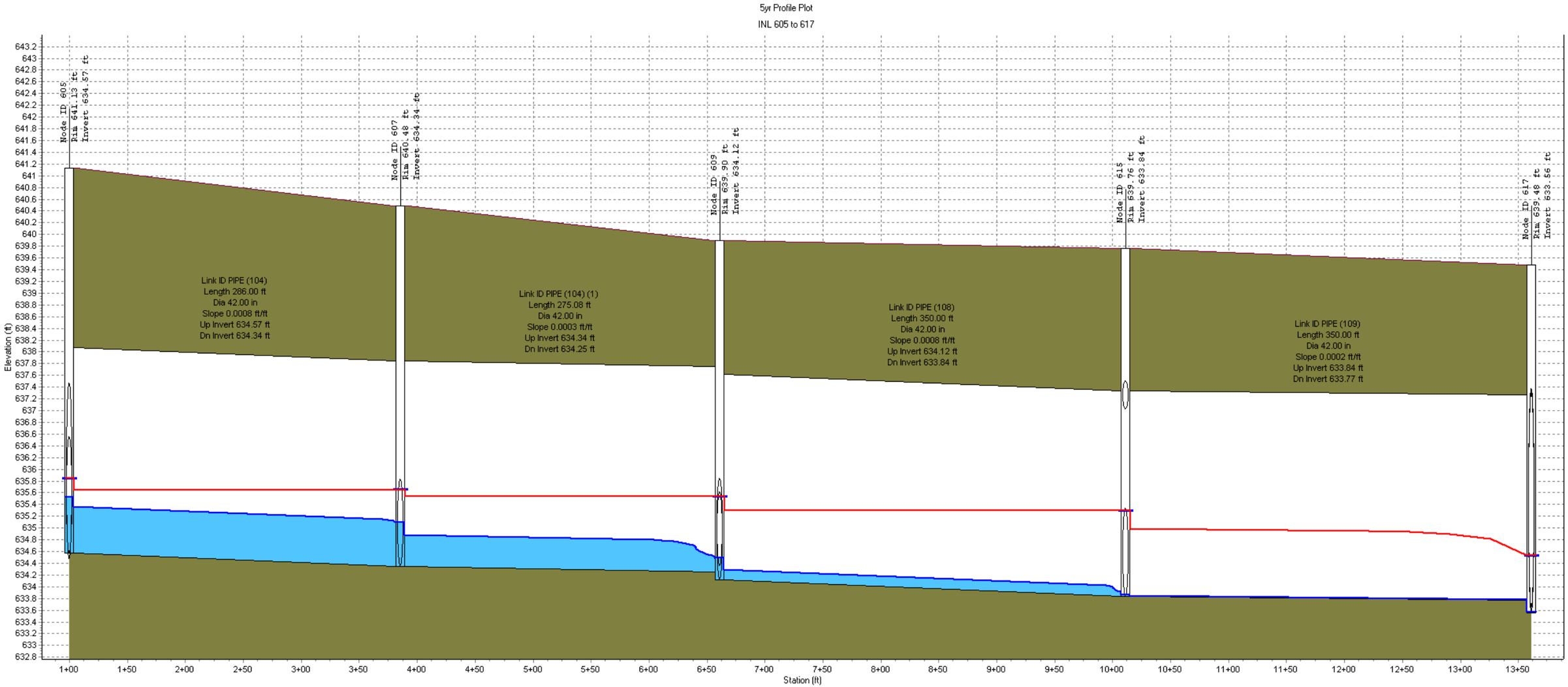
Node ID:	332	331	329	12	11	10
Rim (ft):	640.61	640.36	639.90	638.79	638.70	638.52
Invert (ft):	631.88	631.78	631.60	631.17	630.80	630.75
Min Pipe Cover (ft):						
Max HGL (ft):	633.19	633.19	633.19	633.17	633.17	633.16

Link ID:	PIPE (171)	PIPE (172)	PIPE (173)	PIPE (174)	PIPE (175)
Length (ft):	110.00	190.00	581.00	266.00	266.00
Dia (in):	30.00	30.00	36.00	36.00	42.00
Slope (ft/ft):	0.0008	0.0008	0.0007	0.0012	0.0002
Up Invert (ft):	631.88	631.78	631.60	631.17	630.80
Dn Invert (ft):	631.79	631.63	631.17	630.85	630.75
Max Q (cfs):	1.15	1.14	2.28	2.99	4.57
Max Vel (ft/s):	1.21	0.99	1.10	0.95	1.01
Max Depth (ft):	1.36	1.48	1.79	2.16	2.39



Node ID:	505	506	508	402	249	208
Rim (ft):	639.00	640.51	641.50	638.00	637.00	637.71
Invert (ft):	631.27	631.02	630.76	629.96	629.18	628.44
Min Pipe Cover (ft):						
Max HGL (ft):	633.33	633.27	633.18	633.02	632.89	635.54

Link ID:	PIPE (378)	PIPE (375)	PIPE (373)	PIPE (372)	PIPE (367)
Length (ft):	41.59	130.55	381.61	268.65	455.46
Dia (in):	30.00	30.00	30.00	30.00	36.00
Slope (ft/ft):	0.0060	0.0020	0.0023	0.0018	0.0016
Up Invert (ft):	631.27	631.02	630.76	629.96	629.18
Dn Invert (ft):	631.02	630.76	629.90	629.48	628.44
Max Q (cfs):	13.07	13.01	12.71	11.58	14.42
Max Vel (ft/s):	3.40	3.53	3.79	4.03	2.65
Max Depth (ft):	2.16	2.34	2.46	2.50	3.00

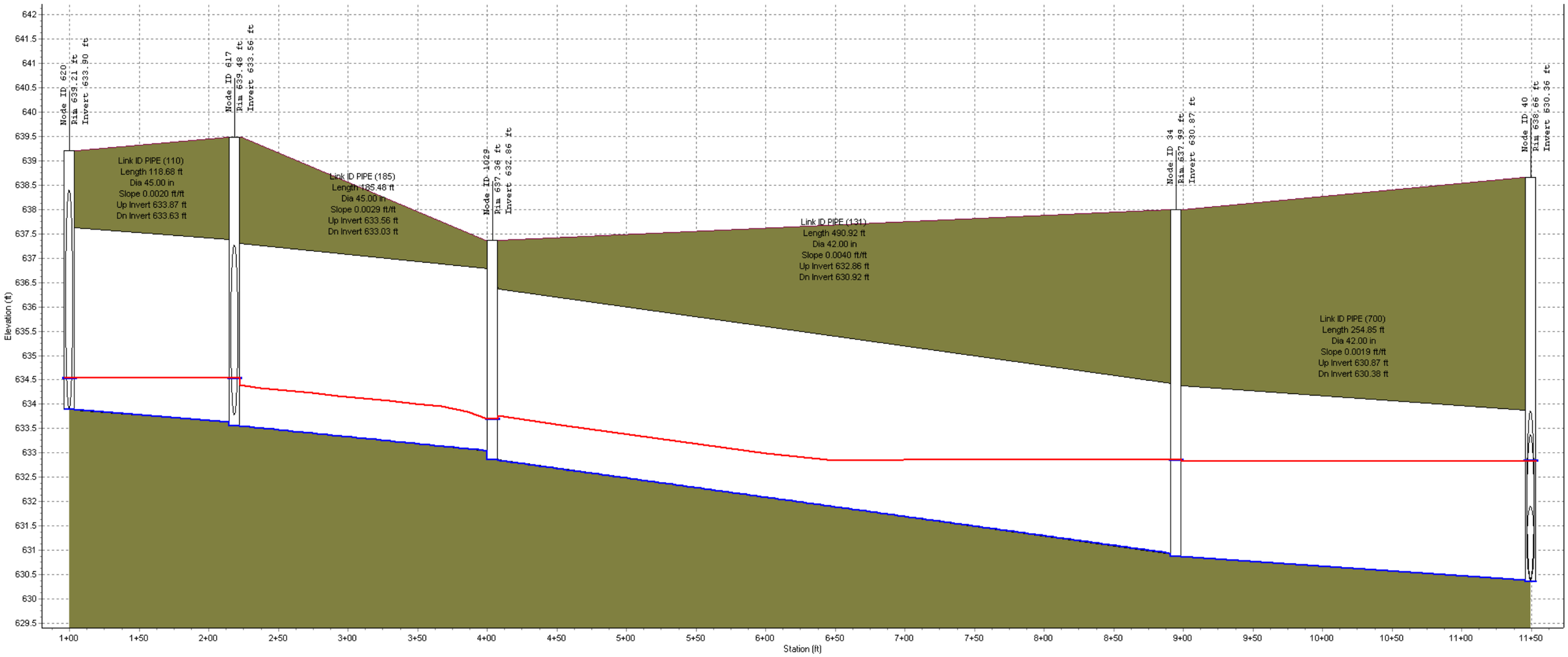


Node ID:	605	607	609	615	617
Rim (ft):	641.13	640.48	639.90	639.76	639.48
Invert (ft):	634.57	634.34	634.12	633.84	633.56
Min Pipe Cover (ft):					
Max HGL (ft):	635.85	635.65	635.54	635.29	634.53

Link ID:	PIPE (104)	PIPE (104) (1)	PIPE (108)	PIPE (109)
Length (ft):	286.00	275.08	350.00	350.00
Dia (in):	42.00	42.00	42.00	42.00
Slope (ft/ft):	0.0008	0.0003	0.0008	0.0002
Up Invert (ft):	634.57	634.34	634.12	633.84
Dn Invert (ft):	634.34	634.25	633.84	633.77
Max Q (cfs):	6.65	4.84	8.16	7.99
Max Vel (ft/s):	3.70	2.16	2.91	2.89
Max Depth (ft):	1.29	1.30	1.43	1.15

5yr Profile Plot

INL 620 to 40

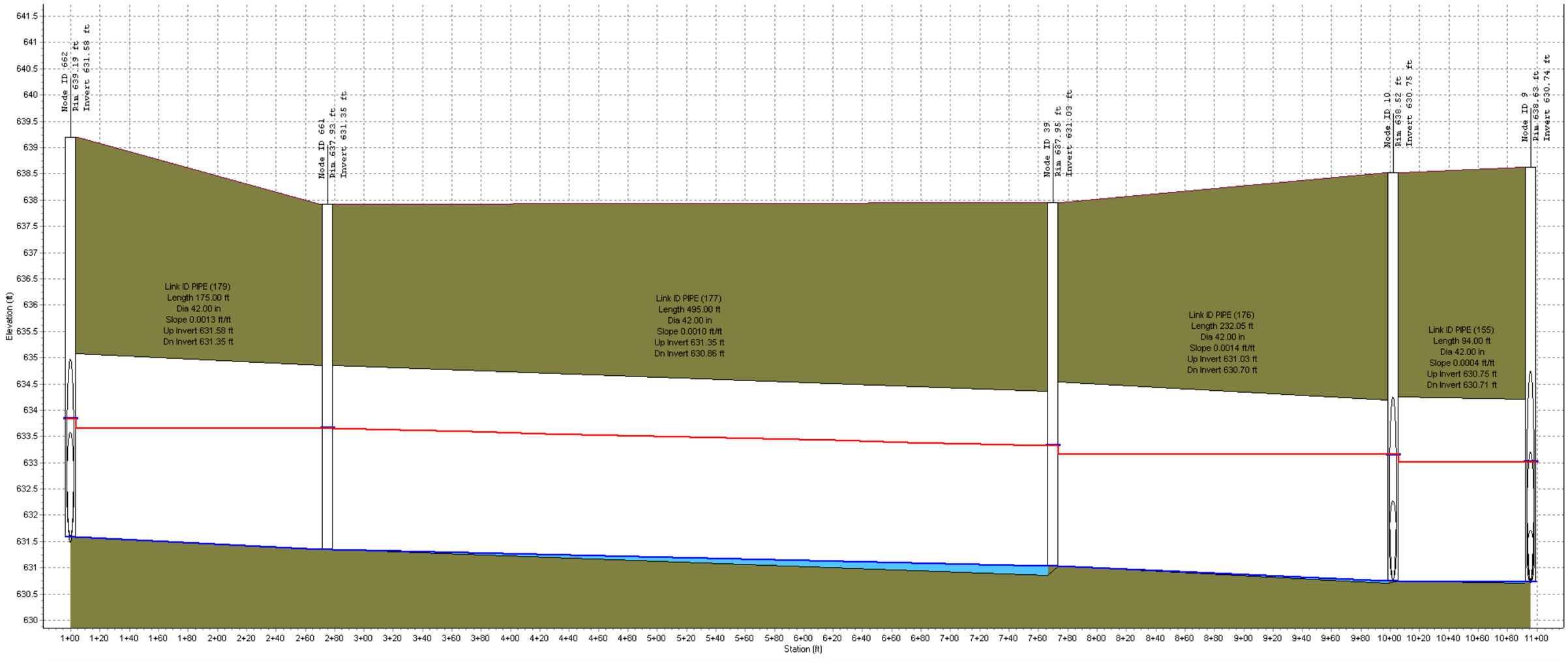


Node ID:	620	617	1029		34	40
Rim (ft):	639.21	639.48	637.36		637.99	638.66
Invert (ft):	633.90	633.56	632.86		630.87	630.36
Min Pipe Cover (ft):						
Max HGL (ft):	634.53	634.53	633.69		632.85	632.83

Link ID:	PIPE (110)	PIPE (185)	PIPE (131)	PIPE (700)
Length (ft):	118.68	185.48	490.92	254.85
Dia (in):	45.00	45.00	42.00	42.00
Slope (ft/ft):	0.0020	0.0029	0.0040	0.0019
Up Invert (ft):	633.87	633.56	632.86	630.87
Dn Invert (ft):	633.63	633.03	630.92	630.38
Max Q (cfs):	1.09	7.93	7.92	8.08
Max Vel (ft/s):	1.32	3.88	3.48	2.35
Max Depth (ft):	0.77	0.90	1.37	2.22

5yr Profile Plot

INL 662 to 9

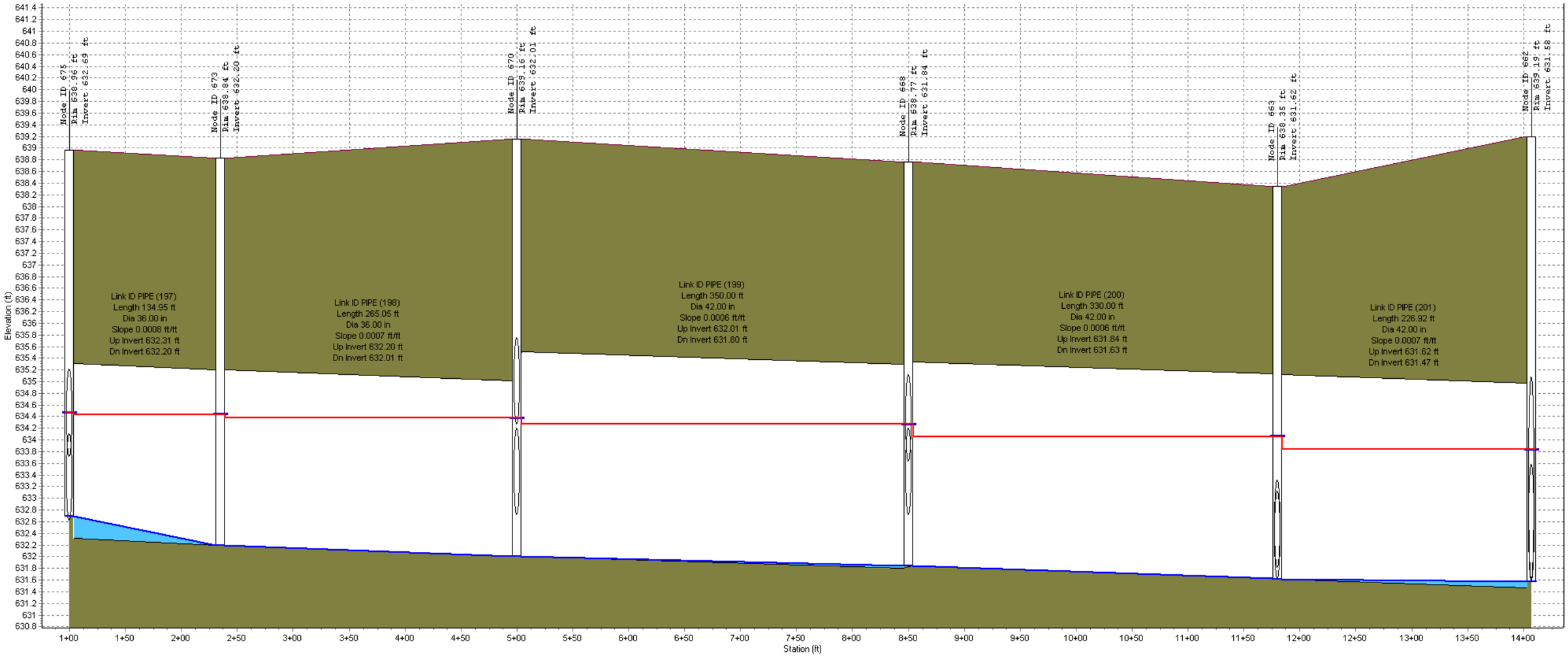


Node ID:	662	661	39	10	9
Rim (ft):	639.19	637.93	637.95	638.52	638.63
Invert (ft):	631.58	631.35	631.03	630.75	630.74
Min Pipe Cover (ft):					
Max HGL (ft):	633.84	633.66	633.33	633.16	633.02

Link ID:	PIPE (179)	PIPE (177)	PIPE (176)	PIPE (155)
Length (ft):	175.00	495.00	232.05	94.00
Dia (in):	42.00	42.00	42.00	42.00
Slope (ft/ft):	0.0013	0.0010	0.0014	0.0004
Up Invert (ft):	631.58	631.35	631.03	630.75
Dn Invert (ft):	631.35	630.86	630.70	630.71
Max Q (cfs):	17.38	17.27	17.12	16.64
Max Vel (ft/s):	2.68	2.68	2.64	2.43
Max Depth (ft):	2.28	2.30	2.35	2.34

5yr Profile Plot

INL 675 to 662

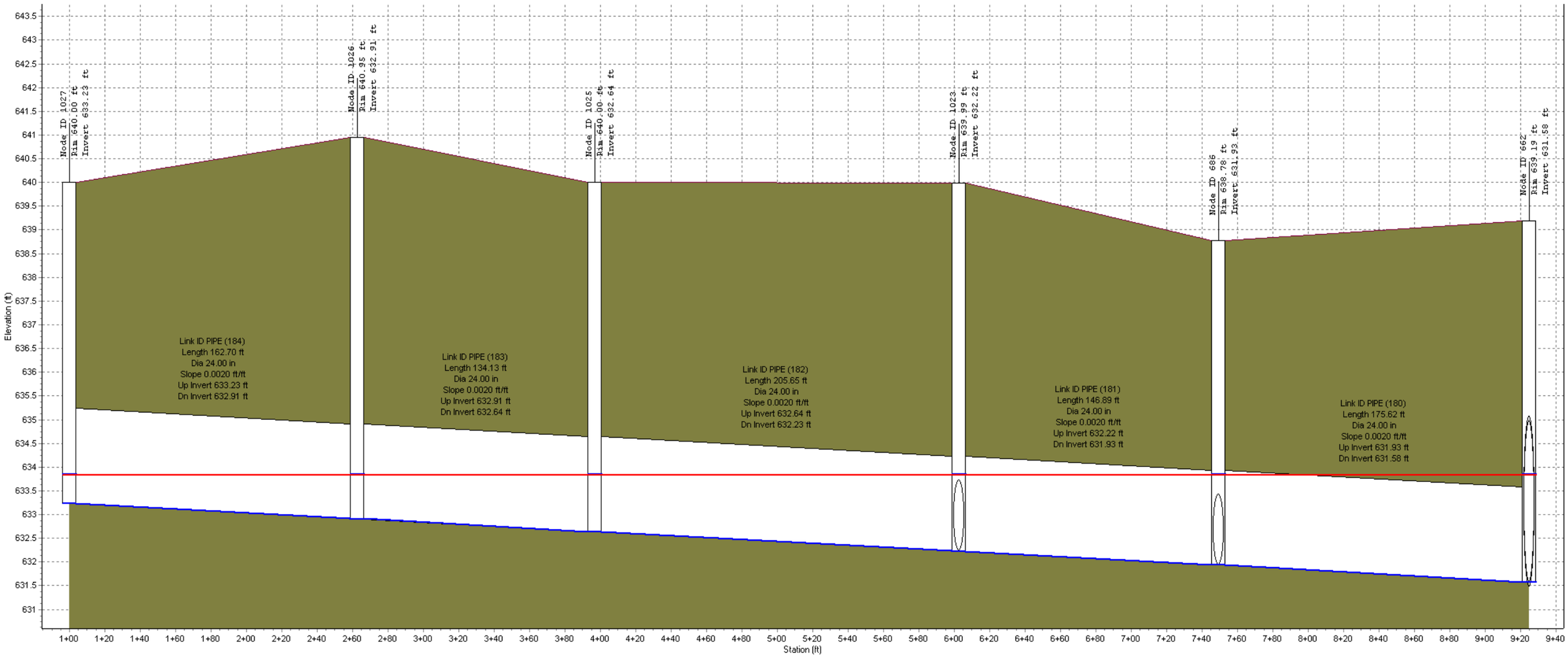


Node ID:	675	673	670	668	663	662
Rim (ft):	638.96	638.84	639.16	638.77	638.35	639.19
Invert (ft):	632.69	632.20	632.01	631.84	631.62	631.58
Min Pipe Cover (ft):						
Max HGL (ft):	634.47	634.44	634.38	634.27	634.06	633.84

Link ID:	PIPE (197)	PIPE (198)	PIPE (199)	PIPE (200)	PIPE (201)
Length (ft):	134.95	265.05	350.00	330.00	226.92
Dia (in):	36.00	36.00	42.00	42.00	42.00
Slope (ft/ft):	0.0008	0.0007	0.0006	0.0006	0.0007
Up Invert (ft):	632.31	632.20	632.01	631.84	631.62
Dn Invert (ft):	632.20	632.01	631.80	631.63	631.47
Max Q (cfs):	8.68	8.30	12.85	17.73	17.62
Max Vel (ft/s):	2.74	2.19	2.18	3.44	2.81
Max Depth (ft):	2.01	2.30	2.40	2.43	2.35

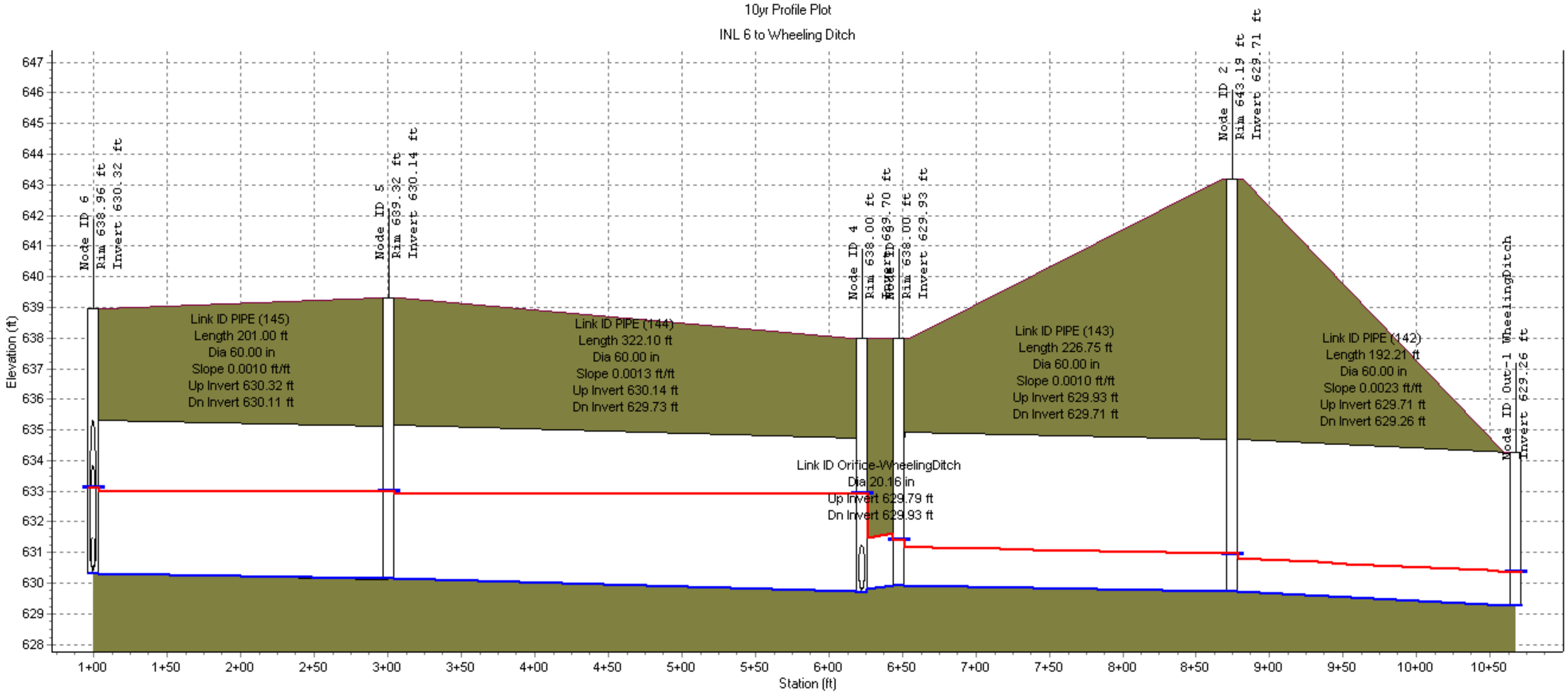
5yr Profile Plot

INL1027 to INL 662



Node ID:	1027	1026	1025	1023	686	662
Rim (ft):	640.00	640.95	640.00	639.99	638.78	639.19
Invert (ft):	633.23	632.91	632.64	632.22	631.93	631.58
Min Pipe Cover (ft):						
Max HGL (ft):	633.84	633.84	633.84	633.84	633.84	633.84

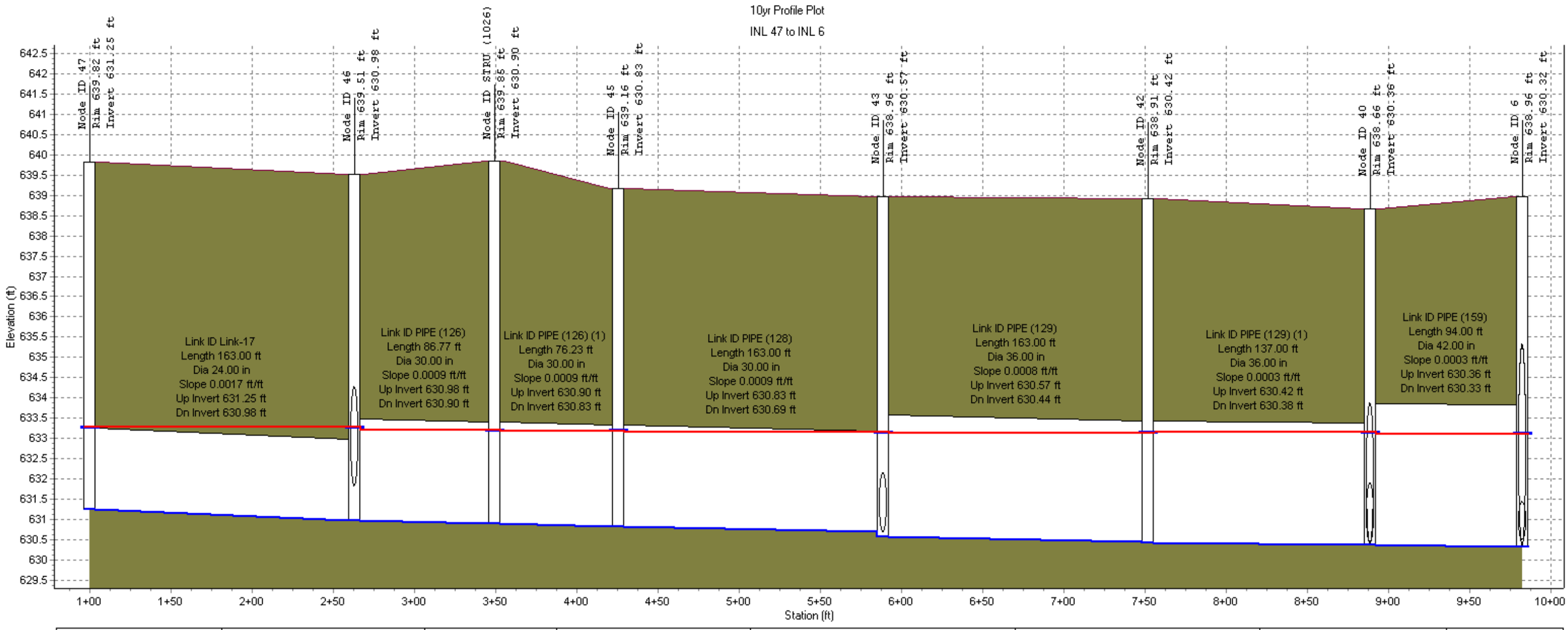
Link ID:	PIPE (184)	PIPE (183)	PIPE (182)	PIPE (181)	PIPE (180)
Length (ft):	162.70	134.13	205.65	146.89	175.62
Dia (in):	24.00	24.00	24.00	24.00	24.00
Slope (ft/ft):	0.0020	0.0020	0.0020	0.0020	0.0020
Up Invert (ft):	633.23	632.91	632.64	632.22	631.93
Dn Invert (ft):	632.91	632.64	632.23	631.93	631.58
Max Q (cfs):	0.25	0.54	0.96	1.50	2.17
Max Vel (ft/s):	0.64	1.00	1.08	1.43	1.19
Max Depth (ft):	0.77	1.06	1.40	1.76	1.95



Node ID:	6	5	4	3	2	
Rim (ft):	638.96	639.32	638.00	638.00	643.19	
Invert (ft):	630.32	630.14	629.70	629.93	629.71	629.26
Min Pipe Cover (ft):				0.00		
Max HGL (ft):	633.11	633.00	632.91	631.40	630.95	630.36

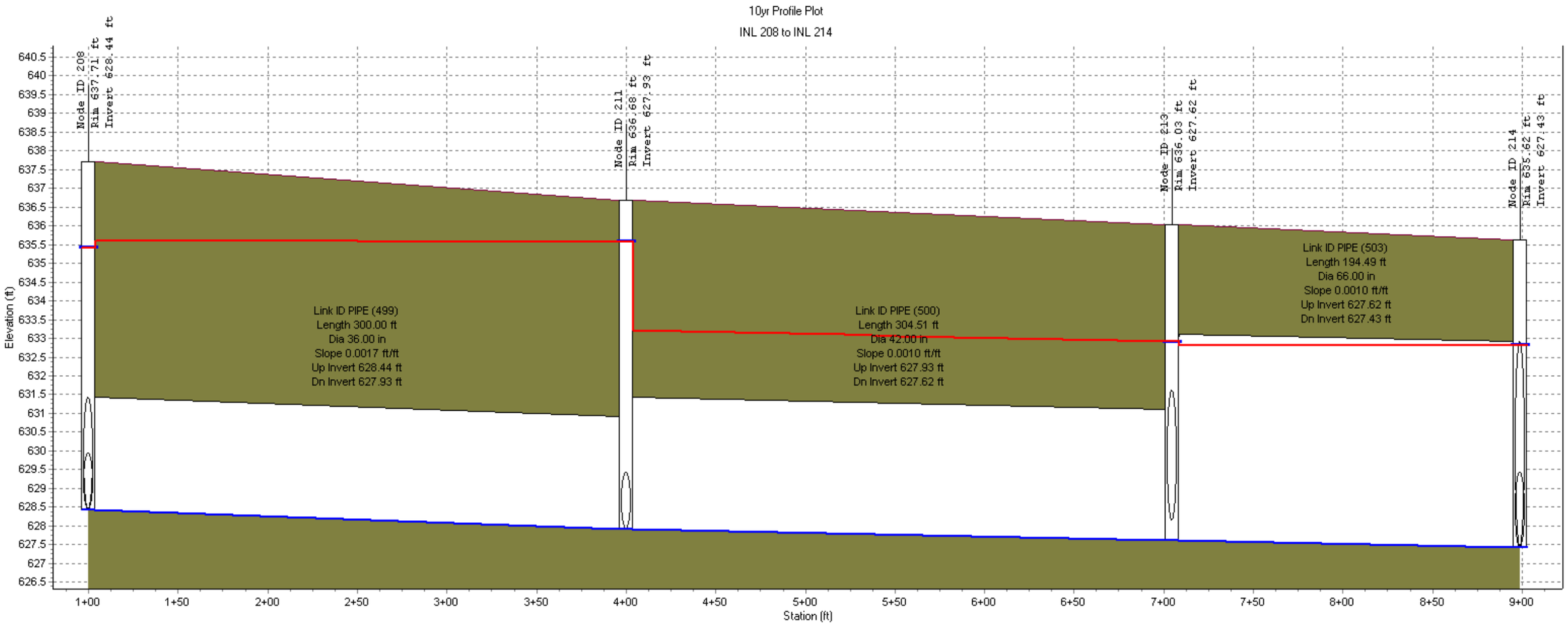
Link ID:	PIPE (145)	PIPE (144)	Orifice-WheelingDitch	PIPE (143)	PIPE (142)
Length (ft):	201.00	322.10		226.75	192.21
Dia (in):	60.00	60.00	20.16	60.00	60.00
Slope (ft/ft):	0.0010	0.0013		0.0010	0.0023
Up Invert (ft):	630.32	630.14	629.79	629.93	629.71
Dn Invert (ft):	630.11	629.73	629.93	629.71	629.26
Max Q (cfs):	26.01	25.78	13.48	13.48	13.47
Max Vel (ft/s):	3.13	3.07	0.00	3.14	3.84
Max Depth (ft):	2.82	3.02	0.00	1.35	1.17

Autodesk Storm and Sanitary Analysis



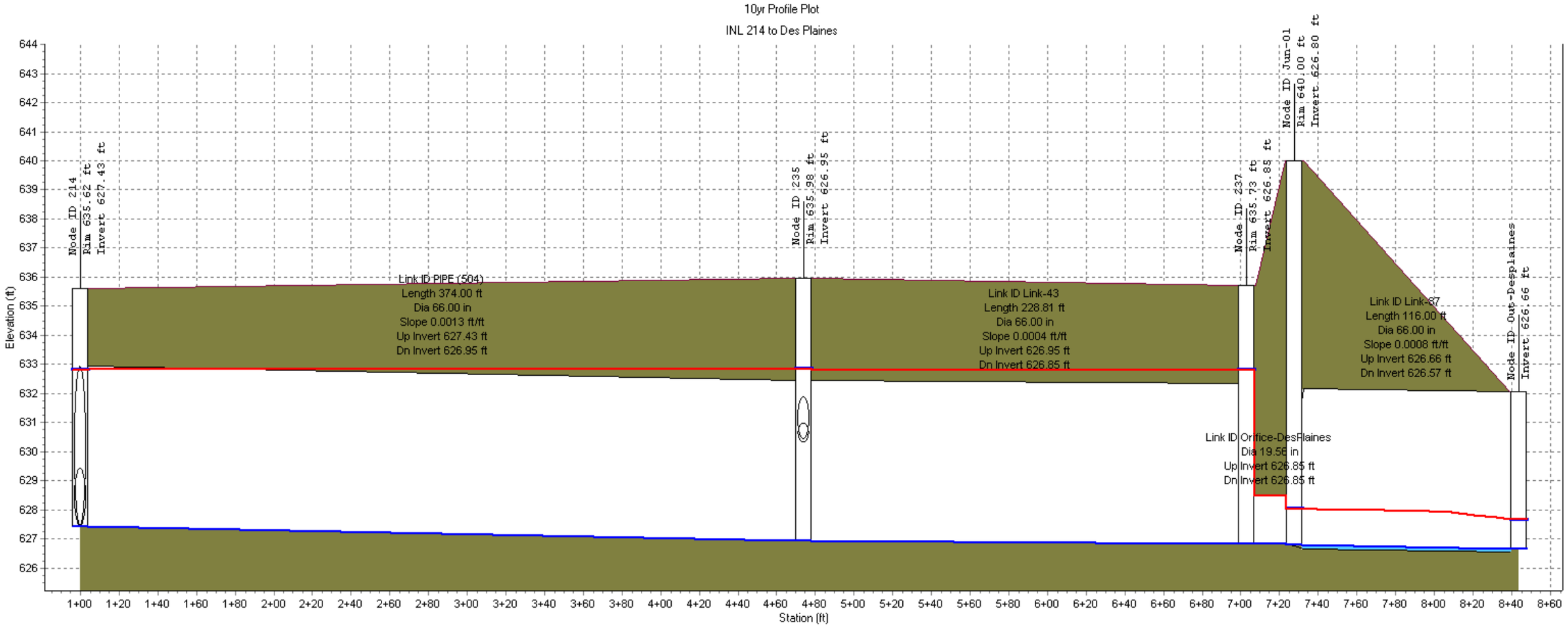
Node ID:	47	46	STRU (1026)	45	43	42	40	6
Rim (ft):	639.82	639.51	639.85	639.16	638.96	638.91	638.66	638.96
Invert (ft):	631.25	630.98	630.90	630.83	630.57	630.42	630.36	630.32
Min Pipe Cover (ft):			6.45					
Max HGL (ft):	633.27	633.27	633.24	633.18	633.14	633.14	633.14	633.11

Link ID:	Link-17	PIPE (126)	PIPE (126) (1)	PIPE (128)	PIPE (129)	PIPE (129) (1)	PIPE (159)
Length (ft):	163.00	86.77	76.23	163.00	163.00	137.00	94.00
Dia (in):	24.00	30.00	30.00	30.00	36.00	36.00	42.00
Slope (ft/ft):	0.0017	0.0009	0.0009	0.0009	0.0008	0.0003	0.0003
Up Invert (ft):	631.25	630.98	630.90	630.83	630.57	630.42	630.36
Dn Invert (ft):	630.98	630.90	630.83	630.69	630.44	630.38	630.33
Max Q (cfs):	0.69	9.43	9.44	9.44	10.14	10.06	15.22
Max Vel (ft/s):	0.79	2.12	2.07	2.05	1.83	1.67	2.31
Max Depth (ft):	2.00	2.28	2.33	2.40	2.64	2.73	2.78



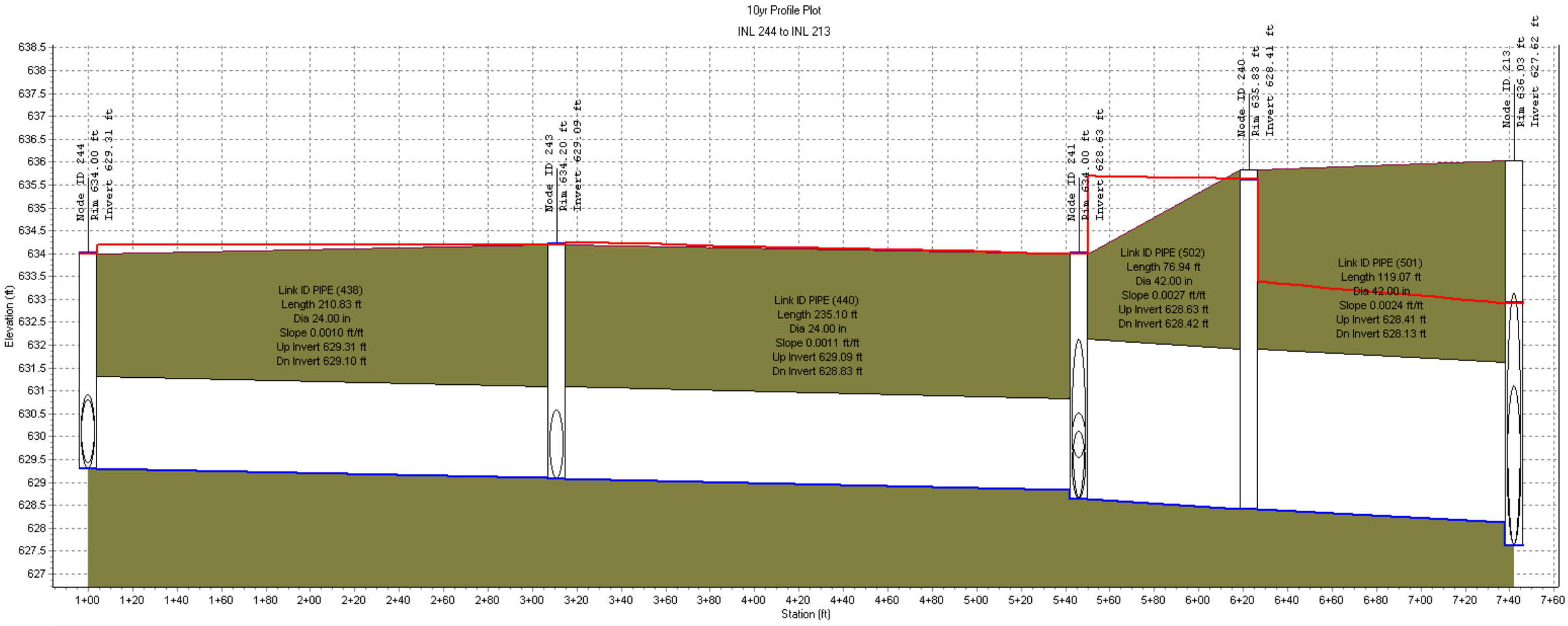
Node ID:	208	211	213	214
Rim (ft):	637.71	636.68	636.03	635.62
Invert (ft):	628.44	627.93	627.62	627.43
Min Pipe Cover (ft):				
Max HGL (ft):	635.41	635.57	632.91	632.81

Link ID:	PIPE (499)	PIPE (500)	PIPE (503)
Length (ft):	300.00	304.51	194.49
Dia (in):	36.00	42.00	66.00
Slope (ft/ft):	0.0017	0.0010	0.0010
Up Invert (ft):	628.44	627.93	627.62
Dn Invert (ft):	627.93	627.62	627.43
Max Q (cfs):	14.52	12.22	35.11
Max Vel (ft/s):	2.05	1.27	2.39
Max Depth (ft):	3.00	3.50	5.30



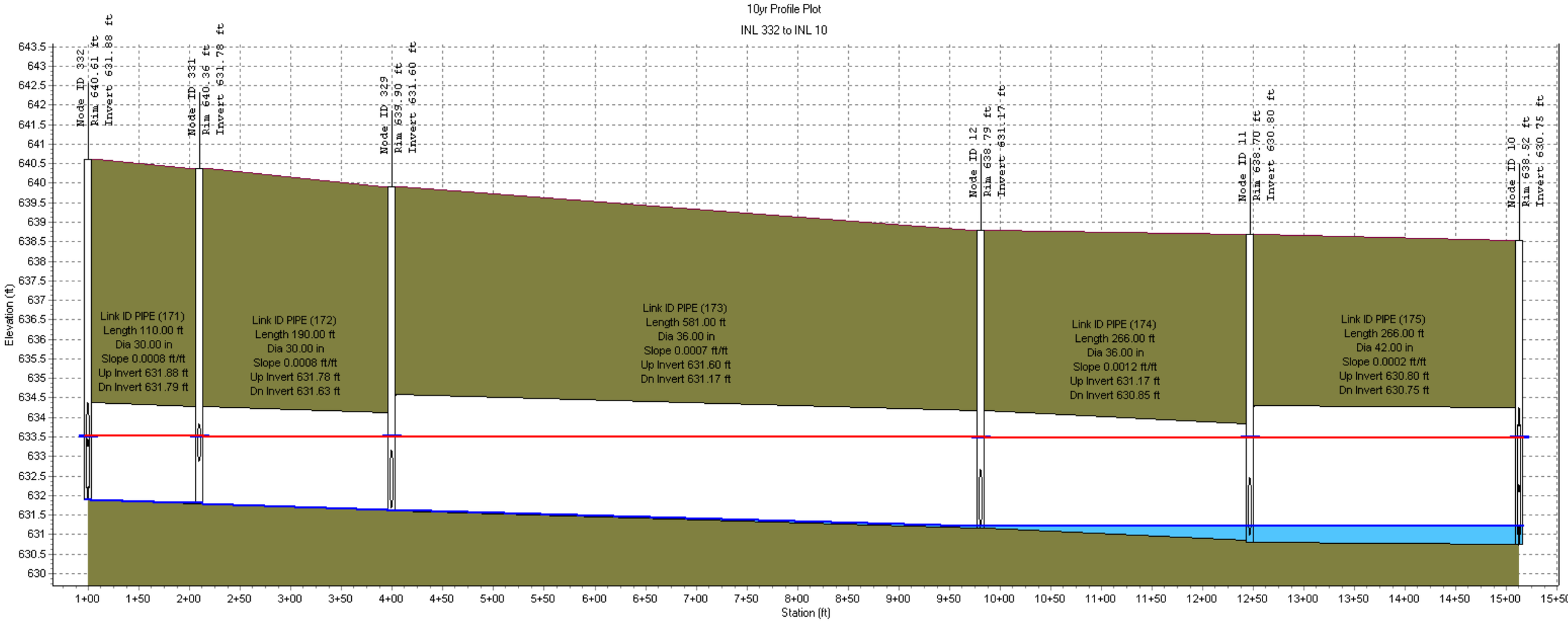
Node ID:	214	235	237	Jun-01	Out-Desplaines
Rim (ft):	635.62	635.98	635.73	640.00	
Invert (ft):	627.43	626.95	626.85	626.80	626.66
Min Pipe Cover (ft):				0.00	
Max HGL (ft):	632.81	632.84	632.80	628.05	627.68

Link ID:	PIPE (504)	Link-43	Orifice-DesPlaines	Link-87
Length (ft):	374.00	228.81		116.00
Dia (in):	66.00	66.00	19.56	66.00
Slope (ft/ft):	0.0013	0.0004		0.0008
Up Invert (ft):	627.43	626.95	626.85	626.66
Dn Invert (ft):	626.95	626.85	626.85	626.57
Max Q (cfs):	26.94	23.52	22.78	22.74
Max Vel (ft/s):	3.18	3.01	0.00	3.22
Max Depth (ft):	5.44	5.50	0.00	1.13



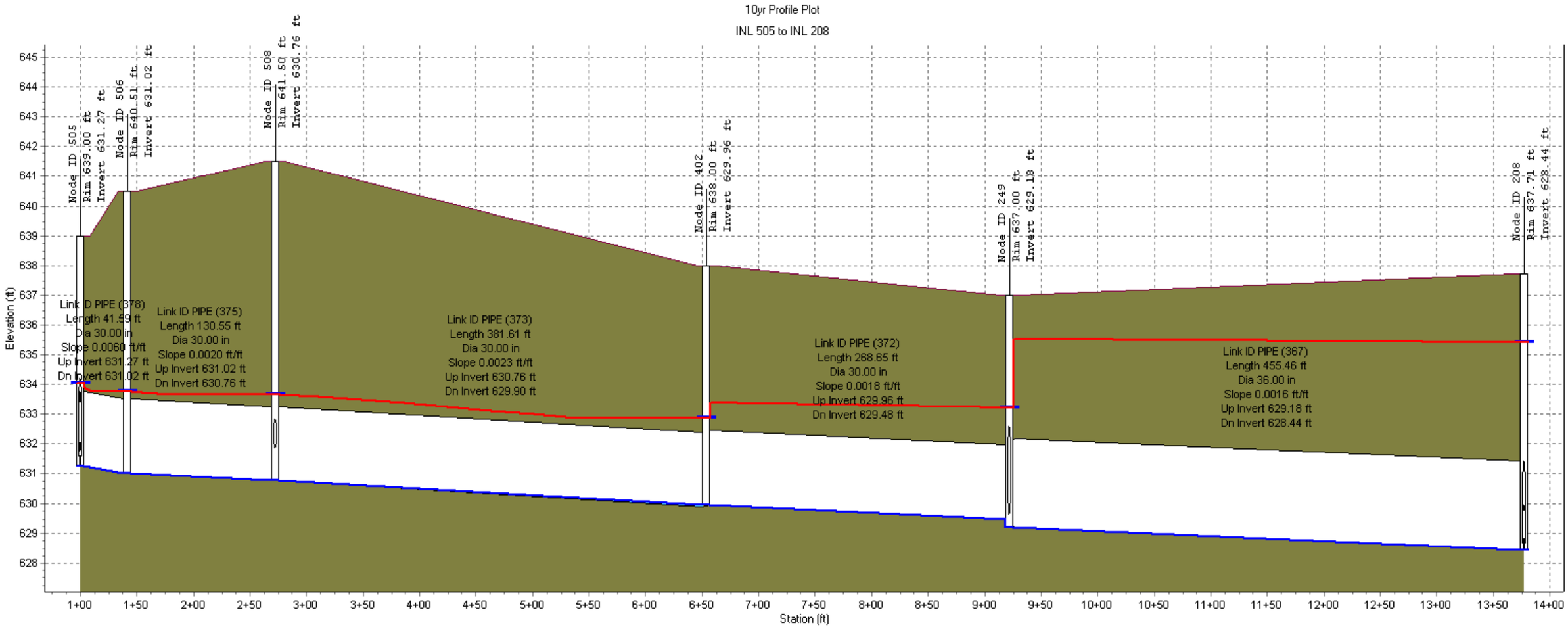
Node ID:	244	243	241	240	213
Rim (ft):	634.00	634.20	634.00	635.83	636.03
Invert (ft):	629.31	629.09	628.63	628.41	627.62
Min Pipe Cover (ft):					
Max HGL (ft):	634.00	634.20	634.00	635.63	632.91

Link ID:	PIPE (438)	PIPE (440)	PIPE (502)	PIPE (501)
Length (ft):	210.83	235.10	76.94	119.07
Dia (in):	24.00	24.00	42.00	42.00
Slope (ft/ft):	0.0010	0.0011	0.0027	0.0024
Up Invert (ft):	629.31	629.09	628.63	628.41
Dn Invert (ft):	629.10	628.83	628.42	628.13
Max Q (cfs):	8.74	11.96	32.32	30.27
Max Vel (ft/s):	2.78	3.81	4.01	4.72
Max Depth (ft):	2.00	2.00	3.50	3.50



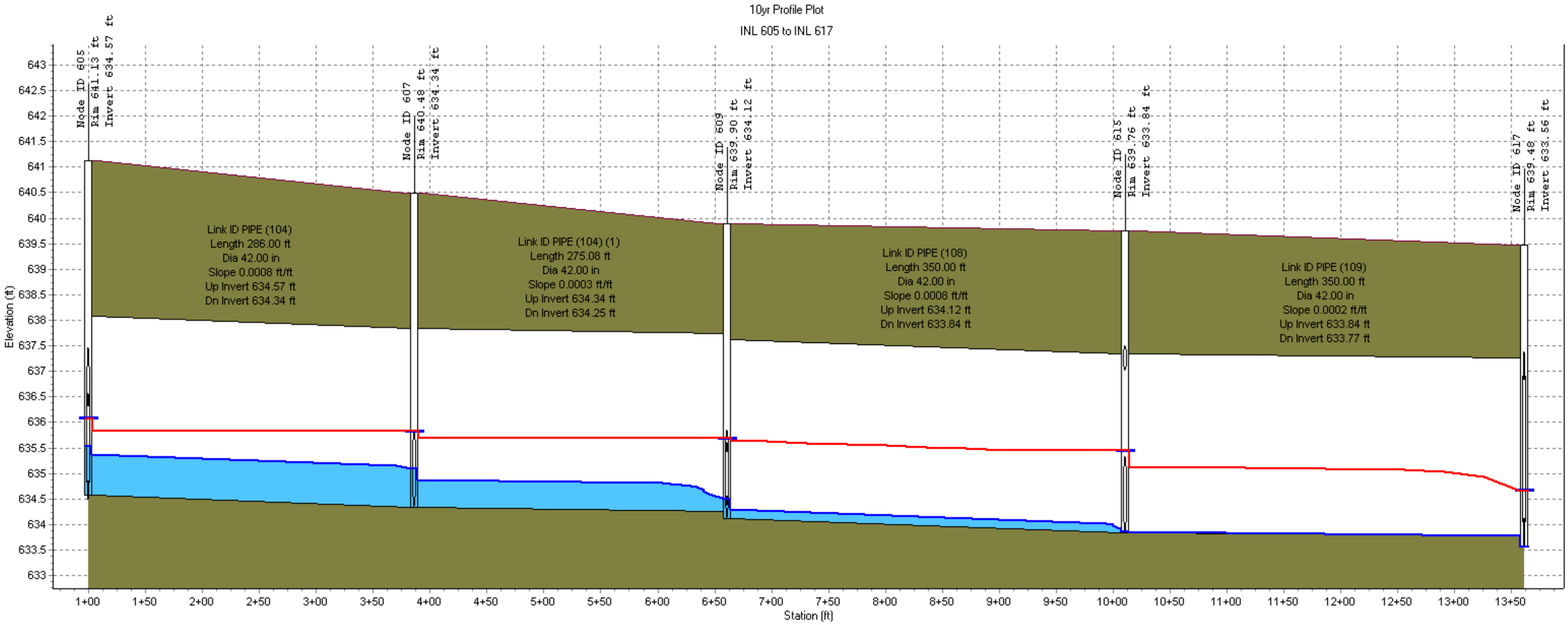
Node ID:	332	331	329	12	11	10
Rim (ft):	640.61	640.36	639.90	638.79	638.70	638.52
Invert (ft):	631.88	631.78	631.60	631.17	630.80	630.75
Min Pipe Cover (ft):						
Max HGL (ft):	633.52	633.52	633.51	633.49	633.49	633.48

Link ID:	PIPE (171)	PIPE (172)	PIPE (173)	PIPE (174)	PIPE (175)
Length (ft):	110.00	190.00	581.00	266.00	266.00
Dia (in):	30.00	30.00	36.00	36.00	42.00
Slope (ft/ft):	0.0008	0.0008	0.0007	0.0012	0.0002
Up Invert (ft):	631.88	631.78	631.60	631.17	630.80
Dn Invert (ft):	631.79	631.63	631.17	630.85	630.75
Max Q (cfs):	1.68	1.67	3.33	4.21	6.27
Max Vel (ft/s):	1.30	1.02	1.09	0.96	1.05
Max Depth (ft):	1.69	1.81	2.12	2.48	2.71



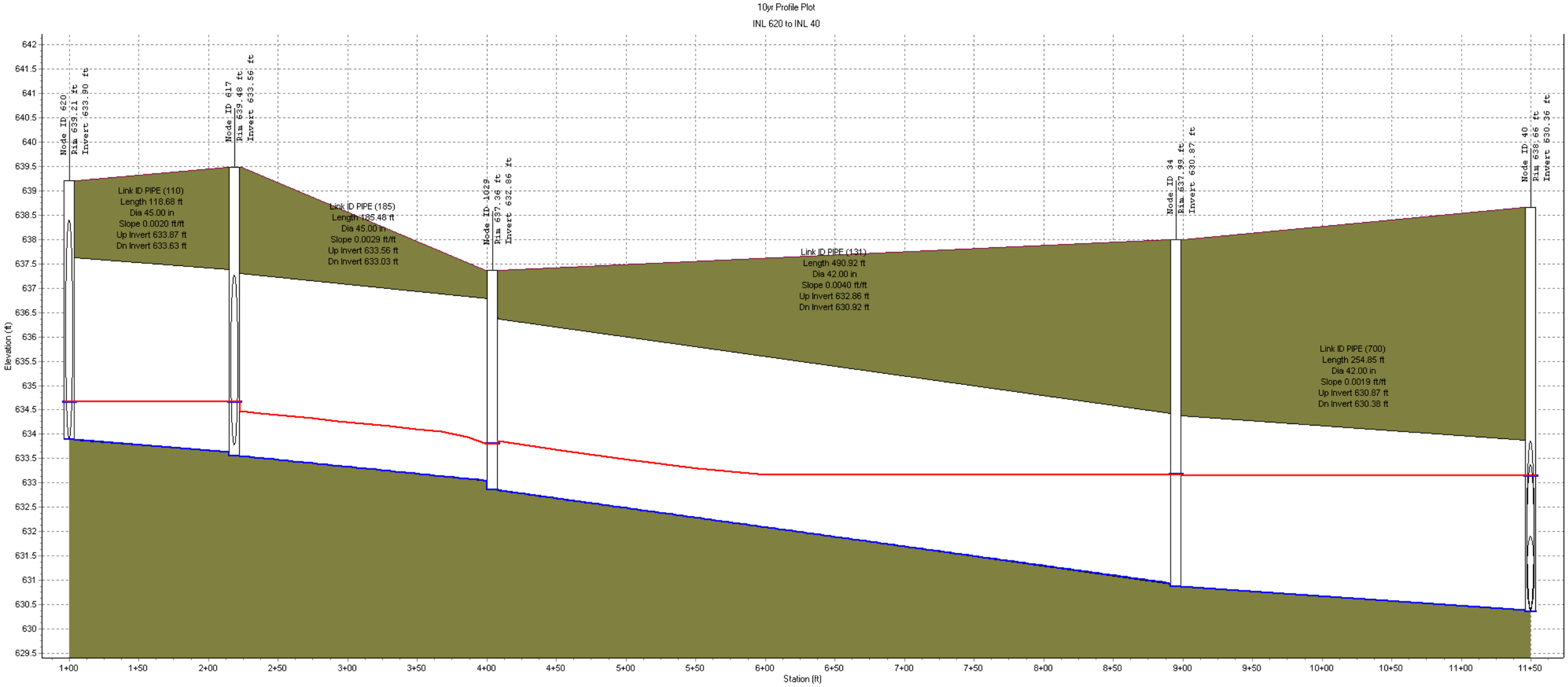
Node ID:	505	506	508	402	249	208
Rim (ft):	639.00	640.51	641.50	638.00	637.00	637.71
Invert (ft):	631.27	631.02	630.76	629.96	629.18	628.44
Min Pipe Cover (ft):						
Max HGL (ft):	634.05	633.76	633.66	632.87	633.23	635.41

Link ID:	PIPE (378)	PIPE (375)	PIPE (373)	PIPE (372)	PIPE (367)
Length (ft):	41.59	130.55	381.61	268.65	455.46
Dia (in):	30.00	30.00	30.00	30.00	36.00
Slope (ft/ft):	0.0060	0.0020	0.0023	0.0018	0.0016
Up Invert (ft):	631.27	631.02	630.76	629.96	629.18
Dn Invert (ft):	631.02	630.76	629.90	629.48	628.44
Max Q (cfs):	19.40	16.40	15.76	13.98	17.89
Max Vel (ft/s):	3.95	3.73	3.96	4.15	2.73
Max Depth (ft):	2.50	2.50	2.50	2.50	3.00



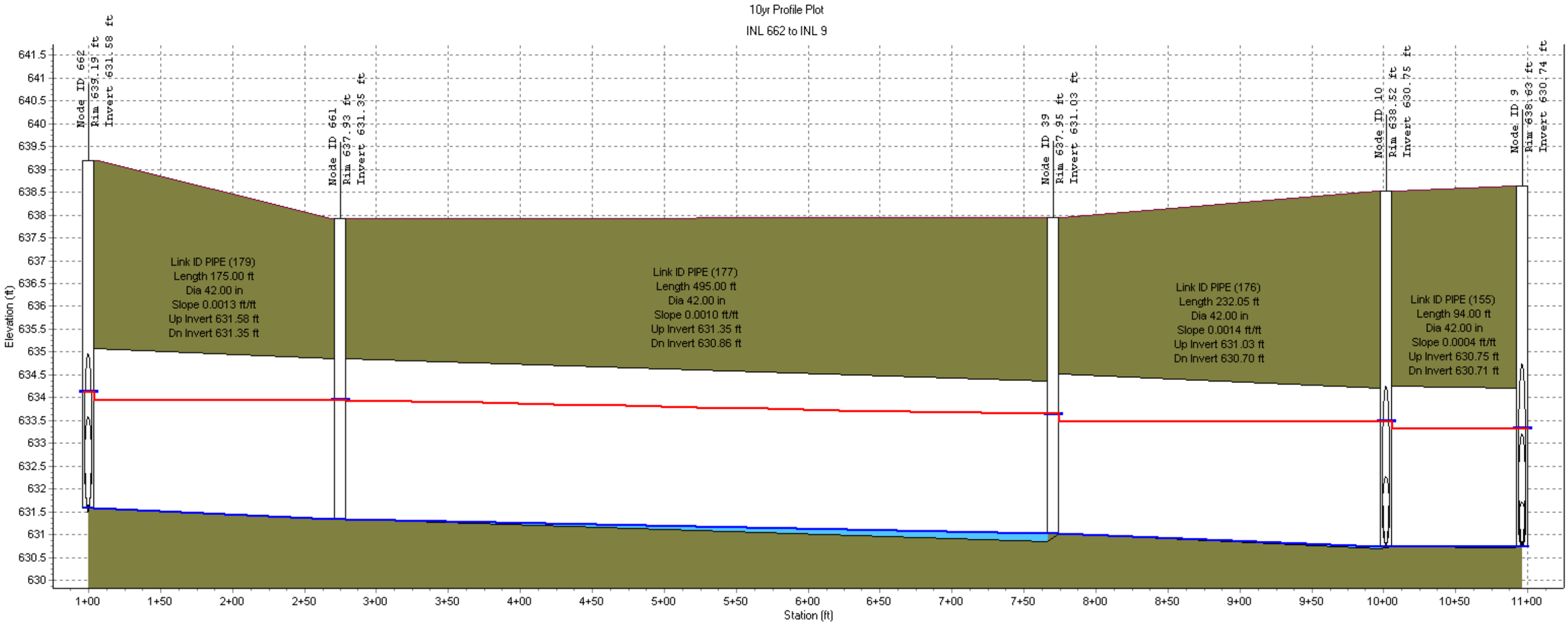
Node ID:	605	607	609	615	617
Rim (ft):	641.13	640.48	639.90	639.76	639.48
Invert (ft):	634.57	634.34	634.12	633.84	633.56
Min Pipe Cover (ft):					
Max HGL (ft):	636.07	635.82	635.69	635.45	634.66

Link ID:	PIPE (104)	PIPE (104) (1)	PIPE (108)	PIPE (109)
Length (ft):	286.00	275.08	350.00	350.00
Dia (in):	42.00	42.00	42.00	42.00
Slope (ft/ft):	0.0008	0.0003	0.0008	0.0002
Up Invert (ft):	634.57	634.34	634.12	633.84
Dn Invert (ft):	634.34	634.25	633.84	633.77
Max Q (cfs):	9.04	6.40	9.98	10.00
Max Vel (ft/s):	3.70	2.15	3.13	3.13
Max Depth (ft):	1.49	1.46	1.57	1.28



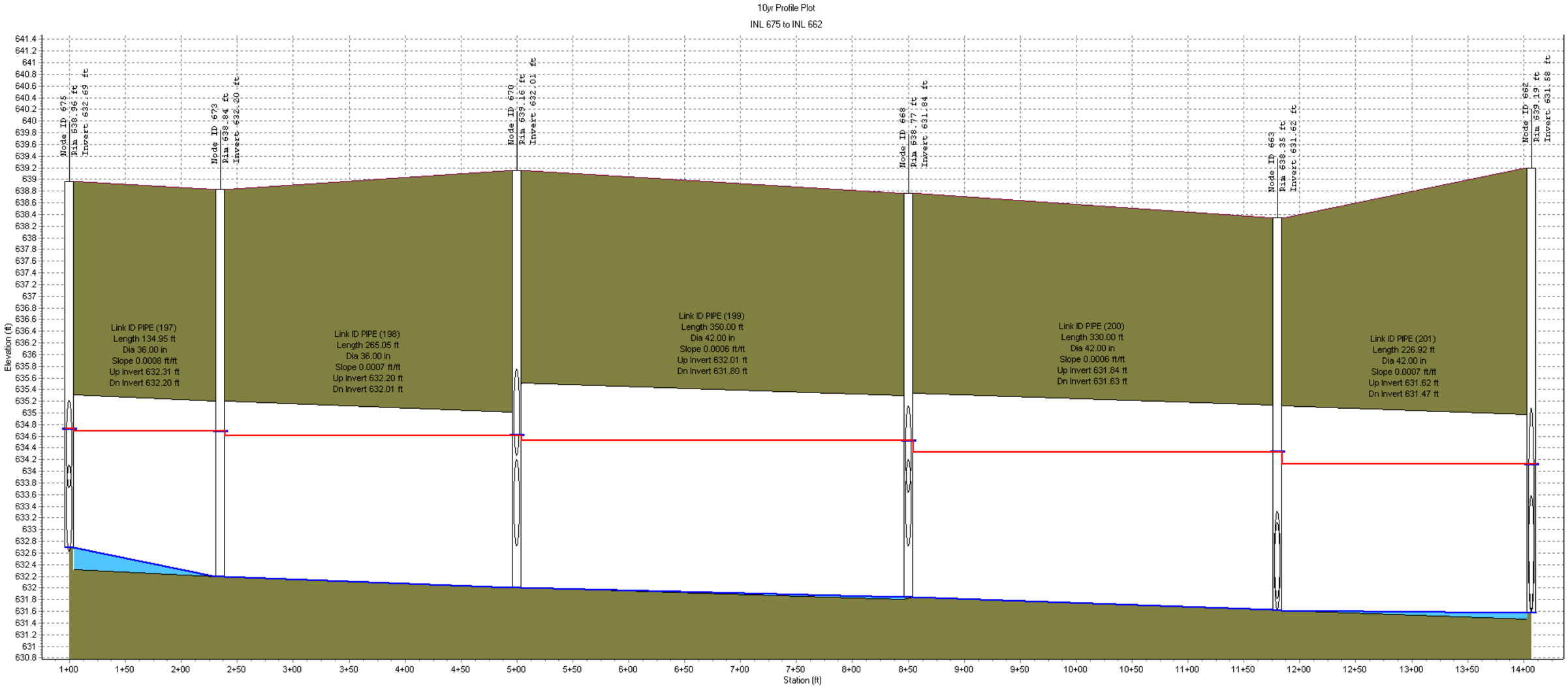
Node ID:	620	617	1029	34	40
Rim (ft):	639.21	639.48	637.36	637.99	638.66
Invert (ft):	633.90	633.56	632.86	630.87	630.36
Min Pipe Cover (ft):					
Max HGL (ft):	634.66	634.66	633.80	633.17	633.14

Link ID:	PIPE (110)	PIPE (185)	PIPE (131)	PIPE (700)
Length (ft):	118.68	185.48	490.92	254.85
Dia (in):	45.00	45.00	42.00	42.00
Slope (ft/ft):	0.0020	0.0029	0.0040	0.0019
Up Invert (ft):	633.87	633.56	632.86	630.87
Dn Invert (ft):	633.63	633.03	630.92	630.38
Max Q (cfs):	1.43	9.96	9.96	10.11
Max Vel (ft/s):	1.49	4.10	3.53	2.35
Max Depth (ft):	0.90	1.02	1.59	2.53



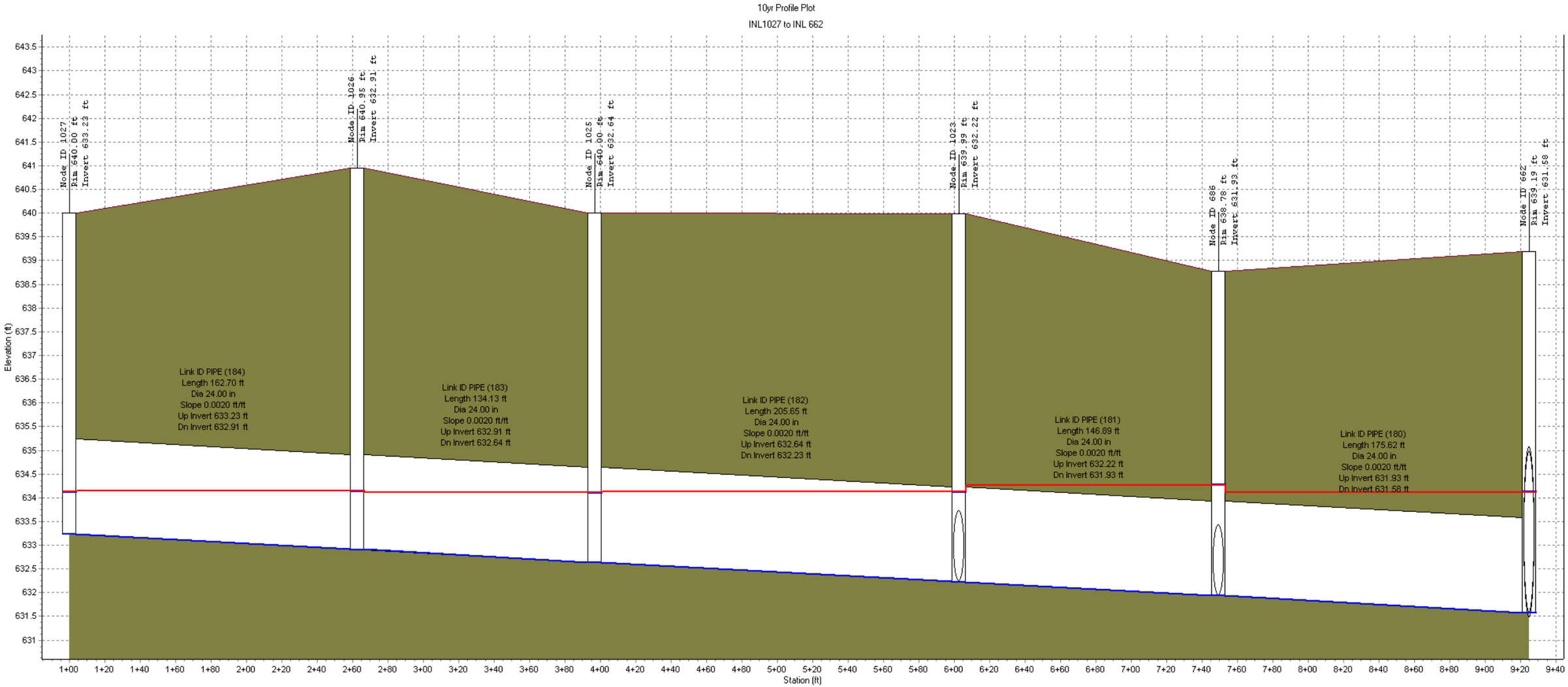
Node ID:	662	661	39	10	9
Rim (ft):	639.19	637.93	637.95	638.52	638.63
Invert (ft):	631.58	631.35	631.03	630.75	630.74
Min Pipe Cover (ft):					
Max HGL (ft):	634.12	633.95	633.65	633.48	633.33

Link ID:	PIPE (179)	PIPE (177)	PIPE (176)	PIPE (155)
Length (ft):	175.00	495.00	232.05	94.00
Dia (in):	42.00	42.00	42.00	42.00
Slope (ft/ft):	0.0013	0.0010	0.0014	0.0004
Up Invert (ft):	631.58	631.35	631.03	630.75
Dn Invert (ft):	631.35	630.86	630.70	630.71
Max Q (cfs):	20.05	19.68	19.42	20.71
Max Vel (ft/s):	2.82	2.78	2.76	2.65
Max Depth (ft):	2.57	2.60	2.67	2.66



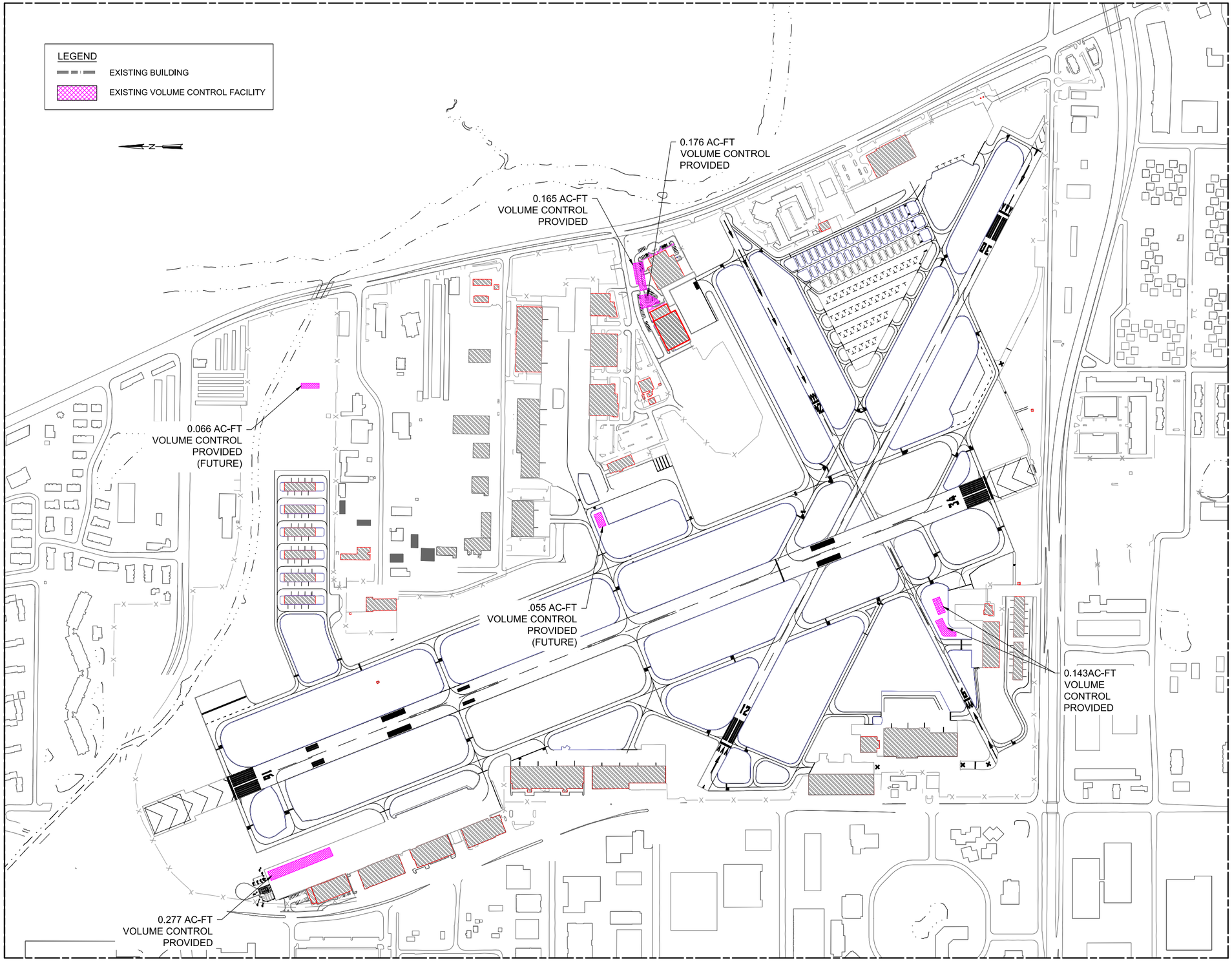
Node ID:	675	673	670	668	663	662
Rim (ft):	638.96	638.84	639.16	638.77	638.35	639.19
Invert (ft):	632.69	632.20	632.01	631.84	631.62	631.58
Min Pipe Cover (ft):						
Max HGL (ft):	634.73	634.68	634.62	634.53	634.33	634.12

Link ID:	PIPE (197)	PIPE (198)	PIPE (199)	PIPE (200)	PIPE (201)
Length (ft):	134.95	265.05	350.00	330.00	226.92
Dia (in):	36.00	36.00	42.00	42.00	42.00
Slope (ft/ft):	0.0008	0.0007	0.0006	0.0006	0.0007
Up Invert (ft):	632.31	632.20	632.01	631.84	631.62
Dn Invert (ft):	632.20	632.01	631.80	631.63	631.47
Max Q (cfs):	10.14	9.71	15.31	21.98	20.35
Max Vel (ft/s):	2.88	2.29	2.34	3.77	3.03
Max Depth (ft):	2.26	2.54	2.65	2.70	2.62



Node ID:	1027	1026	1025	1023	686	662
Rim (ft):	640.00	640.95	640.00	639.99	638.78	639.19
Invert (ft):	633.23	632.91	632.64	632.22	631.93	631.58
Min Pipe Cover (ft):						
Max HGL (ft):	634.13	634.14	634.11	634.13	634.27	634.12

Link ID:	PIPE (184)	PIPE (183)	PIPE (182)	PIPE (181)	PIPE (180)
Length (ft):	162.70	134.13	205.65	146.89	175.62
Dia (in):	24.00	24.00	24.00	24.00	24.00
Slope (ft/ft):	0.0020	0.0020	0.0020	0.0020	0.0020
Up Invert (ft):	633.23	632.91	632.64	632.22	631.93
Dn Invert (ft):	632.91	632.64	632.23	631.93	631.58
Max Q (cfs):	0.59	1.04	1.66	2.82	3.23
Max Vel (ft/s):	0.96	1.36	1.39	1.78	1.49
Max Depth (ft):	1.05	1.35	1.68	1.95	2.00



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CHICAGO EXECUTIVE AIRPORT

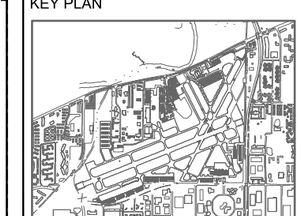
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING VOLUME CONTROL FACILITIES

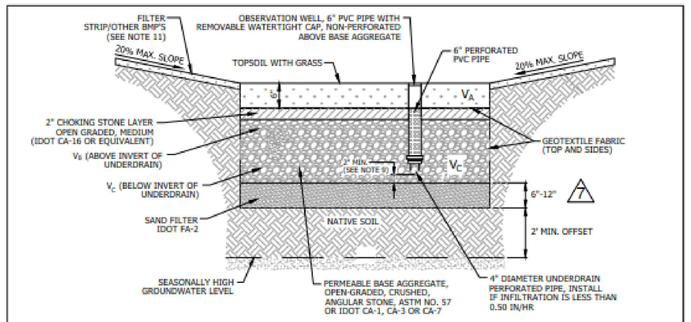
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-1



BOTTOM OF THE FACILITY:	ELEV.	SEE PLAN
SEASONALLY HIGH GROUNDWATER:	ELEV.	633.5'
SEPARATION:	FEET	3.45'

VOLUME TYPE	SURFACE AREA	DEPTH	POROSITY	STORAGE VOLUME	VOLUME PROVIDED
V_A : TURF	4,500	0.5	0.25	0.50 X 0.25 X V_A	281
V_B : COARSE AGGREGATE (ABOVE INVERT)	4,500	1.0	0.36	0.50 X 0.36 X V_B	810
V_C : COARSE AGGREGATE (BELOW INVERT)	4,500	1.0	0.36	0.36 X V_C	1,620
					2,711

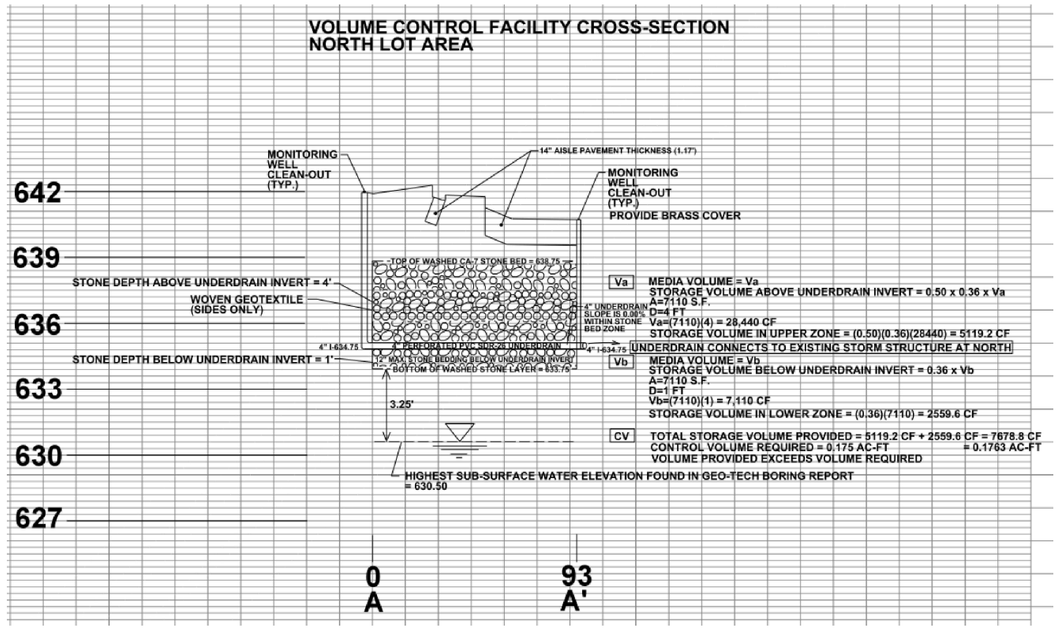
NOTES:

1. THE PERIMETER OF THE VOLUME CONTROL FACILITY SHALL MAINTAIN THE MINIMUM HORIZONTAL SEPARATION DISTANCE OF: 10-FEET FROM FOUNDATIONS, UNLESS WATERPROOFED; 20-FEET FROM ROADWAY GRAVEL SHOULDER; AND 100-FEET FROM POTABLE WATER WELLS, SEPTIC TANKS/FIELDS, OR OTHER UNDERGROUND TANKS.
2. SANITARY OR COMBINED SEWERS SHALL NOT BE LOCATED WITHIN THE VOLUME CONTROL FACILITY. SANITARY OR COMBINED SEWERS SHALL NOT BE LOCATED BELOW THE FOOTPRINT OF THE VOLUME CONTROL FACILITY. WHEN LOCAL CONDITIONS PREVENT THE SEWER FROM BEING LOCATED OUTSIDE THE FOOTPRINT OF THE FACILITY THE SEWER SHALL BE CONSTRUCTED TO WATER MAIN QUALITY STANDARDS, OR IT SHALL BE ENCASED WITH A WATER MAIN QUALITY CARRIER PIPE WITH THE ENDS SEALED.
3. AVOID INSTALLATION ON SLOPES GREATER THAN 3.00%.
4. AVOID COMPACTING NATIVE SOILS, SCARIFY COMPACTED FILL.
5. GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF IUM MATERIAL SPECIFICATION 592. FOR WOVEN: APPARENT OPENING SIZE OF 0.50 MM (TABLE 1, CLASS I). FOR NON WOVEN: APPARENT OPENING SIZE OF 0.30 MM (TABLE 2, CLASS II).
6. STONE STORAGE OPTIONS ARE IDOT CA-1, IDOT CA-7, DISTRICT VULCAN MIX, OR APPROVED ALTERNATE. NO RECYCLED MATERIALS.
7. MINIMUM DISTANCE OF 2 FEET (3.5 FEET IN COMBINED SEWER AREAS) BETWEEN BOTTOM OF BMP AND SEASONALLY HIGH GROUNDWATER LEVEL.
8. UNDERDRAINS ARE REQUIRED IN TYPICAL CLAYEY SOILS WHERE INFILTRATION RATES ARE LESS THAN 0.5 INCH/HOUR. MAXIMUM OF 1 UNDERDRAIN PER 30 FEET. PROVIDE A SOIL REPORT DOCUMENTING NATIVE INFILTRATION RATE TO FOREGO UNDERDRAINS.
9. MINIMUM UNDERDRAIN BEDDING OF TWO INCHES, MAXIMUM OF 12 INCHES.
10. ONE OBSERVATION WELL REQUIRED PER 6,000 SQUARE FEET OF SURFACE AREA.
11. FOLLOW THE REQUIRED PRETREATMENT MEASURES LISTED ON THE VOLUME CONTROL PRETREATMENT MEASURES DETAIL.

NOT TO SCALE

	TECHNICAL GUIDANCE MANUAL	10/4/18
	DETAIL - RECTANGULAR TRENCH SECTION EAST OF MANHOLE	STD. DWG. NO.6
		PAGE NO. 7

VOLUME CONTROL FACILITY CROSS-SECTION NORTH LOT AREA



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0 150 300

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P.312-466-3900 F.312-466-3905

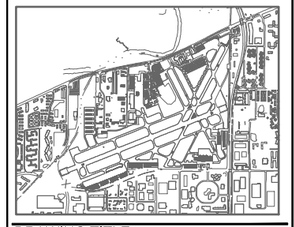
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING VOLUME CONTROL FACILITIES

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-2

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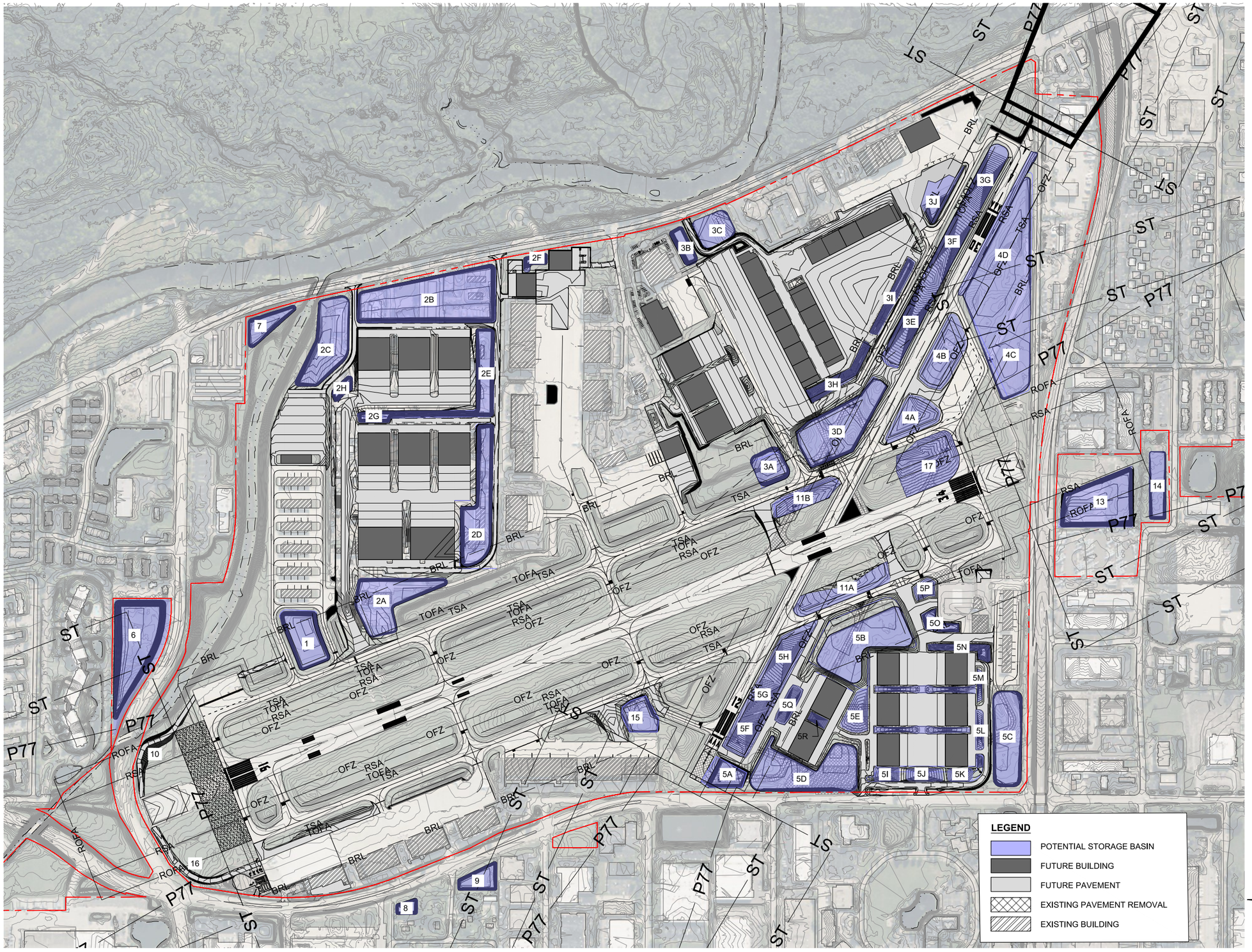
APPENDIX D

PROPOSED CONIDTIONS MODELING



Primera

CHICAGO EXECUTIVE AIRPORT

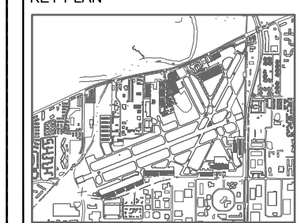
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED GRADING KEY PLAN CG-100

SHEET NO.
PRIMERA

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PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
1

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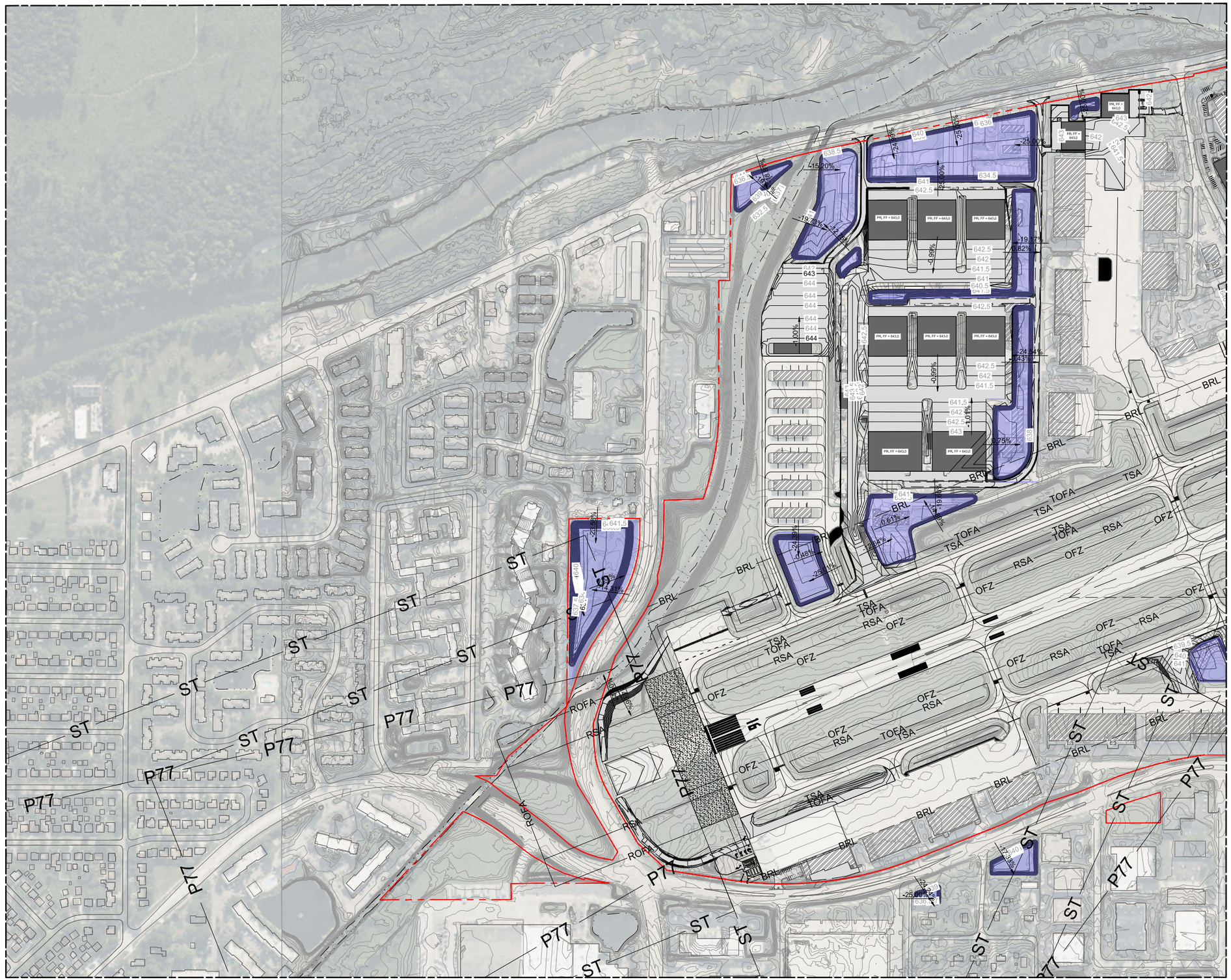


Primera

CHICAGO EXECUTIVE AIRPORT

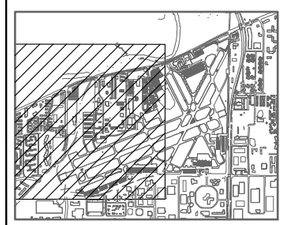
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED GRADING NORTH

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
2

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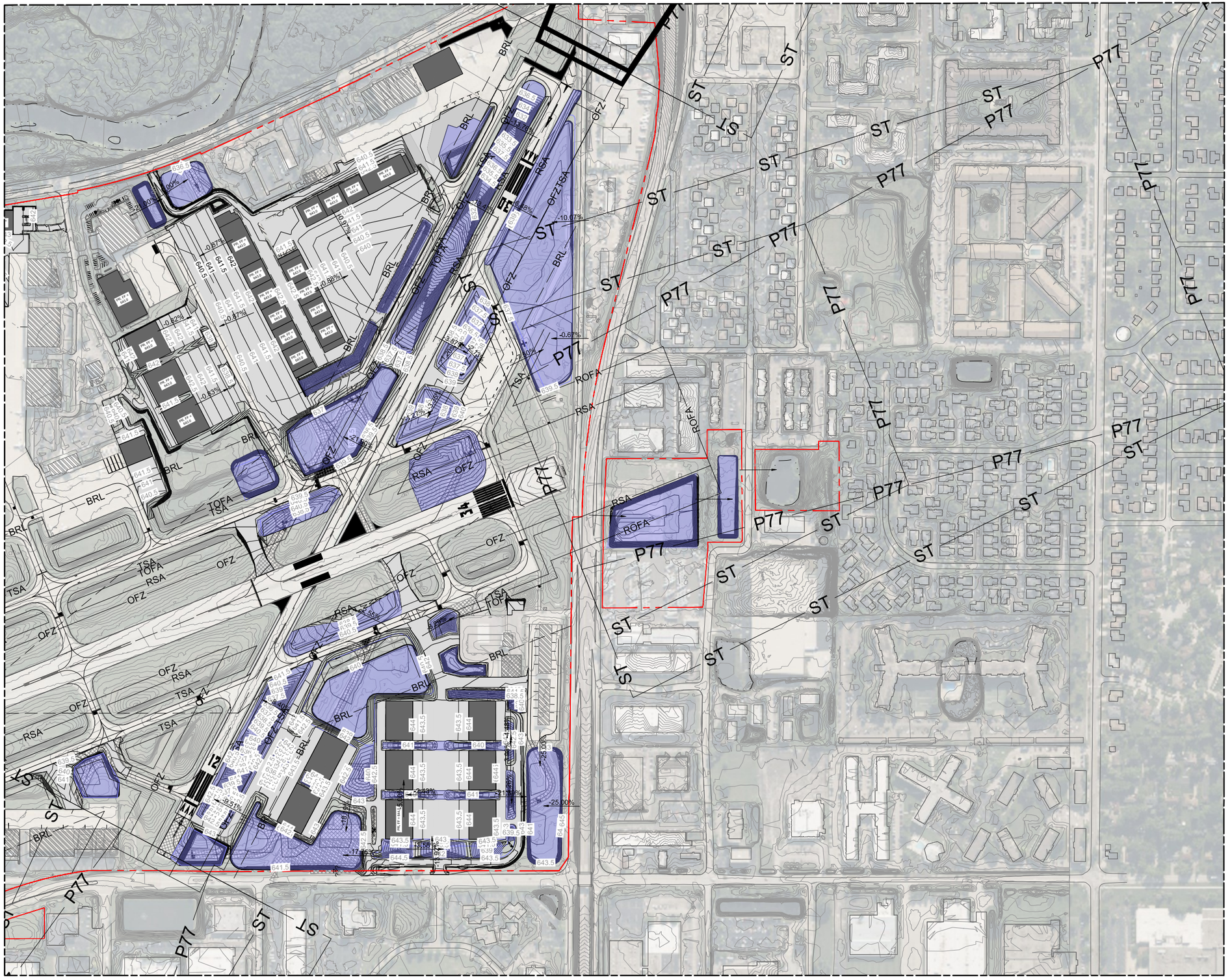
MATCHLINE SEE SHEET 2





Primera

CHICAGO EXECUTIVE AIRPORT

LEGEND:

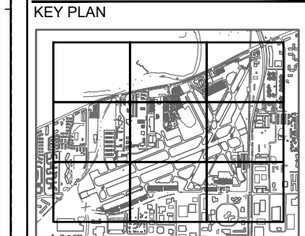
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EXHIBIT

SHEET NO.
XXX

APPROVED
XXX

CHECKED
XXX

DRAWN BY
XXX

DRAWING NO.
1

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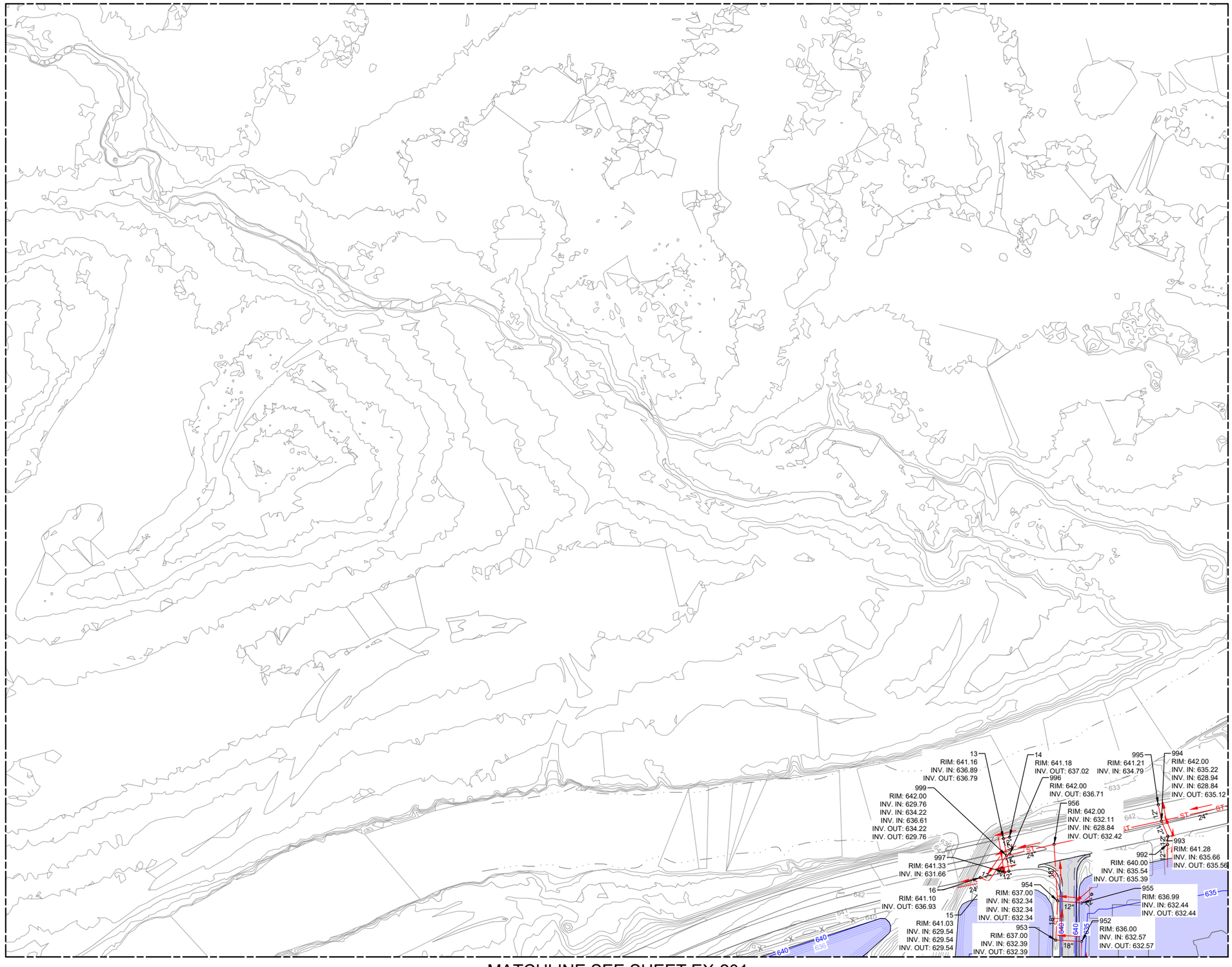

MATCHLINE SEE SHEET EX-102

MATCHLINE SEE SHEET EX-201

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Primera
105 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3300 F:312-466-3495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

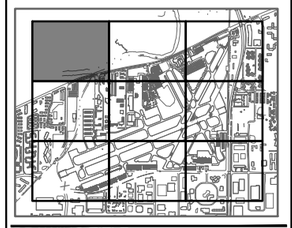
- EX. DRAINAGE STRUCTURE
- ST — EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EX-101

SHEET NO.
XXX

APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
2

Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3300 F:312-466-3405

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

MATCHLINE SEE SHEET EX-101

MATCHLINE SEE SHEET EX-103

MATCHLINE SEE SHEET EX-202

MILWAUKEE AVE.

SOUTH BASIN OUTFALL
INV. IN: 625.76

RESTRICTOR PLATE ON UPSTREAM SIDE OF STRUCTURE
RIM: 635.73
INV. IN: 626.85
INV. OUT: 626.85

991 RIM: 641.01 INV. IN: 634.85
980 RIM: 642.00 INV. IN: 634.27 INV. IN: 634.77 INV. OUT: 634.27
973 RIM: 641.76 INV. IN: 638.22 INV. OUT: 638.22
9980 RIM: 641.07 INV. IN: 632.66 INV. IN: 632.36 INV. OUT: 632.66 INV. OUT: 632.36
987 RIM: 641.06 INV. IN: 630.96 INV. OUT: 630.86
979 RIM: 639.00 INV. IN: 637.26 INV. OUT: 635.54 INV. OUT: 635.54
971 RIM: 641.01 INV. OUT: 636.30
986 RIM: 641.19 INV. IN: 631.49
976 RIM: 640.48 INV. IN: 637.15 INV. OUT: 635.15
970 RIM: 641.00 INV. IN: 637.51 INV. OUT: 637.51
198 RIM: 640.99 INV. IN: 634.58 INV. OUT: 634.50
985 RIM: 641.38 INV. IN: 633.43 INV. IN: 634.08 INV. OUT: 633.43 INV. OUT: 638.53
197 RIM: 641.00 INV. IN: 635.13 INV. OUT: 635.08
800 RIM: 640.72 INV. IN: 633.61 INV. OUT: 633.32
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983 RIM: 640.00 INV. OUT: 636.79
974 RIM: 640.36 INV. OUT: 638.40
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216 RIM: 631.00 INV. IN: 628.68 INV. OUT: 628.46
214 RIM: 635.62 INV. IN: 627.43 INV. IN: 627.43 INV. OUT: 627.43
242 RIM: 635.00 INV. OUT: 630.66
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1247 RIM: 641.00 INV. IN: 634.44 INV. OUT: 634.34
1246 RIM: 639.00 INV. OUT: 635.88
1248 RIM: 641.01 INV. IN: 633.98
1239 RIM: 638.00 INV. IN: 633.26 INV. OUT: 633.45
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0 50 100

No. Description By Chk. App. Date
Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN

DRAWING TITLE

EXISTING STORM SEWER - EX-102

SHEET NO. XXX
APPROVED XXX
CHECKED XXX
DRAWN BY
DRAWING NO. 3

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PLOTTED BY JESSICA JIMENEZ
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MATCHLINE SEE SHEET EX-102

MATCHLINE SEE SHEET EX-203

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

0 50 100

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100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3300 F:312-466-3405

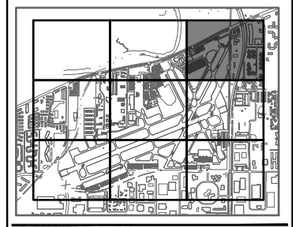
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EX-103

SHEET NO.	XXX
APPROVED	XXX
CHECKED	XXX
DRAWN BY	
DRAWING NO.	4

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PLOT DEVICE DRIVER
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PRINTED BY: JESSICA JIMENEZ
DATE PRINTED: 6/28/2023 10:20 PM
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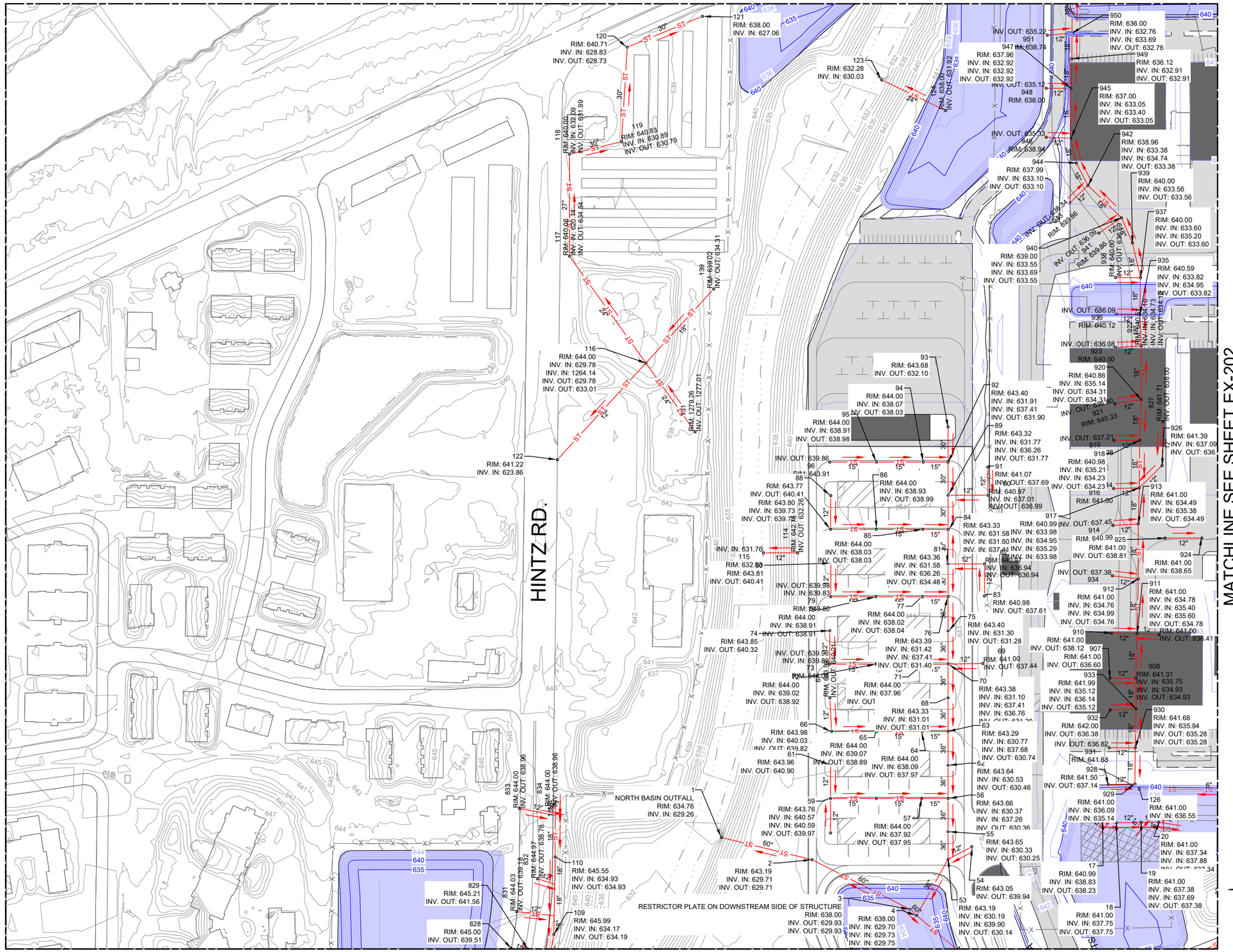
MATCHLINE SEE SHEET EX-101



MATCHLINE SEE SHEET EX-301

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3300 F:312-466-3405

CHICAGO EXECUTIVE AIRPORT

LEGEND:

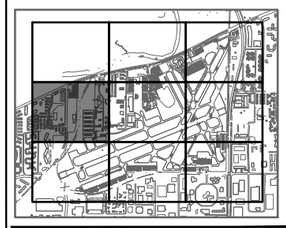
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EX-201

SHEET NO. XXX

APPROVED XXX

CHECKED XXX

DRAWN BY

DRAWING NO. 5

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FILE SAVED 6/28/2025 10:12 PM
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PLOTTED BY JESSICA JIMENEZ
DATE PLOTTED 6/28/2025 10:18 PM
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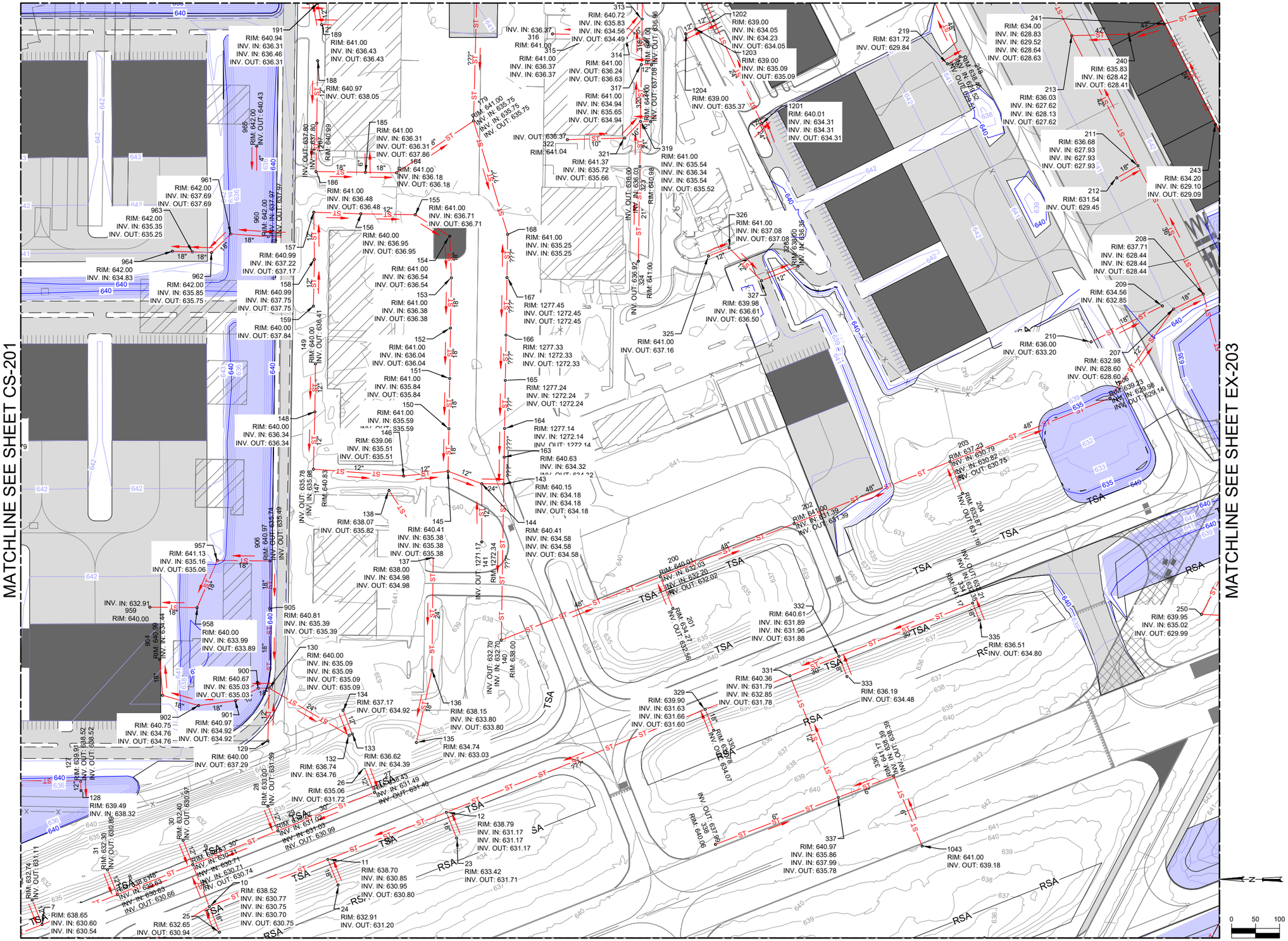
MATCHLINE SEE SHEET CS-102

MATCHLINE SEE SHEET CS-201

MATCHLINE SEE SHEET EX-203

MATCHLINE SEE SHEET EX-302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185 RIM: 641.00 INV. IN: 636.31 INV. OUT: 636.31 INV. OUT: 637.86
184 RIM: 641.00 INV. IN: 636.18 INV. OUT: 636.18
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156 RIM: 640.00 INV. IN: 636.95 INV. OUT: 636.95
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153 RIM: 641.00 INV. IN: 636.38 INV. OUT: 636.38
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315 RIM: 641.00 INV. IN: 636.37 INV. IN: 636.37
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967 RIM: 640.99
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958 RIM: 640.00 INV. IN: 633.99 INV. OUT: 633.89
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900 RIM: 640.67 INV. IN: 635.03 INV. OUT: 635.03
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134 RIM: 637.17 INV. OUT: 634.92
133 RIM: 636.62 INV. IN: 634.39
132 RIM: 636.74 INV. IN: 634.76
136 RIM: 638.15 INV. IN: 633.80 INV. OUT: 633.80
135 RIM: 634.74 INV. IN: 633.03
128 RIM: 639.49 INV. IN: 638.32
127 RIM: 639.99 INV. OUT: 638.52 INV. OUT: 638.52
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INV. OUT: 637.99
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RIM: 639.47
INV. OUT: 634.17
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INV. OUT: 631.40
INV. OUT: 630.80

MATCHLINE SEE SHEET CS-103

MATCHLINE SEE SHEET CS-202

MATCHLINE SEE SHEET EX-303

PALATINE RD.

RSA

TSA

ST

LS

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407 RIM: 641.00 INV. OUT: 632.18
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INV. OUT: 630.86
INV. IN: 630.96 INV. OUT: 630.84
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570 RIM: 641.00 INV. OUT: 638.86
571 RIM: 638.47 INV. OUT: 638.76
572 RIM: 640.55 INV. IN: 635.38 INV. OUT: 635.42
573 RIM: 639.51 INV. OUT: 637.80
574 RIM: 640.94 INV. IN: 634.83 INV. IN: 635.11 INV. OUT: 634.83
531 RIM: 642.00 INV. OUT: 638.76
532 RIM: 642.00
INV. OUT: 638.93
533 RIM: 642.00 INV. IN: 638.82 INV. OUT: 638.80
534 RIM: 642.47 INV. IN: 638.61 INV. IN: 639.61 INV. OUT: 638.61
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536 RIM: 642.99 INV. OUT: 638.69
537 RIM: 642.99 INV. IN: 638.49 INV. IN: 638.48 INV. OUT: 638.49
517 RIM: 643.00 INV. OUT: 638.43
518 RIM: 642.99 INV. IN: 638.23 INV. IN: 638.23 INV. OUT: 638.23
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PRINTED BY: JESSICA JIMENEZ
DATE PRINTED: 6/26/2025 10:16 PM
FILE SAVED: 6/26/2025 10:12 PM

Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3300 F:312-466-3405

CHICAGO EXECUTIVE AIRPORT

LEGEND:

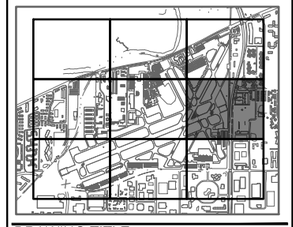
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EX-203

SHEET NO. XXX

APPROVED XXX

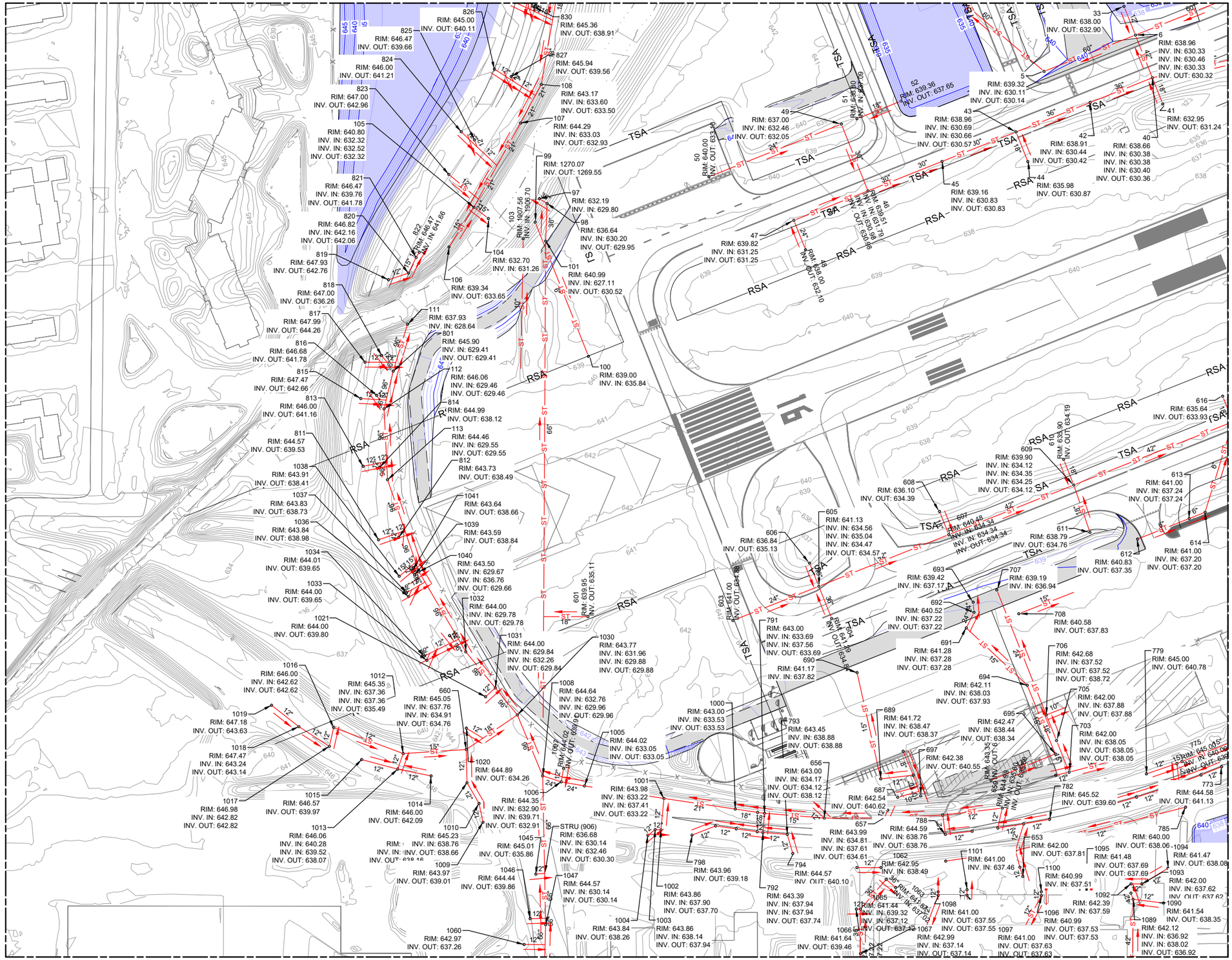
CHECKED XXX

DRAWN BY

DRAWING NO. 7

MATCHLINE SEE SHEET CS-201

MATCHLINE SEE SHEET EX-302



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PLOT DEVICE: DRIVER
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PRINTED BY: JESSICA JIMENEZ
DATE PRINTED: 6/28/2025 10:16 PM
FILE SAVED: 6/28/2025 10:12 PM

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Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3905

CHICAGO EXECUTIVE AIRPORT

LEGEND:

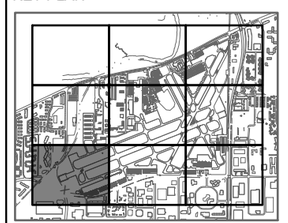
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EX-301

SHEET NO. XXX

APPROVED XXX

CHECKED XXX

DRAWN BY

DRAWING NO. 8

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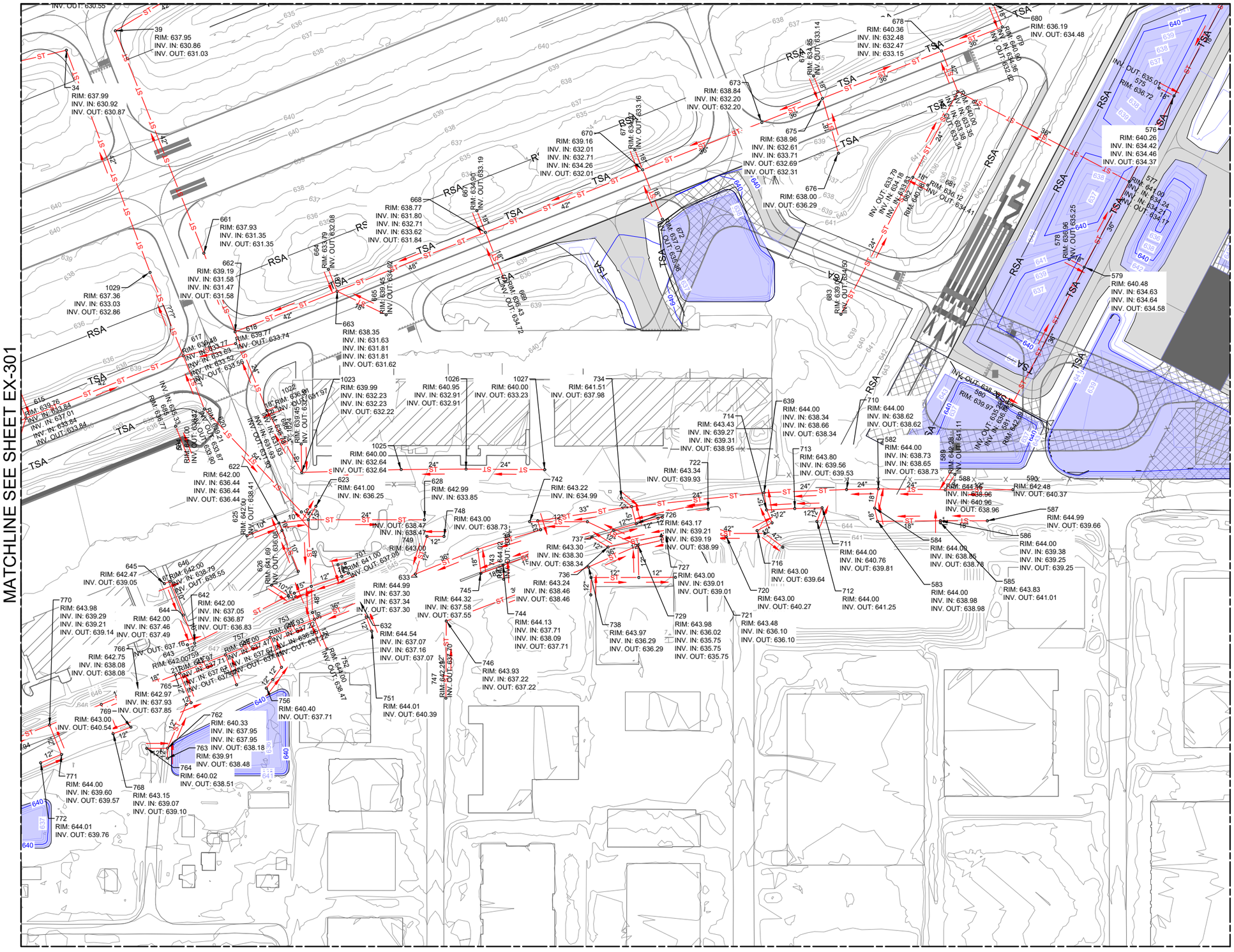
MATCHLINE SEE SHEET EX-202

MATCHLINE SEE SHEET EX-301

MATCHLINE SEE SHEET EX-303



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Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-496-3900 F:312-496-9495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

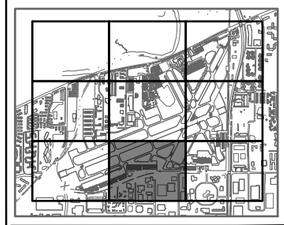
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

EXISTING STORM SEWER - EX-302

SHEET NO.	XXX
APPROVED	XXX
CHECKED	XXX
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MATCHLINE SEE SHEET EX-203

MATCHLINE SEE SHEET EX-302

WOLF RD.

TSA

560
RIM: 644.00
INV. IN: 637.72
INV. OUT: 637.72

558
RIM: 644.00
INV. IN: 637.23
INV. IN: 637.23
INV. OUT: 637.23

510
RIM: 643.09
INV. IN: 634.45
INV. OUT: 634.37

516
RIM: 643.98
INV. IN: 637.60
INV. OUT: 637.60

561
RIM: 643.55
INV. OUT: 638.61

559
RIM: 644.00
INV. IN: 637.43
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515
RIM: 642.33
INV. IN: 636.89
INV. OUT: 636.89

511
RIM: 645.00
INV. IN: 636.10
INV. IN: 636.08
INV. OUT: 636.02

514
RIM: 643.00
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512
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INV. OUT: 636.60

513
RIM: 642.00
INV. OUT: 636.90

N

0 50 100

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Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3300 F:312-466-3405

CHICAGO EXECUTIVE AIRPORT

LEGEND:

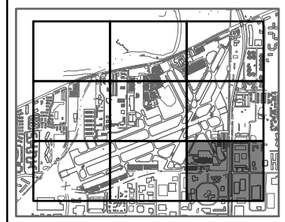
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



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EXISTING STORM SEWER - EX-303

SHEET NO.
XXX

APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
10

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DATE PRINTED 6/28/2025 10:19 PM
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Primera

100 S. WACKER DRIVE SUITE 700 , CHICAGO IL 60606 , P:312-606-0910 F:312-606-0495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

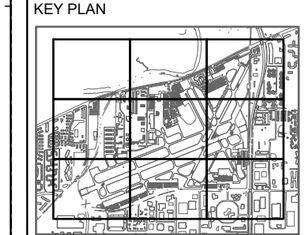
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



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PROPOSED STORM SEWER - EXHIBIT

SHEET NO.
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APPROVED
XXX

CHECKED
XXX

DRAWN BY
XXX

DRAWING NO.
1

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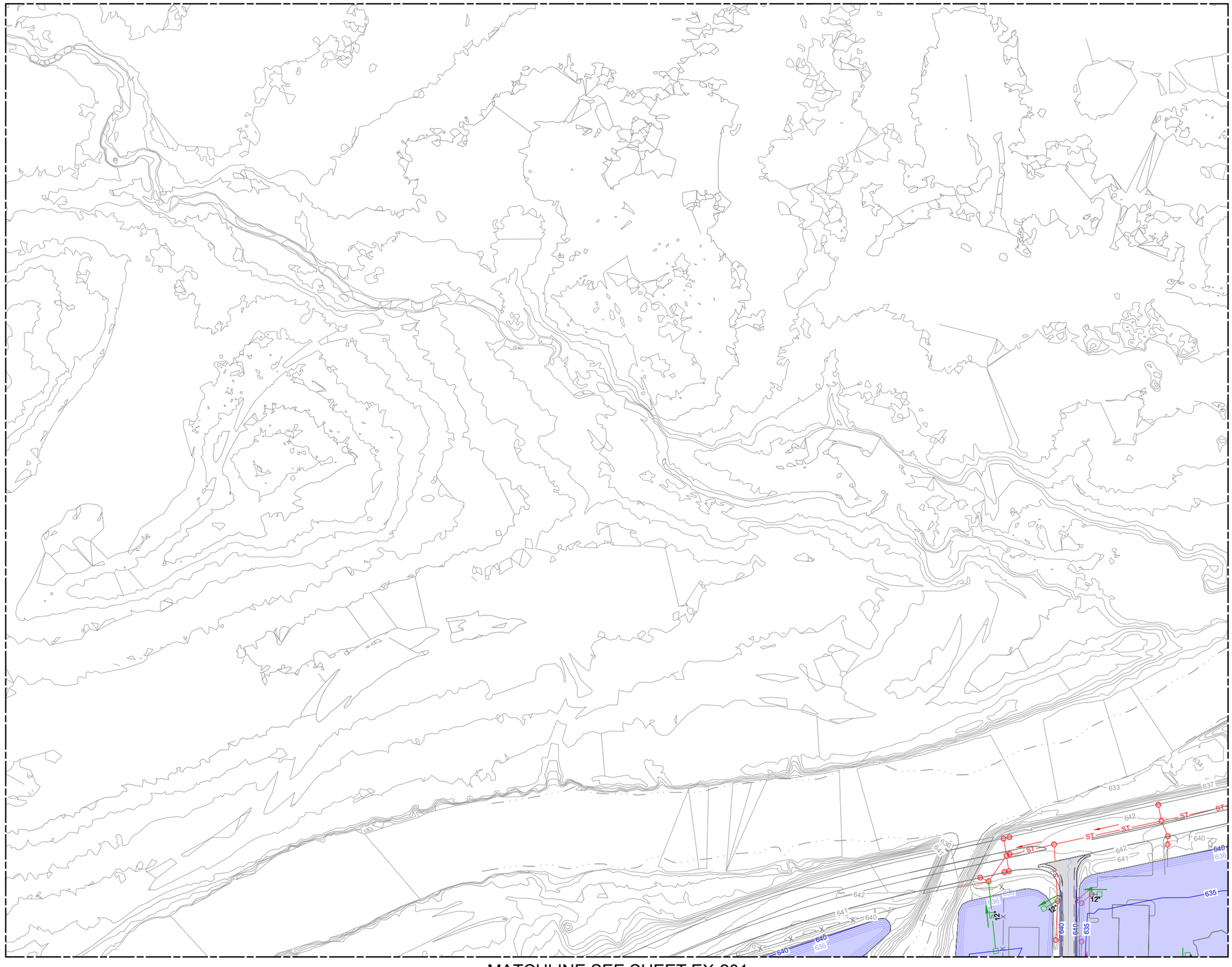

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Primera

100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

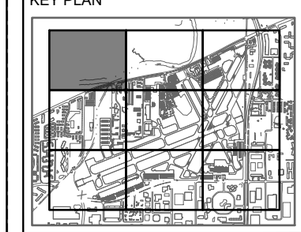
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-101

SHEET NO.
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APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
2

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PLOT STYLE TABLE - CTB

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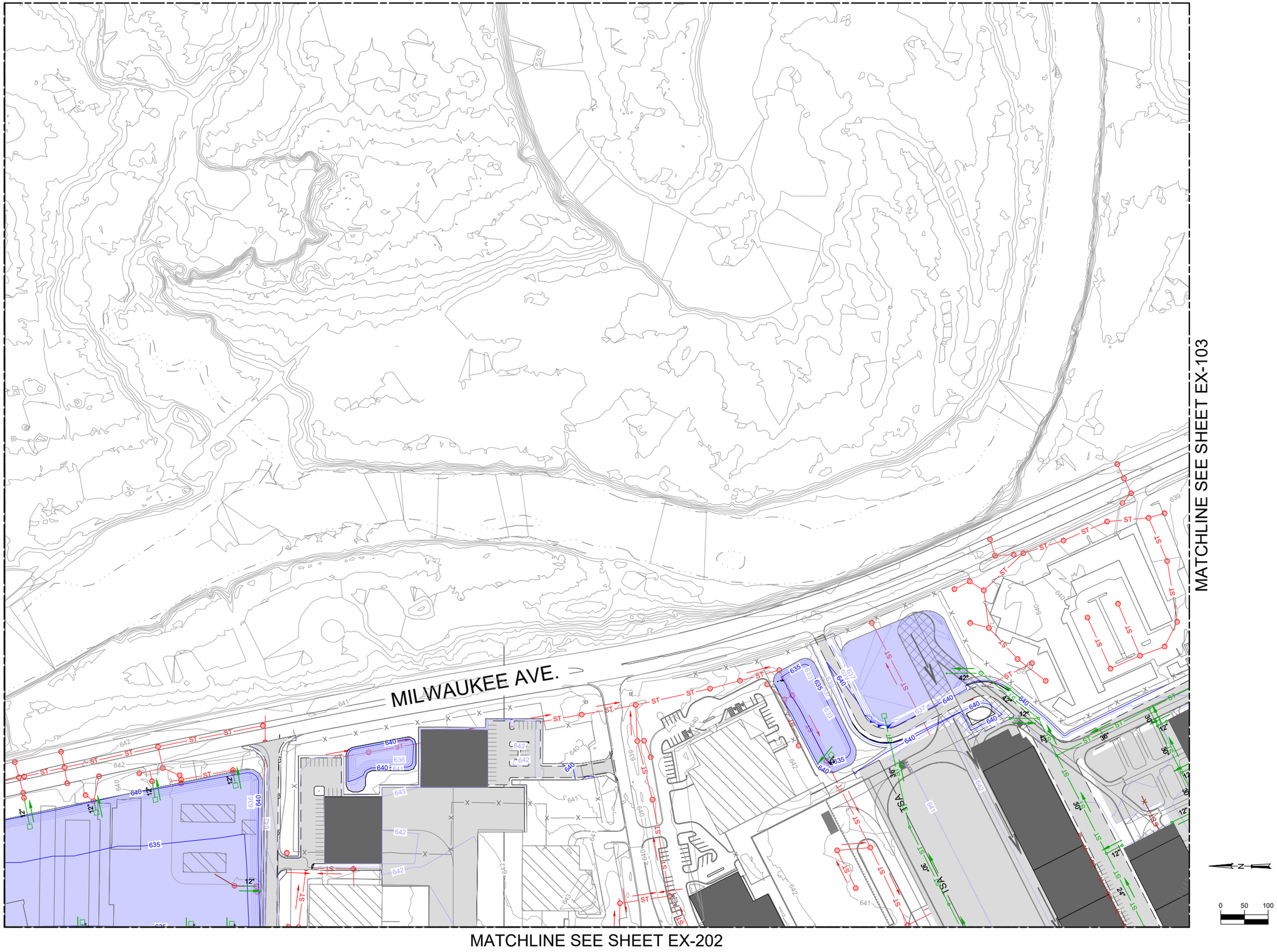


Primera

100 S. WACKER DRIVE SUITE 700 , CHICAGO IL 60606 , P:312-606-8910 F:312-606-8495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

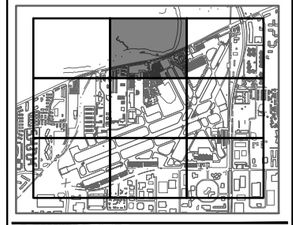
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-102

SHEET NO.
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APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
3

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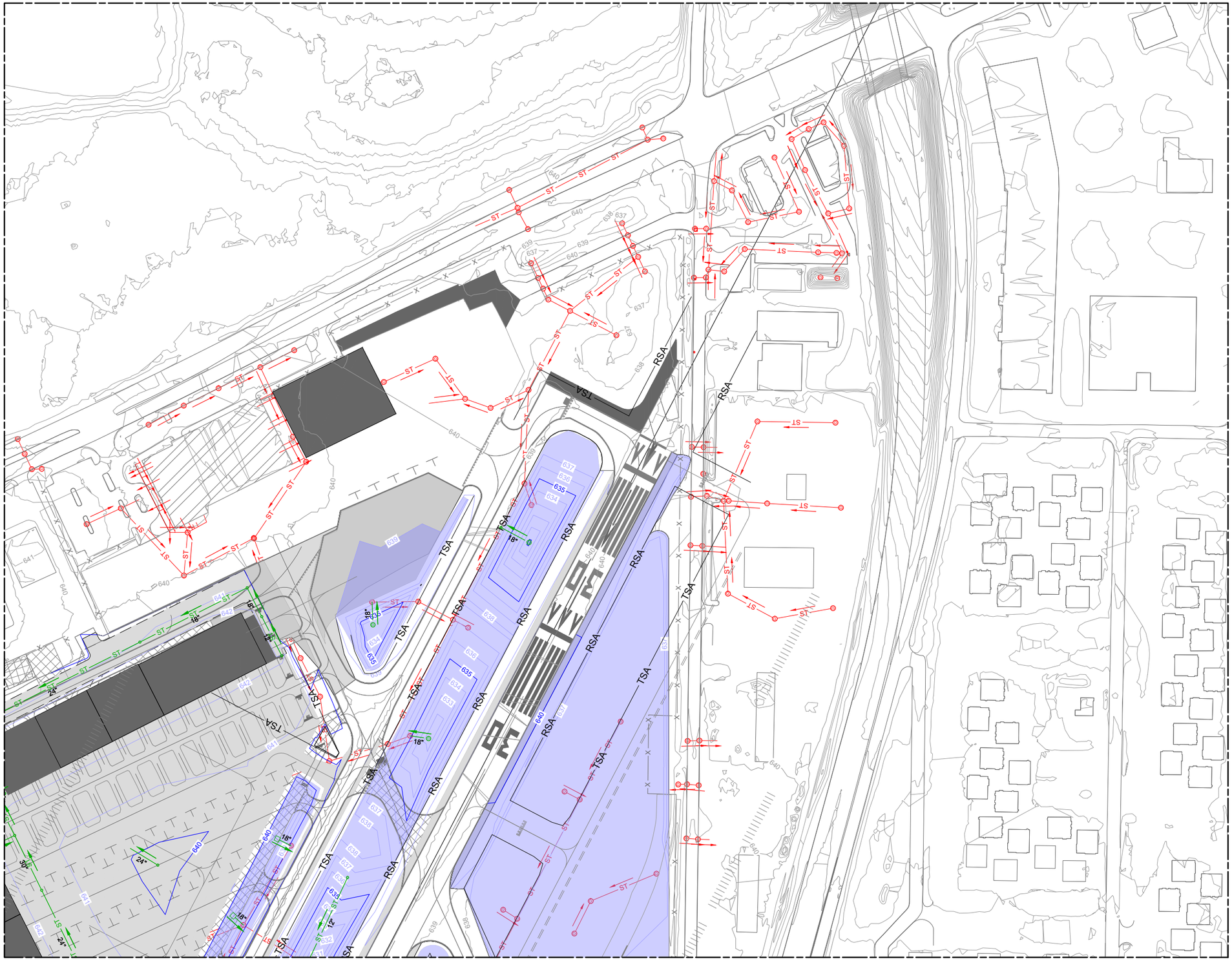


Primera

100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-8910 F:312-606-8495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

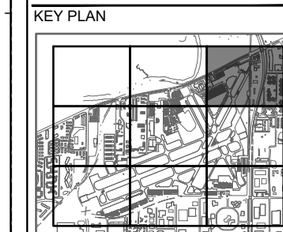
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-103

SHEET NO.
XXX

APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
4

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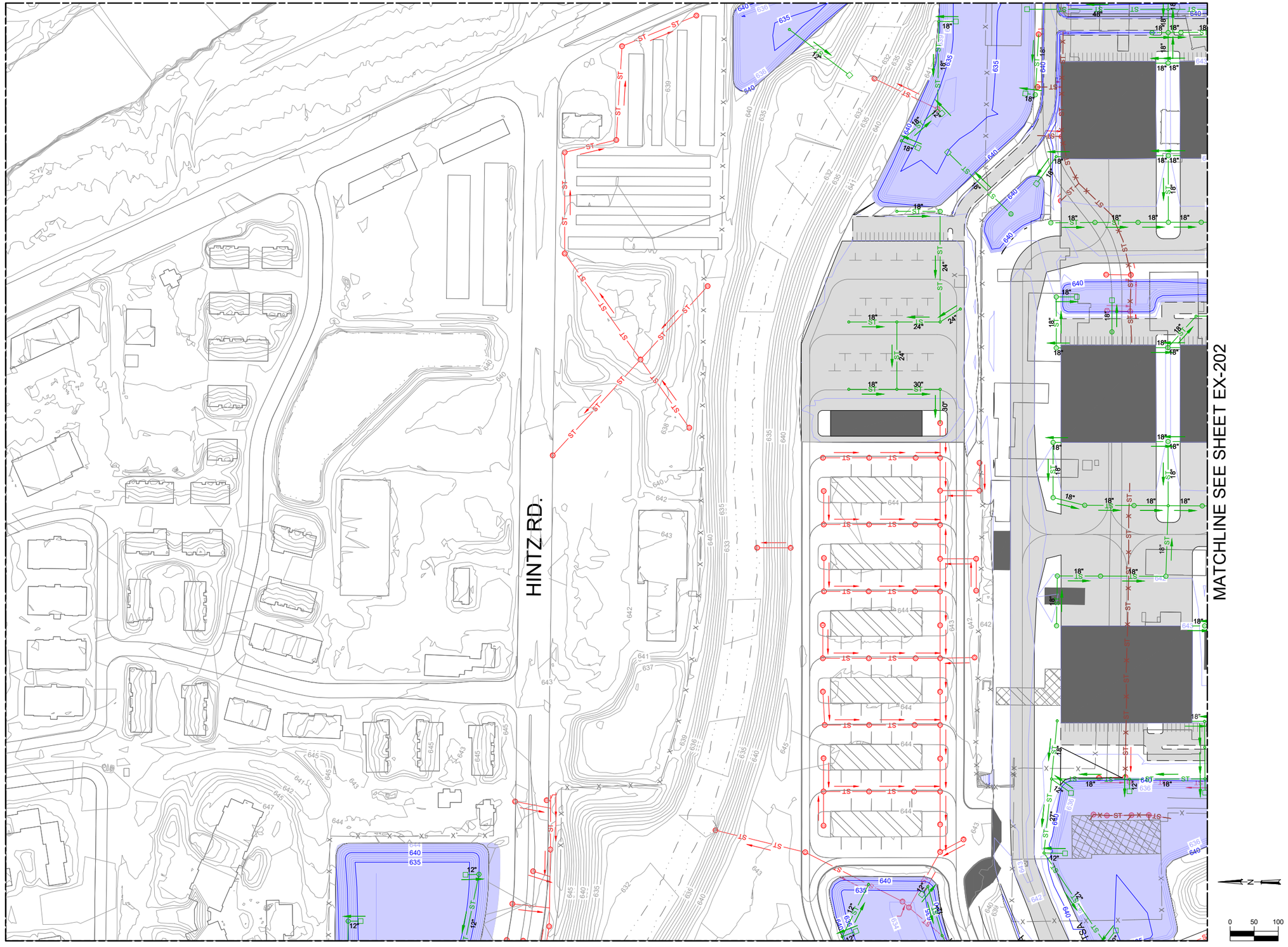
MATCHLINE SEE SHEET EX-101



MATCHLINE SEE SHEET EX-301

Primera

CHICAGO EXECUTIVE AIRPORT

LEGEND:

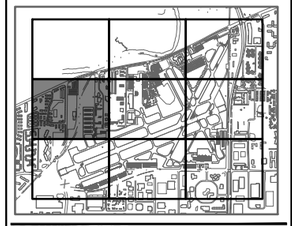
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-201

SHEET NO. XXX

APPROVED XXX

CHECKED XXX

DRAWN BY

DRAWING NO. 5

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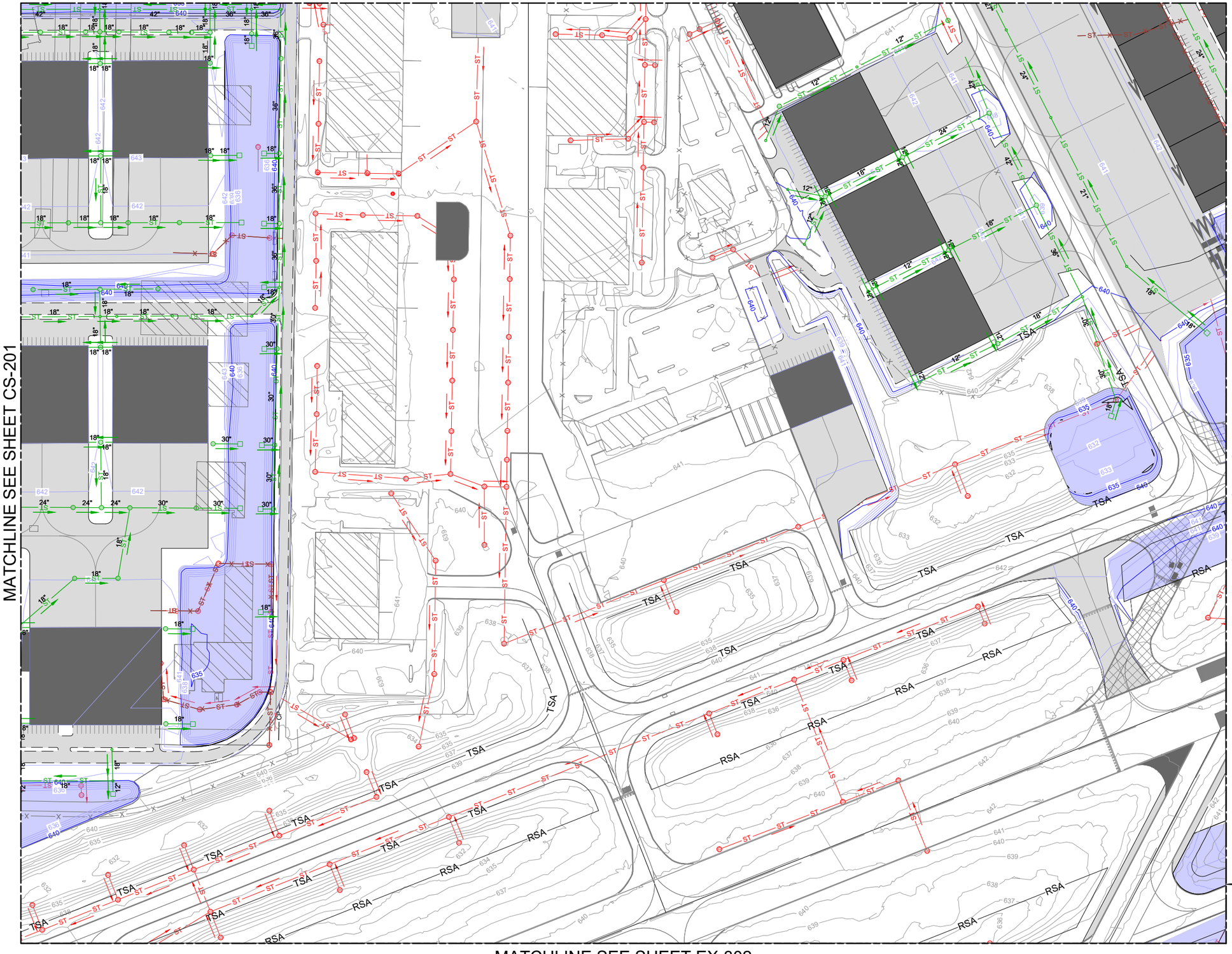
MATCHLINE SEE SHEET CS-102



MATCHLINE SEE SHEET EX-302

Primera

100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

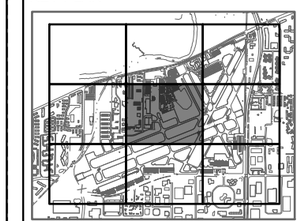
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-202

SHEET NO.
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APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
6

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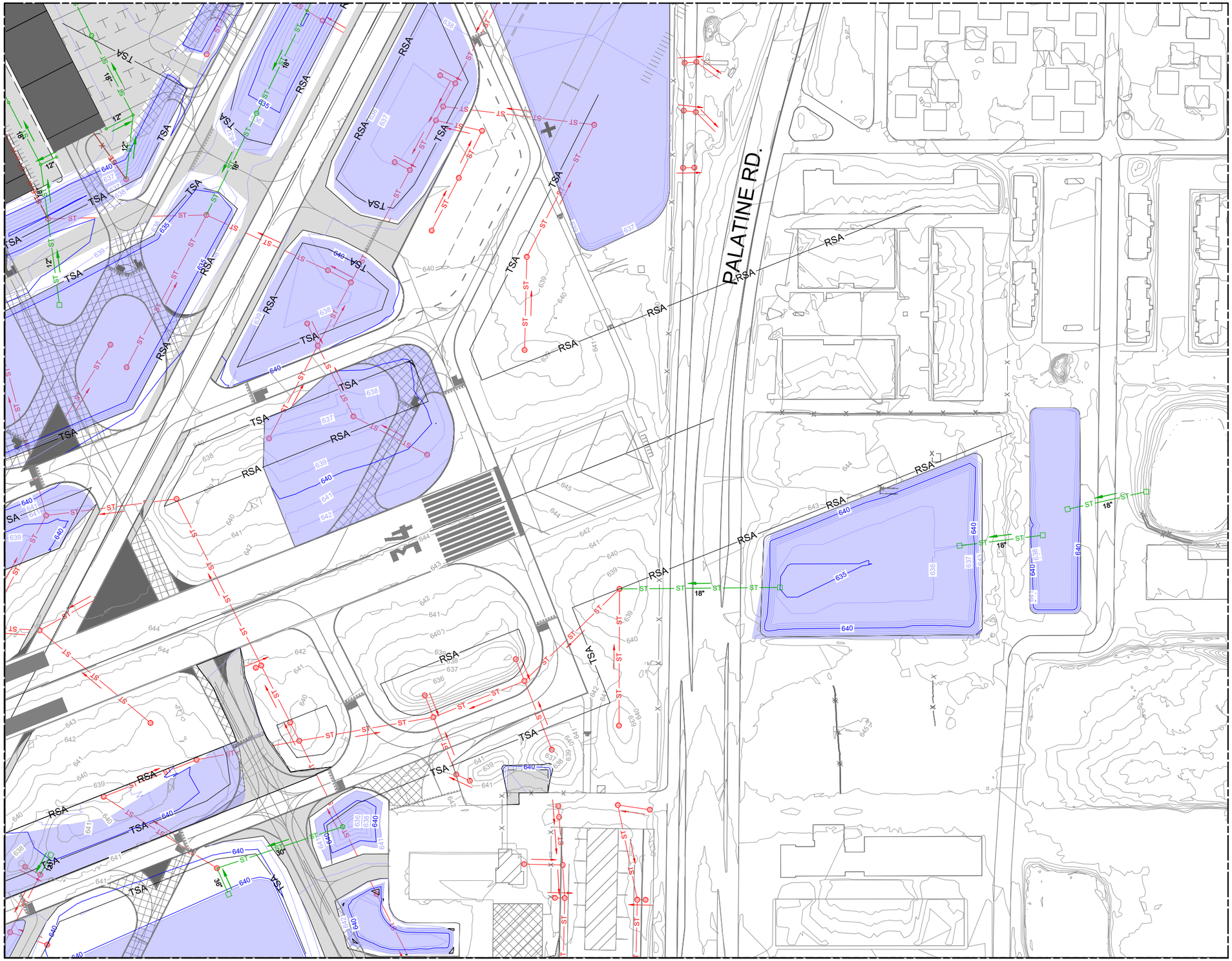
MATCHLINE SEE SHEET CS-103



MATCHLINE SEE SHEET CS-202

MATCHLINE SEE SHEET EX-303

0 50 100

Primera

CHICAGO EXECUTIVE AIRPORT

LEGEND:

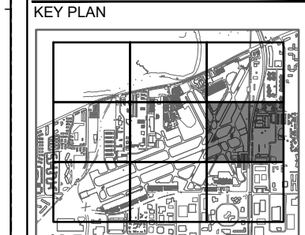
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-203

SHEET NO.
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XXX

DRAWN BY

DRAWING NO.
7

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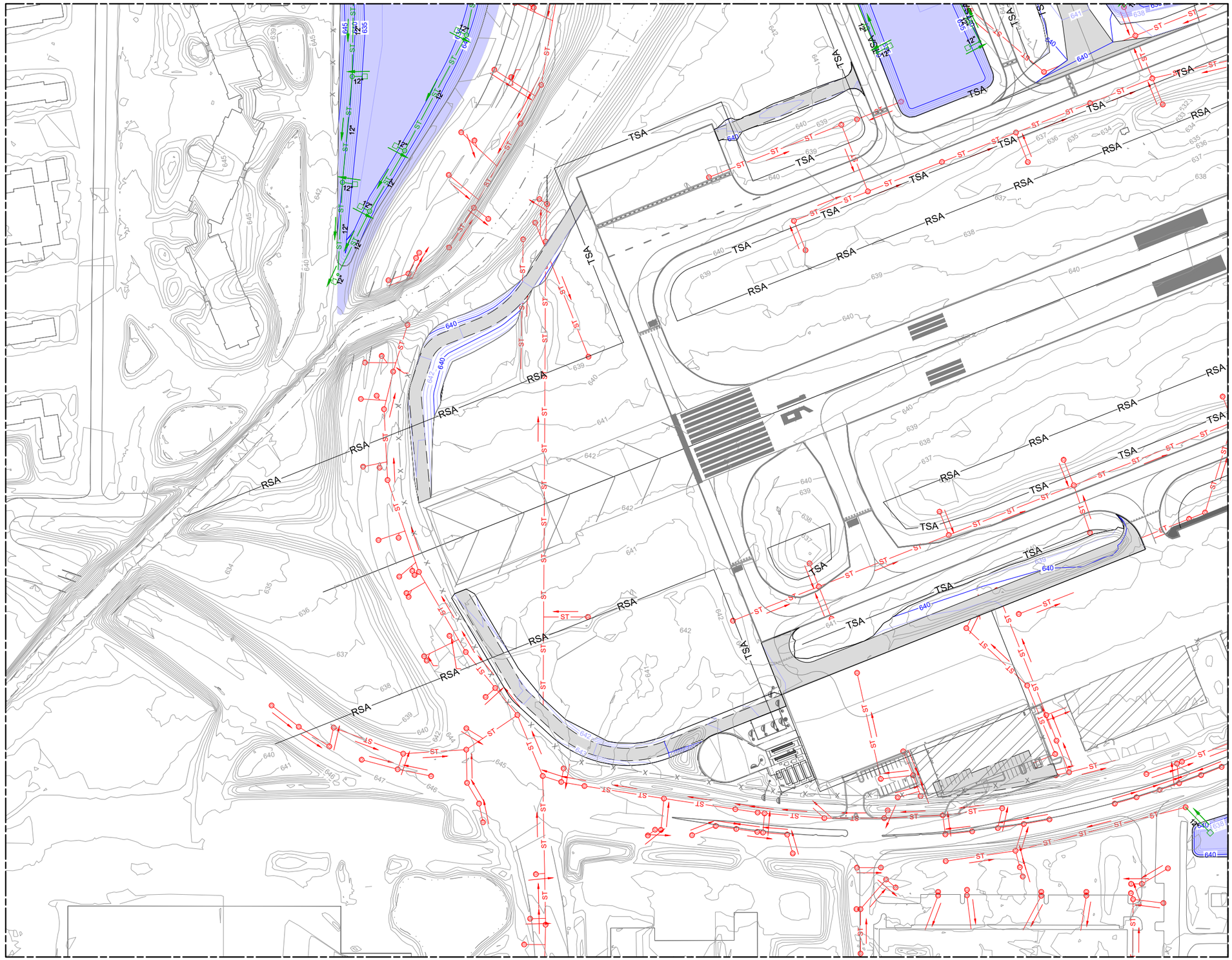
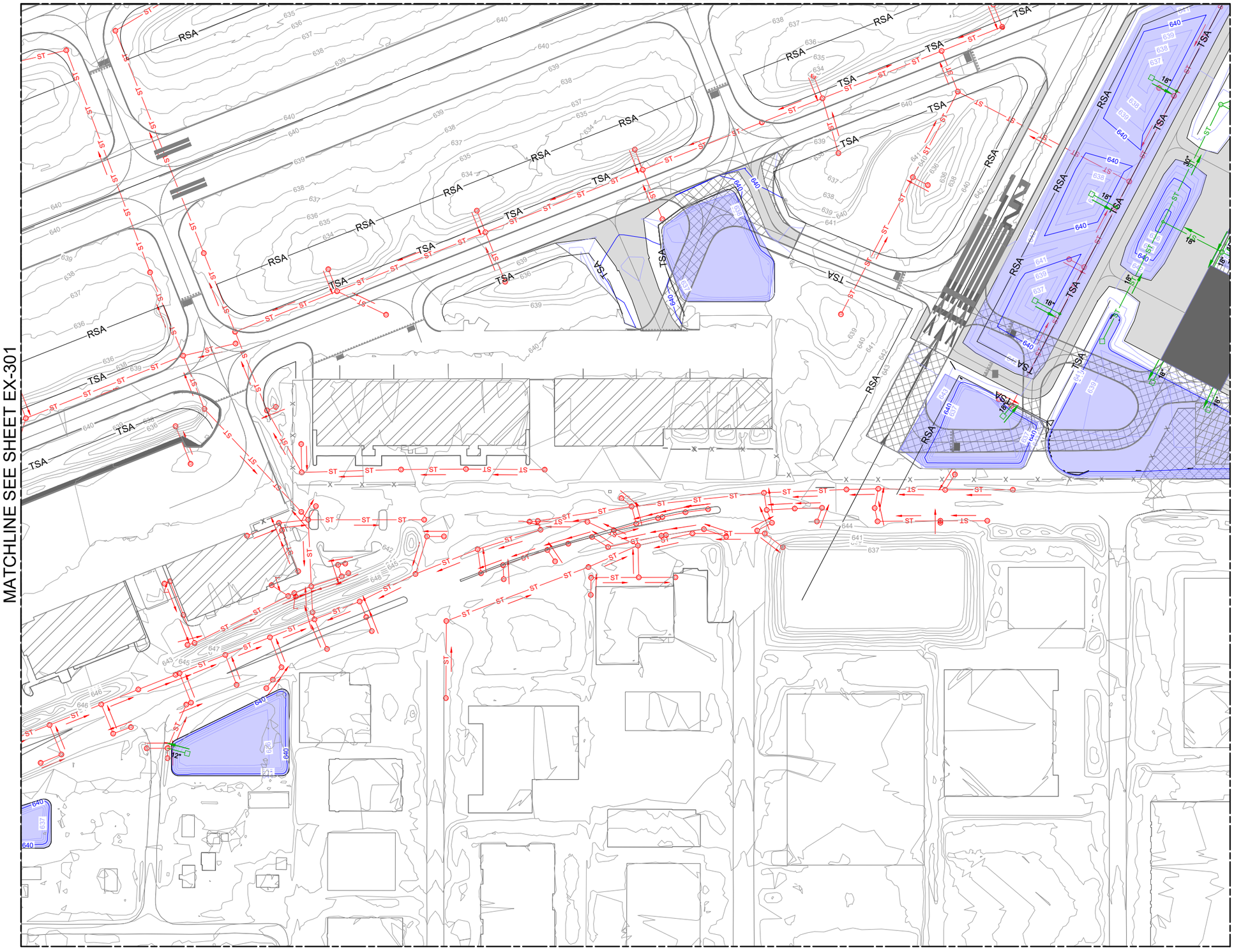
MATCHLINE SEE SHEET CS-201





Primera

CHICAGO EXECUTIVE AIRPORT

LEGEND:

- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

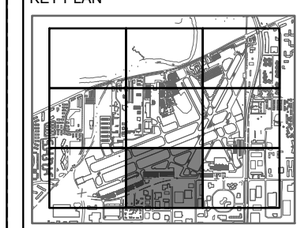
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-302

SHEET NO.
XXX

APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
9

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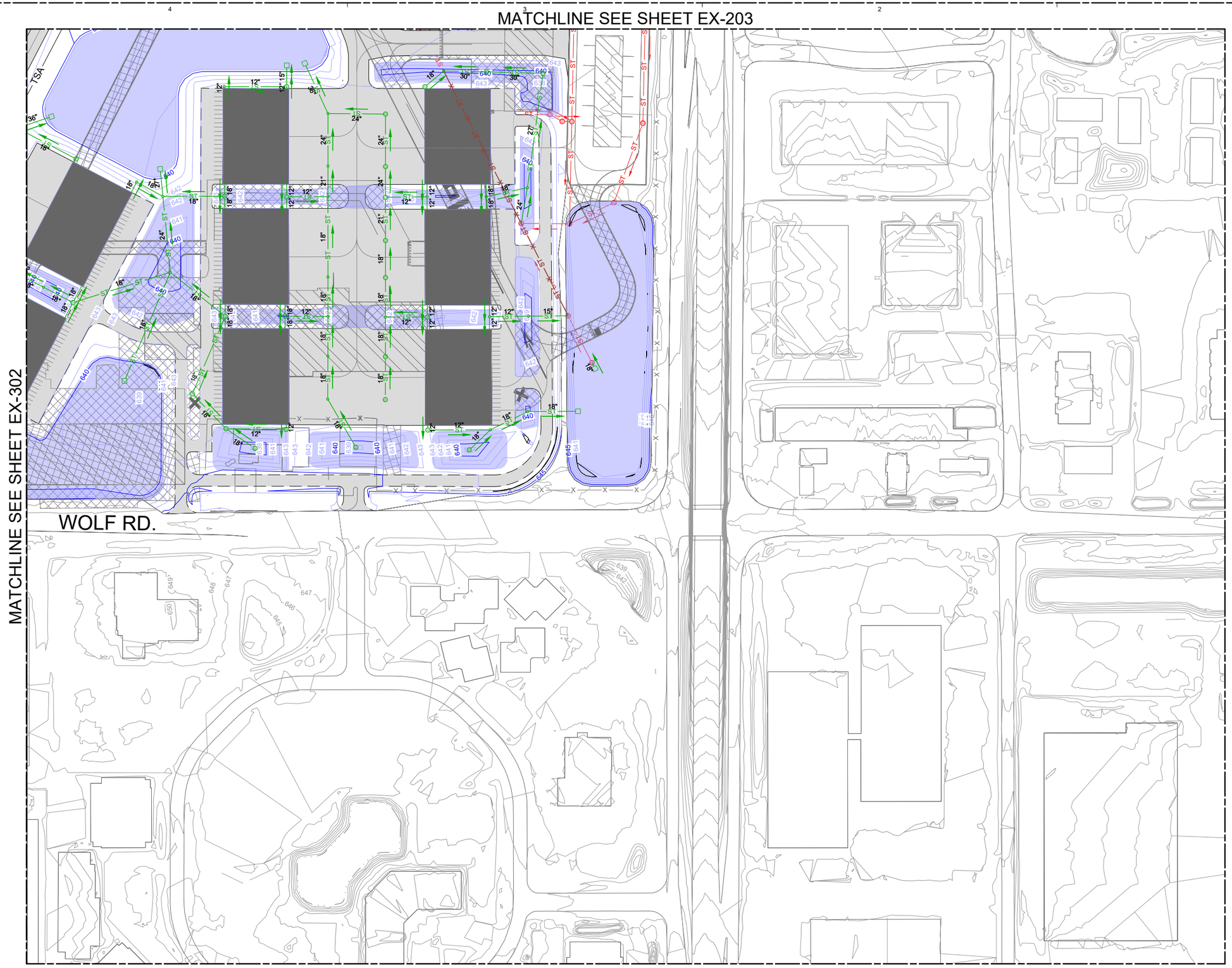


Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-8910 F:312-606-8495

CHICAGO EXECUTIVE AIRPORT

LEGEND:

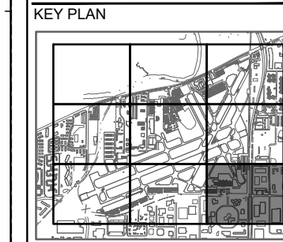
- EX. DRAINAGE STRUCTURE
- EX. STORM SEWER
- EX. DIRECTION OF FLOW
- EX. STORM SEWER REMOVAL
- PROP. INLET
- PROP. STORM SEWER
- PROP. DIRECTION OF FLOW
- PROP. SLOPE BOX
- PROP. POND

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

PROPOSED STORM SEWER - EX-303

SHEET NO.
XXX

APPROVED
XXX

CHECKED
XXX

DRAWN BY

DRAWING NO.
10

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LEGEND

PROPOSED DETENTION

DEVELOPMENT BOUNDARY

Basin #	(1) Bulletin-75 Detention Required (AC-FT)	(2) Bulletin-70 (1989) Existing Detention (AC-FT)	(3) Existing Detention to be Filled (AC-FT)	(4) (1)-(2)+(3) Total Detention Required (AC-FT)	(5) Detention Provided (AC-FT)	(6) (5)-(4) Net Detention (AC-FT)	(7) Required Volume Control (AC-FT)	(8) Excavation Area (SQ. FT)
6	-	-	0.00	-	0.00	0.00	0.00	156,457
7	-	-	0.00	-	0.00	0.00	0.00	34,770
8	0.13	-	0.00	0.13	0.24	0.11	0.00	11,421
9	0.37	-	0.00	0.37	0.98	0.61	0.00	31,180
11A	1.1	0.94	0.00	0.16	0.00	-0.16	0.05	75,536
11B	1.04	0.93	0.09	0.20	0.00	-0.20	0.05	53,404
13	1.36	-	0.00	1.36	4.76	3.40	0.00	130,469
14	0.45	-	0.00	0.45	0.95	0.50	0.00	43,257
18	0.07	0.06	0.00	0.01	0.00	-0.01	0.00	1,510
2F	2.29	1.34	0.00	0.95	0.15	-0.80	0.26	10,502
3A-3L	30.8	24.86	28.80	34.74	23.59	-11.16	2.86	549,278
4A-4D	6.43	5.66	1.31	2.08	9.16	7.08	0.08	503,039
5B, 5C, 5E, 5I-5R	18.06	16.42	0.35	1.99	0.62	-1.36	1.26	564,633
5A, 5D, 5F, 5G, 5H & 15	6.87	6.60	0.15	0.42	1.47	1.05	0.21	432,195
17	1.26	1.16	0.00	0.10	0.19	0.09	0.00	107,720
2A-2E, 2G, 2H	28.44	9.50	0.00	18.94	33.76	14.82	2.23	686,278
1	0.66	0.55	0.00	0.11	3.27	3.16	0.00	73,670
10 & 16	1.40	1.12	0.51	0.79	0.00	-0.79	0.08	74,365
Total (AC-FT)	100.73	69.14	31.21	62.80	79.12	16.33	7.06	3,539,684

(1)- Per MWRD WMO Nomograph
(2)- Required per the previous MWRD permit
(3)- Proposed to be filled by the proposed ALP
(5)- Proposed detention volume per the Primera grading plan
(7)- Required storage based on 1" of rainfall over the new proposed impervious area

16: 36,504 SF
10: 37,861 SF
6: 156,457 SF
E MINTZ ROAD
1: 73,670 SF
2H: 12,013 SF
7: 34,770 SF
WHEELING DRAIN DITCH
DES PLAINES RIVER
2C: 114,001 SF
2B: 231,145 SF
0 125 250 500
SCALE: 1"=250'
8: 11,421 SF
S WOLF ROAD
2A: 114,133 SF
9: 31,180 SF
2D: 120,999 SF
2E&2G: 93,987 SF
S MILWAUKEE AVE
2F: 10,502 SF
15: 40,470 SF
3K: 4,326 SF
3L: 31,030 SF
3B: 22,087 SF
3C: 42,178 SF
5A: 57,722 SF
3A: 40,827 SF
3H&3I: 61,609 SF
5F,5G,&5H: 151,641 SF
5B&5E: 250,153 SF
5D: 175,940 SF
5Q: 15,125 SF
5R: 6,549 SF
11A: 75,536 SF
11B: 53,404 SF
3D: 143,486 SF
3E,3F,&3G: 186,060 SF
3J: 17,675 SF
5I,5J,&5K: 58,084 SF
5P: 8,217 SF
4A: 64,144 SF
4B: 85,486 SF
18: 1,510 SF
5C: 104,654 SF
5L: 7,337 SF
5M: 6,919 SF
5N: 24,832 SF
5O: 23,763 SF
17: 107,720 SF
4C&4D: 353,409 SF
E PALATINE ROAD
PALATINE FRONTAGE ROAD
13: 130,469 SF
14: 43,257 SF

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EX. 5-1
PRI.WHIL01

PROJ. MGR.: DEB
PROJ. ASSOC.: KMS
DRAWN BY: ARD
DATE: 1/25/2024
SCALE: 1"=250'

CHICAGO EXECUTIVE AIRPORT

VILLAGE OF WHEELING AND CITY OF PROSPECT HEIGHTS, ILLINOIS

PROPOSED DETENTION EXHIBIT

Manhard CONSULTING
333 East Butterfield Road, Suite 600, Lombard, IL 60148 ph:630.691.8500 fx:630.691.8585 manhard.com
Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
Construction Managers • Environmental Scientists • Landscape Architects • Planners

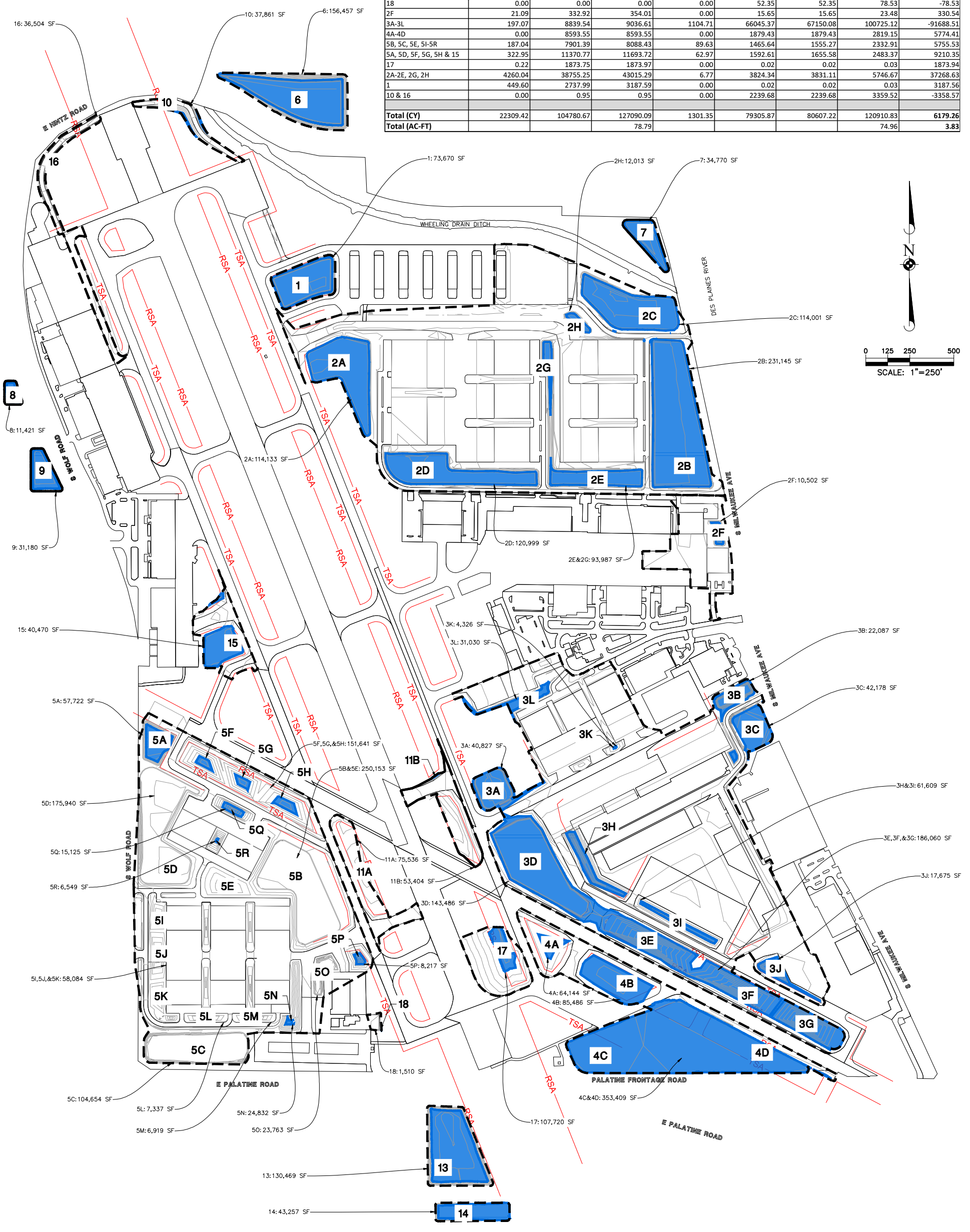
DATE	REVISIONS	DRAWN BY

LEGEND

PROPOSED DETENTION
*PROPOSED COMPENSATORY STORAGE PROVIDED ABOVE PROPOSED DETENTION HIGH WATER LEVEL

DEVELOPMENT BOUNDARY

Basin #	(1) 0-10 Year Cut (CY)	(2) 10-100 Year Cut (CY)	(3) (1)+(2) Total Cut (CY)	(4) 0-10 Year Fill (CY)	(5) 10-100 Year Fill (CY)	(6) (4)+(5) Total Fill (CY)	(7) (6) x 1.5 Factored Fill	(8) (3)-(7) Net (CY)
6	13939.67	9022.52	22962.19	0.00	0.00	0.00	0.00	22962.19
7	2728.28	2520.89	5249.17	0.00	0.00	0.00	0.00	5249.17
8	48.19	548.30	596.49	0.00	0.00	0.00	0.00	596.49
9	155.27	1688.37	1843.64	0.00	0.00	0.00	0.00	1843.64
11A	0.00	490.76	490.76	0.00	306.22	306.22	459.33	31.43
11B	0.00	67.81	67.81	37.27	1884.54	1921.81	2882.72	-2814.91
13	0.00	7847.46	7847.46	0.00	0.00	0.00	0.00	7847.46
14	0.00	2188.45	2188.45	0.00	0.00	0.00	0.00	2188.45
18	0.00	0.00	0.00	0.00	52.35	52.35	78.53	-78.53
2F	21.09	332.92	354.01	0.00	15.65	15.65	23.48	330.54
3A-3L	197.07	8839.54	9036.61	1104.71	66045.37	67150.08	100725.12	-91688.51
4A-4D	0.00	8593.55	8593.55	0.00	1879.43	1879.43	2819.15	5774.41
5B, 5C, 5E, 5I-5R	187.04	7901.39	8088.43	89.63	1465.64	1555.27	2332.91	5755.53
5A, 5D, 5F, 5G, 5H & 15	322.95	11370.77	11693.72	62.97	1592.61	1655.58	2483.37	9210.35
17	0.22	1873.75	1873.97	0.00	0.02	0.02	0.03	1873.94
2A-2E, 2G, 2H	4260.04	38755.25	43015.29	6.77	3824.34	3831.11	5746.67	37268.63
1	449.60	2737.99	3187.59	0.00	0.02	0.02	0.03	3187.56
10 & 16	0.00	0.95	0.95	0.00	2239.68	2239.68	3359.52	-3358.57
Total (CY)	22309.42	104780.67	127090.09	1301.35	79305.87	80607.22	120910.83	**6179.26**
Total (AC-FT)			78.79				74.96	**3.83**



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EX. 5-2
PRI.WHIL01

PROJ. MGR.: DEC
PROJ. ASSOC.: KMS
DRAWN BY: ARD
DATE: 1/25/2024
SCALE: 1"=250'

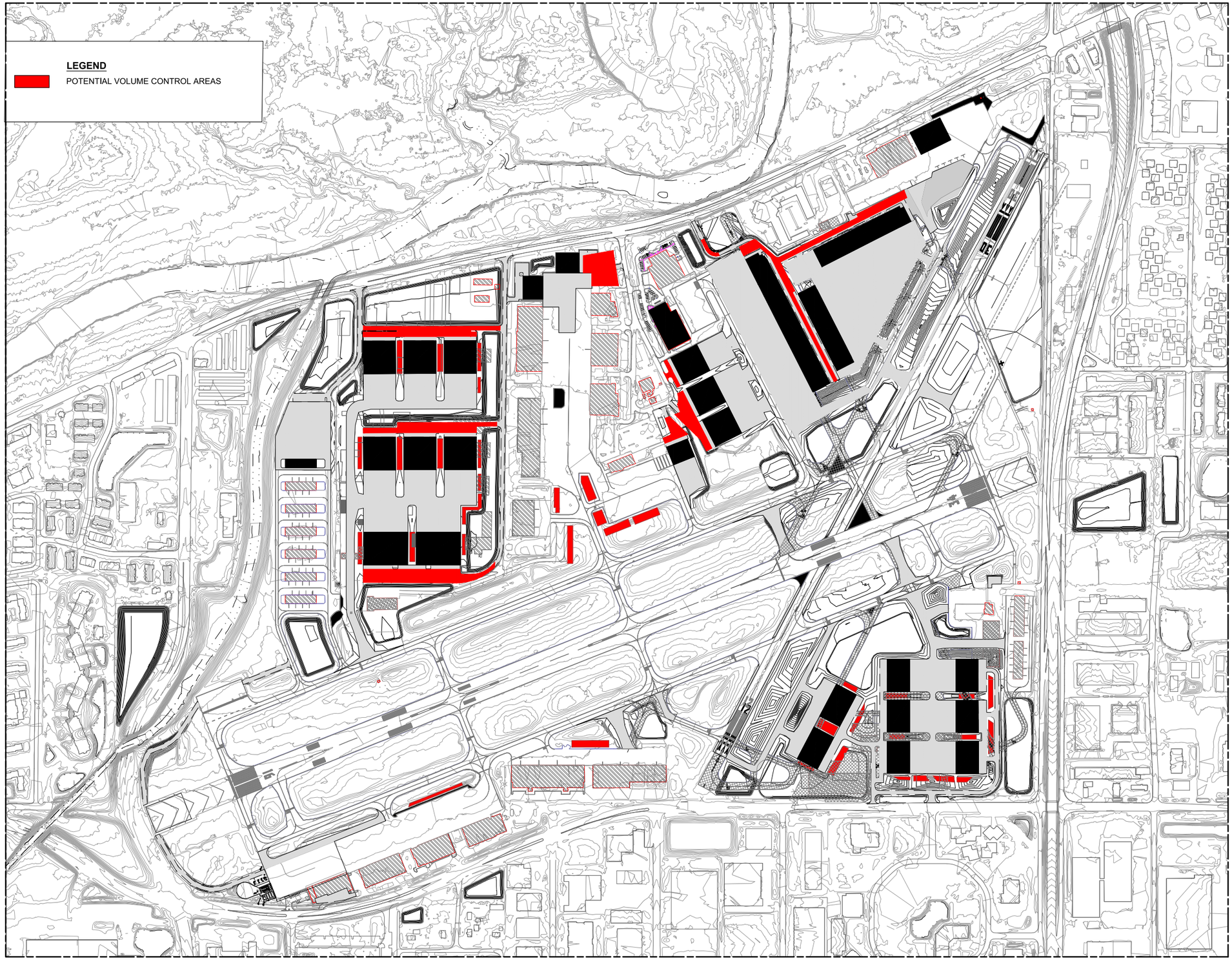
CHICAGO EXECUTIVE AIRPORT

VILLAGE OF WHEELING AND CITY OF PROSPECT HEIGHTS, ILLINOIS

PROPOSED COMPENSATORY STORAGE EXHIBIT

Manhard CONSULTING
333 East Butterfield Road, Suite 600, Lombard, IL 60148 ph:630.691.8500 fx:630.691.8585 manhard.com
Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
Construction Managers • Environmental Scientists • Landscape Architects • Planners

DATE	REVISIONS	DRAWN BY



Primera

CHICAGO EXECUTIVE AIRPORT

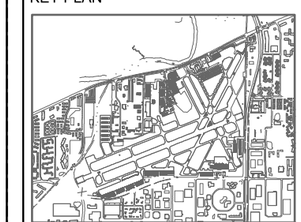
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL VOLUME CONTROL LOCATIONS

SHEET NO.
SM

APPROVED
KWS

CHECKED
JVJ

DRAWN BY

DRAWING NO.

EXHIBIT

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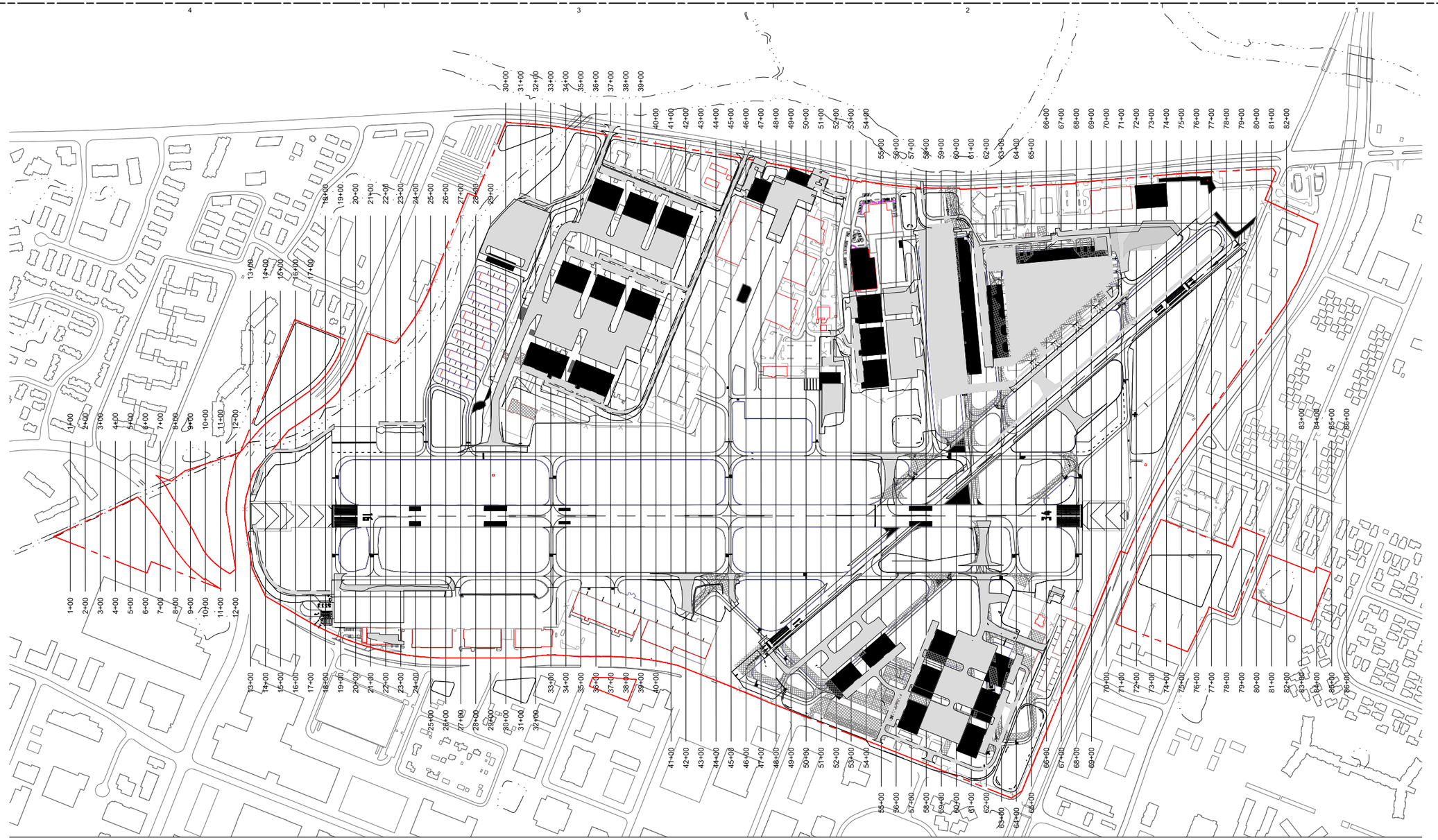
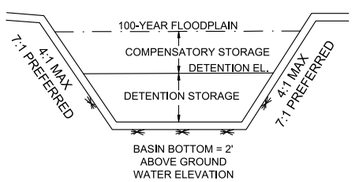


LEGEND

- FUTURE AIRPORT PROPERTY LINE
- FUTURE PAVEMENT
- FUTURE PAVEMENT REMOVAL
- FUTURE BUILDING
- EXISTING BUILDING
- EXISTING FLOODPLAIN
- EXISTING 100-YEAR BFE
- EXISTING 500-YEAR BFE
- 1+00——1+00 CROSS SECTION



BASIN CROSS SECTION

PER MWRD LEGACY PERMIT 03-246, DETENTION ELEVATION AT ZERO DISCHARGE EQUALS APPROXIMATELY 638.0

NOTE:

1. SAMPLE LINES HAVE BEEN GENERATED WITH RESPECT TO THE RUNWAY 16/34 CENTERLINE
2. EARTHWORK TABLES PROVIDED ARE MODELED FOR CONCEPTUAL QUANTITIES OF EARTHWORK MOVEMENTS FOR DETENTION AND COMPENSATORY STORAGE CALCULATIONS. FOR ACTUAL REQUIRED AND PROVIDED STORMWATER STORAGE, SEE DETENTION AND COMPENSATORY STORAGE EXHIBITS MODELED BY MANHARD, CONSULTING.
3. EARTHWORK TABLES ARE EXPRESSED AS CUBIC YARDS (VOLUME) AND SQUARE FEET (AREA) .

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Primera

CHICAGO EXECUTIVE AIRPORT

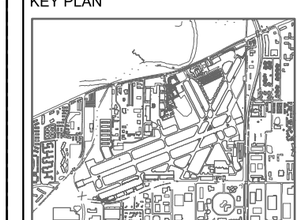
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

AIRPORT CROSS SECTIONS - SITE PLAN AND INDEX

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PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
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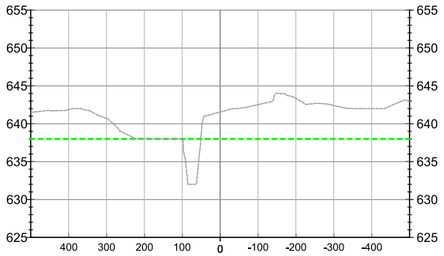
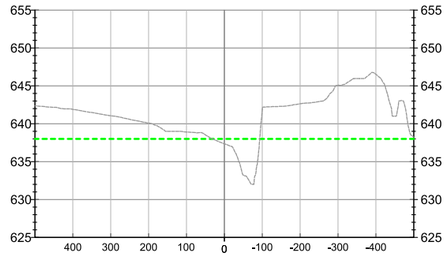


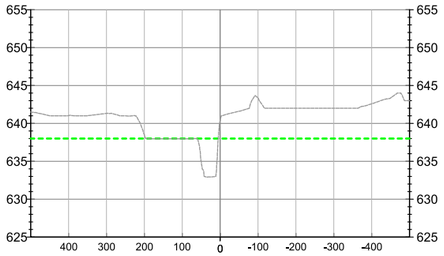
1+00.0

MATERIAL(S) AT STATION 1+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0,00	0,00	0,00
DETENTON FILL	0,00	0,00	0,00



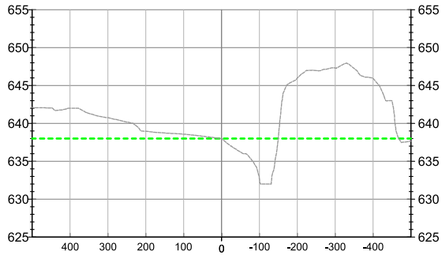
4+00.0

MATERIAL(S) AT STATION 4+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0,00	0,00	0,00
DETENTON FILL	0,00	0.00	0,00



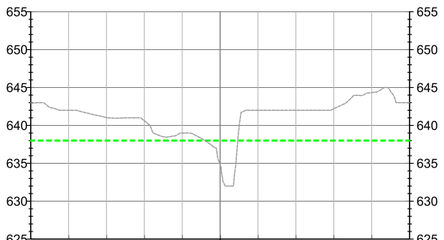
2+00.0

MATERIAL(S) AT STATION 2+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0,00	0,00	0,00
DETENTON FILL	0,00	0,00	0,00



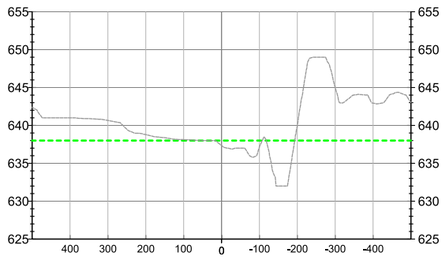
5+00.0

MATERIAL(S) AT STATION 5+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0,00	0,00	0,00
DETENTON FILL	0.00	0.00	0.00



3+00.0

MATERIAL(S) AT STATION 3+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0,00	0,00	0,00
10-100 YEAR CUT	0,00	0.00	0,00
10-100 YEAR FILL	0,00	0.00	0,00
DETENTION CUT	0.00	0.00	0,00
DETENTON FILL	0.00	0.00	0.00



6+00.0

MATERIAL(S) AT STATION 6+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0,00	0,00
10-100 YEAR CUT	0.00	0,00	0,00
10-100 YEAR FILL	0.00	0,00	0,00
DETENTION CUT	0.00	0,00	0,00
DETENTON FILL	0.00	0.00	0.00

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3900 F:312-466-3915

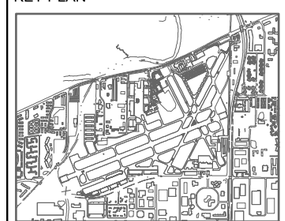
CHICAGO EXECUTIVE AIRPORT

No. Description By Chk. App. Date
Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 1

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

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DRAWING NO.
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PRINTED BY: KRIS SALVATERA
DATE PRINTED: 6/30/2025 1:26 PM
FILE SAVED: 6/30/2025 1:22 PM

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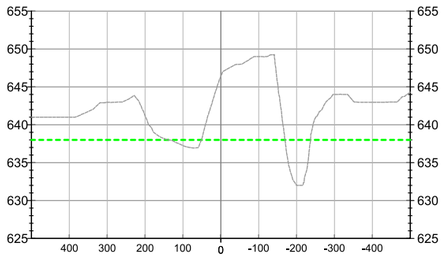
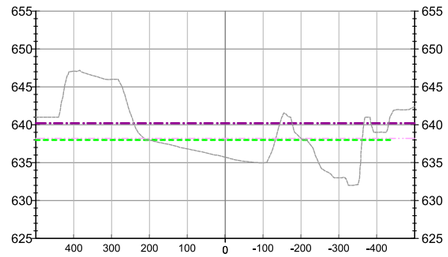


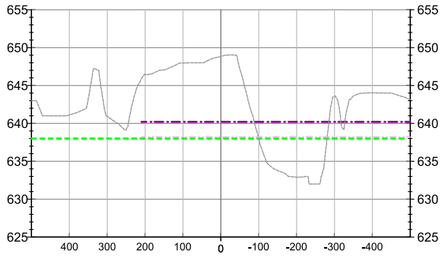
7+00.0

MATERIAL(S) AT STATION 7+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0.00	0.00	0.00
DETENTON FILL	0,00	0,00	0,00



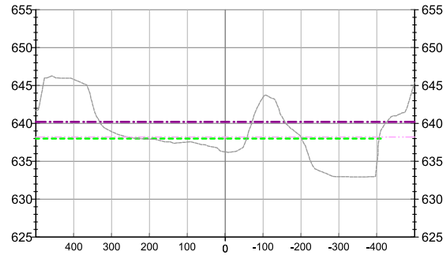
10+00.0

MATERIAL(S) AT STATION 10+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0.00	0.00	0.00
DETENTON FILL	0,00	0.00	0,00



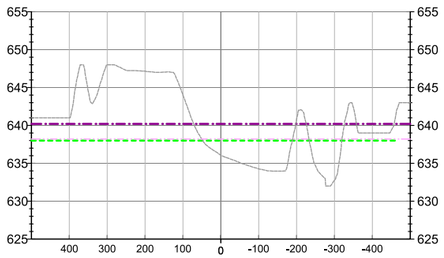
8+00.0

MATERIAL(S) AT STATION 8+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0.00	0.00	0.00
DETENTON FILL	0.00	0.00	0.00



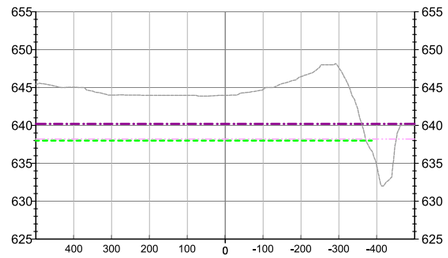
11+00.0

MATERIAL(S) AT STATION 11+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0.00	0.00	0.00
DETENTON FILL	0,00	0,00	0,00



9+00.0

MATERIAL(S) AT STATION 9+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0,00	0,00
10-100 YEAR FILL	0,00	0,00	0,00
DETENTION CUT	0,00	0,00	0,00
DETENTON FILL	0.00	0.00	0.00



12+00.0

MATERIAL(S) AT STATION 12+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0,00	0,00	0,00
10-100 YEAR FILL	0,00	0,00	0,00
DETENTION CUT	0,00	0,00	0,00
DETENTON FILL	0,00	0,00	0,00

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

Primera
105 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3900 F:312-466-3915

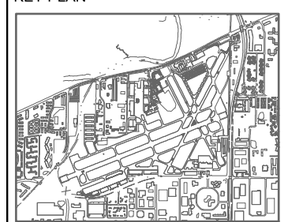
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



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CROSS SECTION 2

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
2

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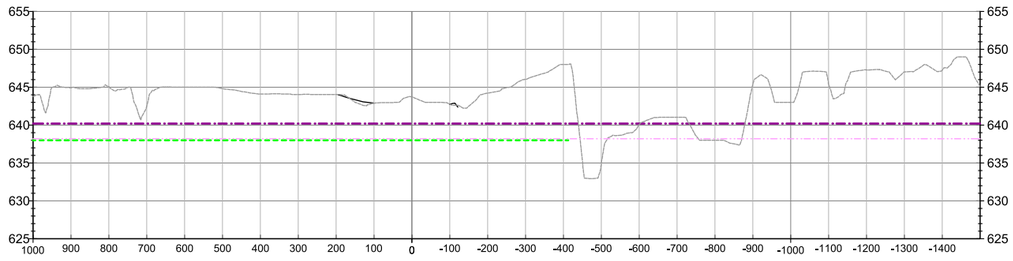
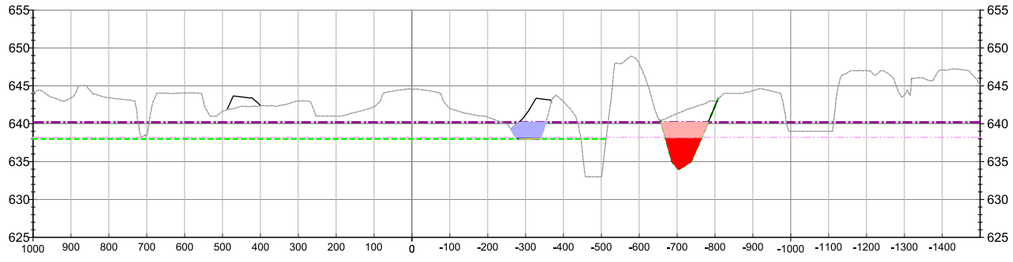


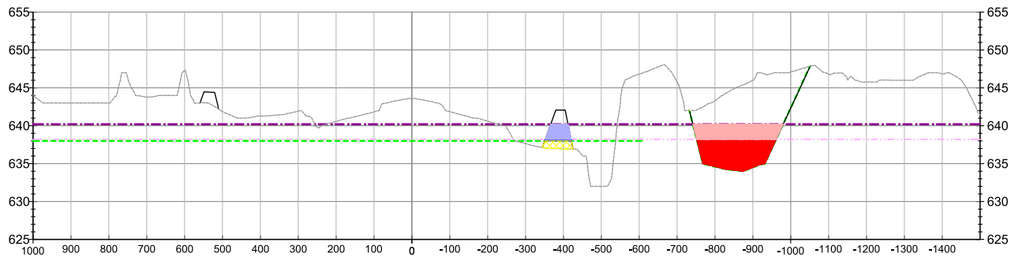
13+00.0

MATERIAL(S) AT STATION 13+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	0.00
0-10 YEAR FILL	0.00	0.00	0.00
10-100 YEAR CUT	0.00	0.00	0.00
10-100 YEAR FILL	0.00	0.00	0.00
DETENTION CUT	0.00	0.00	0.00
DETENTON FILL	0.00	0.00	0.00



14+00.0

MATERIAL(S) AT STATION 14+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	258.28	478.30	478.30
0-10 YEAR FILL	12.00	22.22	22.22
10-100 YEAR CUT	218.96	405.48	405.48
10-100 YEAR FILL	154.82	286.71	286.71
DETENTION CUT	0.00	0.00	0.00
DETENTON FILL	0.74	1.37	1.37



15+00.0

MATERIAL(S) AT STATION 15+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	687.23	1750.95	2229.25
0-10 YEAR FILL	13.85	47.87	70.10
10-100 YEAR CUT	448.13	1235.34	1640.82
10-100 YEAR FILL	114.00	497.83	784.53
DETENTION CUT	0.00	0.00	0.00
DETENTON FILL	77.72	145.29	146.66

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

Primera

CHICAGO EXECUTIVE AIRPORT

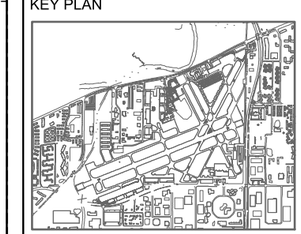
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 3

SHEET NO.
PRIMERA

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PRIMERA

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PRIMERA

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DRAWING NO.
3

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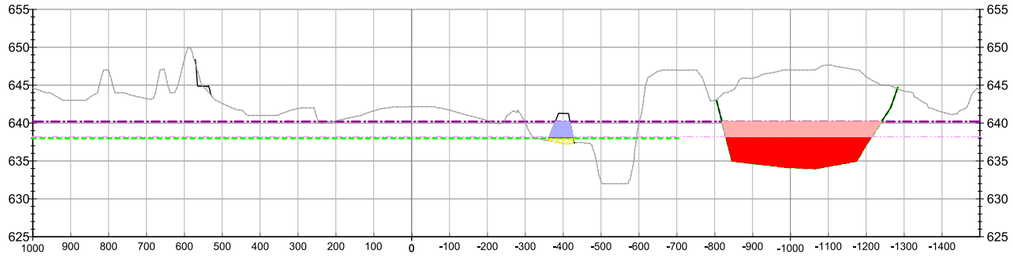
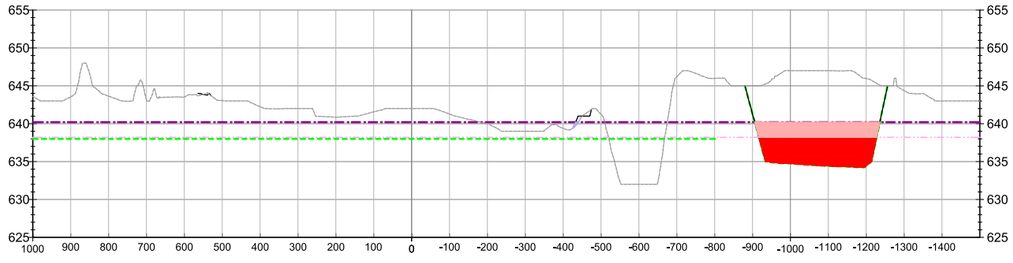


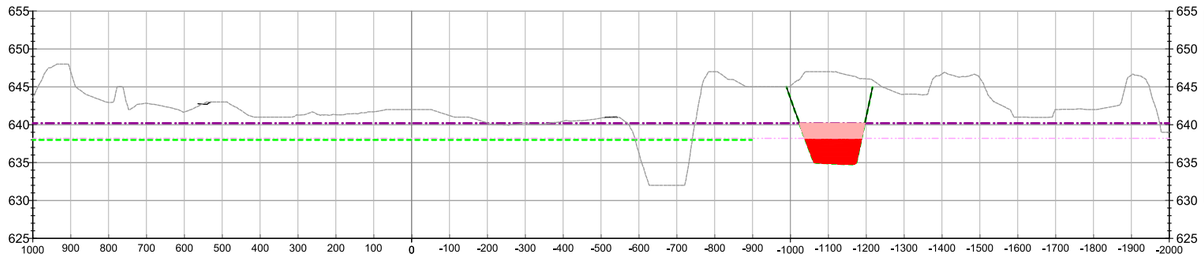
16+00.0

MATERIAL(S) AT STATION 16+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	1320.08	3717.24	5946.49
0-10 YEAR FILL	12.57	48.92	119.02
10-100 YEAR CUT	805.49	2321.51	3962.32
10-100 YEAR FILL	100.50	397.23	1181.77
DETENTION CUT	0.01	0.01	0.01
DETENTON FILL	38.86	215.89	362.54



17+00.0

MATERIAL(S) AT STATION 17+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	1066.68	4419.92	10366.41
0-10 YEAR FILL	0.00	23.27	142.29
10-100 YEAR CUT	641.04	2678.75	6641.08
10-100 YEAR FILL	3.84	193.22	1374.99
DETENTION CUT	0.00	0.01	0.02
DETENTON FILL	0.00	71.96	434.51



18+00.0

MATERIAL(S) AT STATION 18+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	431.44	2774.30	13140.71
0-10 YEAR FILL	0.00	0.00	142.29
10-100 YEAR CUT	322.47	1784.28	8425.35
10-100 YEAR FILL	0.00	7.11	1382.10
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	0.00	0.00	434.51

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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CHICAGO EXECUTIVE AIRPORT

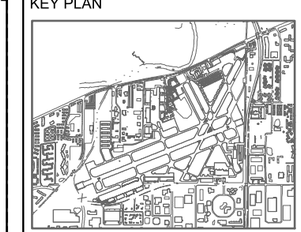
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 4

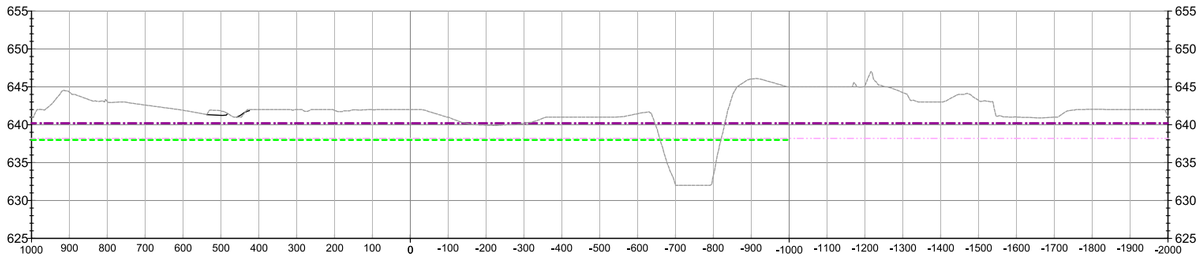
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

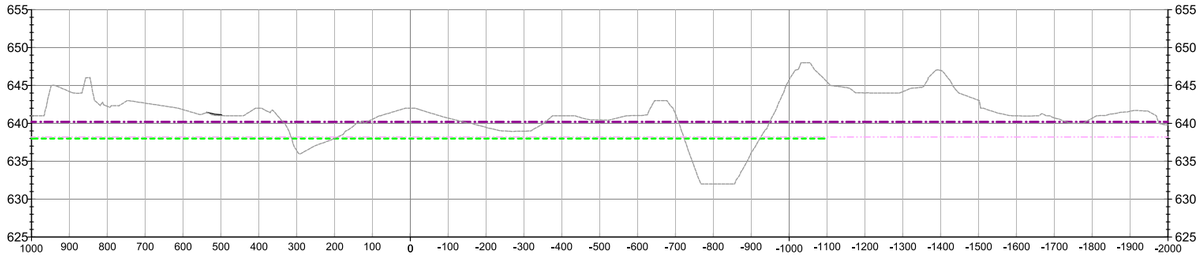
DRAWN BY

DRAWING NO.
4



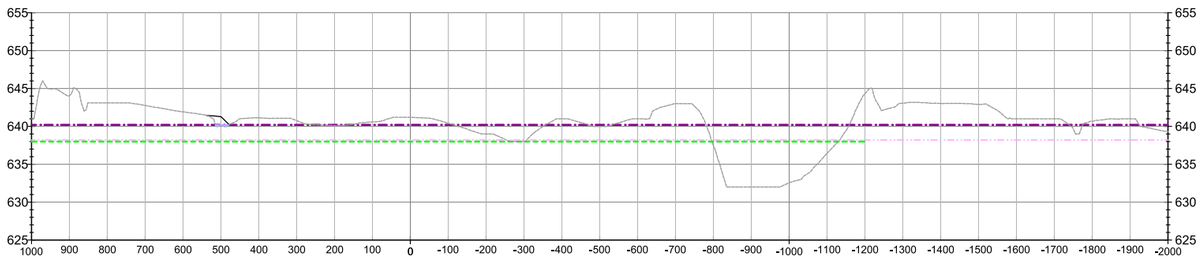
19+00.0

MATERIAL(S) AT STATION 19+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	798.97	13939.67
0-10 YEAR FILL	0.00	0.00	142.29
10-100 YEAR CUT	0.00	597.16	9022.52
10-100 YEAR FILL	0.00	0.00	1382.10
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	0.00	0.00	434.51



20+00.0

MATERIAL(S) AT STATION 20+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	13939.67
0-10 YEAR FILL	0.00	0.00	142.29
10-100 YEAR CUT	0.00	0.00	9022.52
10-100 YEAR FILL	0.00	0.00	1382.10
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	0.00	0.00	434.51



21+00.0

MATERIAL(S) AT STATION 21+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	13939.67
0-10 YEAR FILL	0.00	0.00	142.29
10-100 YEAR CUT	0.00	0.00	9022.52
10-100 YEAR FILL	4.56	8.44	1390.53
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	0.00	0.00	434.51

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

Primera
100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-1900 F:312-466-1915

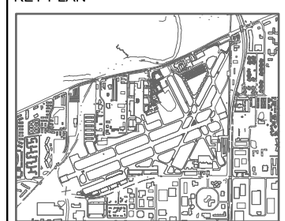
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 5

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
5

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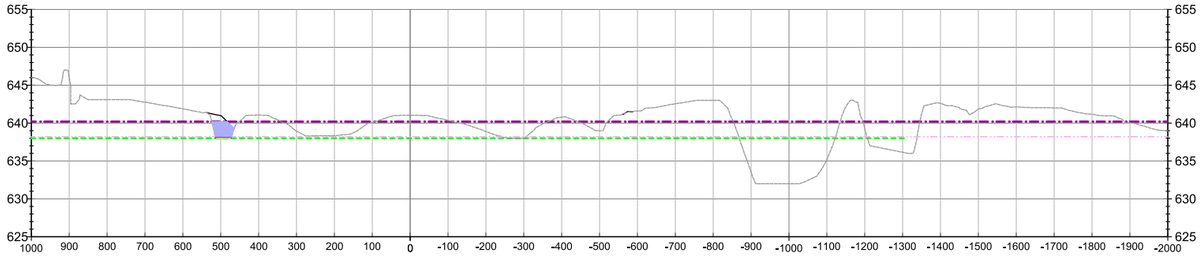
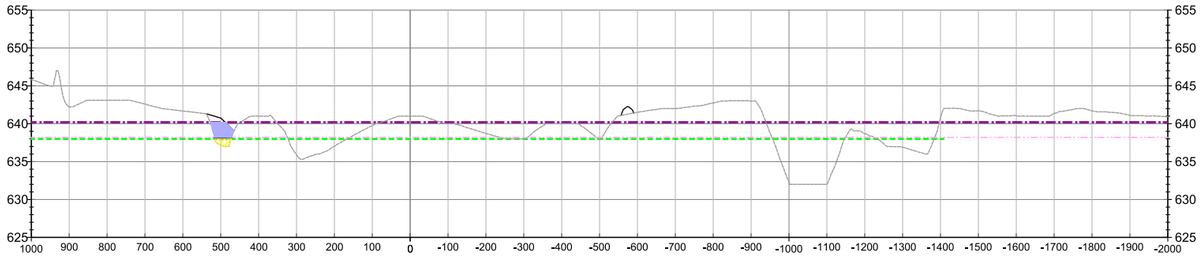


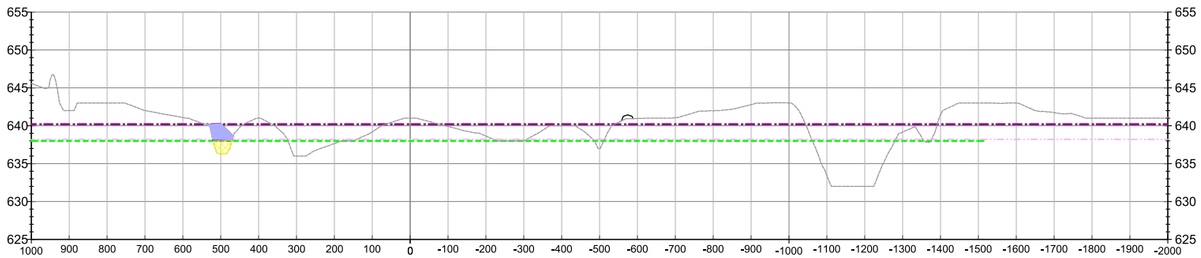
22+00.0

MATERIAL(S) AT STATION 22+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	13939.67
0-10 YEAR FILL	8.14	15.07	157.36
10-100 YEAR CUT	0.00	0.00	9022.52
10-100 YEAR FILL	96.21	186.59	1577.13
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	0.70	1.29	435.80



23+00.0

MATERIAL(S) AT STATION 23+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	13939.67
0-10 YEAR FILL	8.94	31.63	188.98
10-100 YEAR CUT	0.00	0.00	9022.52
10-100 YEAR FILL	96.85	357.50	1934.63
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	33.07	62.54	498.34



24+00.0

MATERIAL(S) AT STATION 24+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	13939.67
0-10 YEAR FILL	10.16	35.38	224.37
10-100 YEAR CUT	0.00	0.00	9022.52
10-100 YEAR FILL	91.32	348.45	2283.08
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	66.48	184.37	682.71

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3900 F:312-466-3915

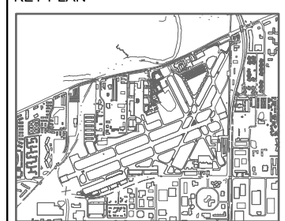
CHICAGO EXECUTIVE AIRPORT

No. Description By Chk. App. Date
Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 6

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
6

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DATE PRINTED: 6/30/2025 1:28 PM
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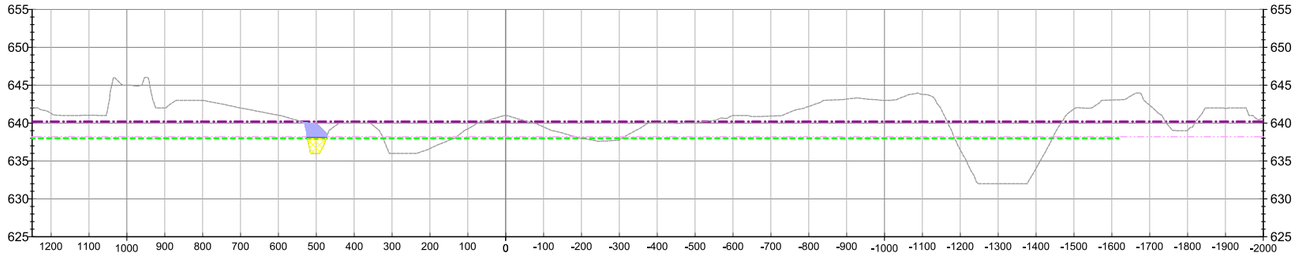
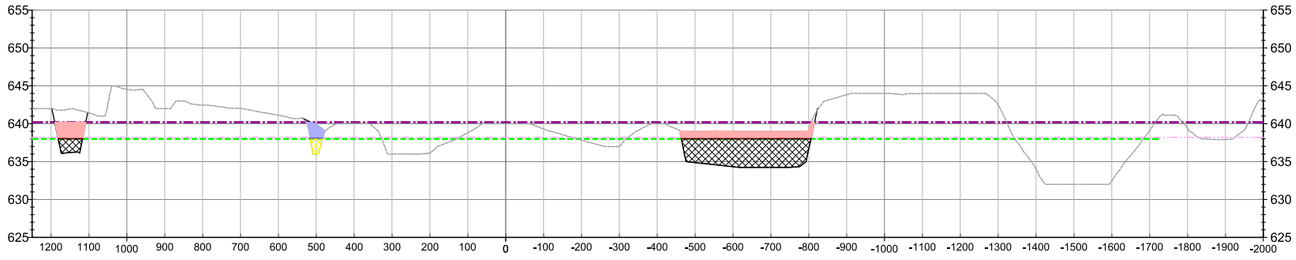


25+00.0

MATERIAL(S) AT STATION 25+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	13939.67
0-10 YEAR FILL	10.09	37.51	261.88
10-100 YEAR CUT	0.05	0.09	9022.61
10-100 YEAR FILL	76.37	310.53	2593.61
DETENTION CUT	0.00	0.00	0.02
DETENTON FILL	75.15	262.28	944.99

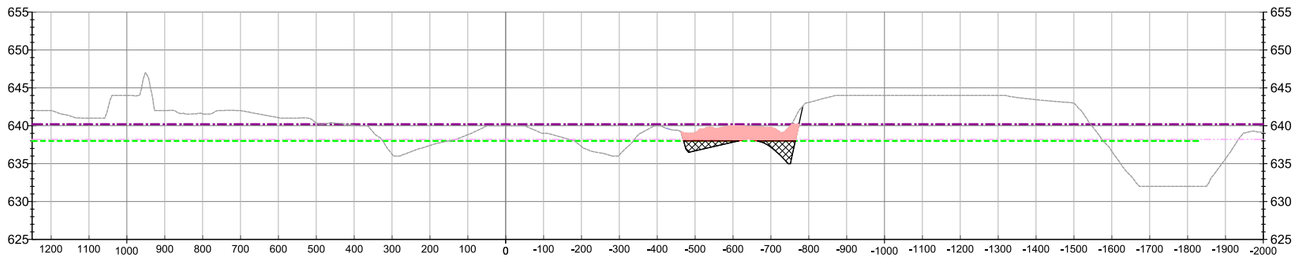
0 5 10
VERT. SCALE

0 100 200
HOR. SCALE



26+00.0

MATERIAL(S) AT STATION 26+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	81.65	151.20	14090.88
0-10 YEAR FILL	6.60	30.91	292.78
10-100 YEAR CUT	440.71	816.22	9838.83
10-100 YEAR FILL	64.15	260.22	2853.83
DETENTION CUT	1277.20	2365.18	2365.21
DETENTON FILL	46.77	225.77	1170.77



27+00.0

MATERIAL(S) AT STATION 27+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	52.75	248.89	14339.77
0-10 YEAR FILL	0.00	12.22	305.01
10-100 YEAR CUT	446.59	1643.15	11481.97
10-100 YEAR FILL	0.19	119.15	2972.98
DETENTION CUT	248.65	2825.65	5190.86
DETENTON FILL	0.00	86.61	1257.38

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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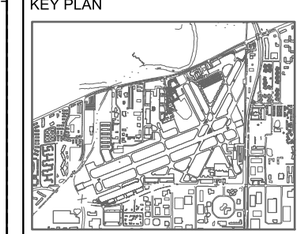
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 7

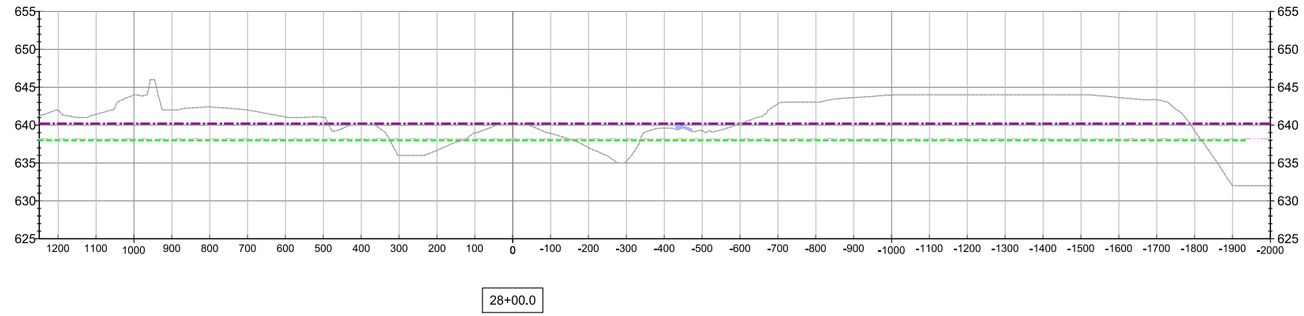
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

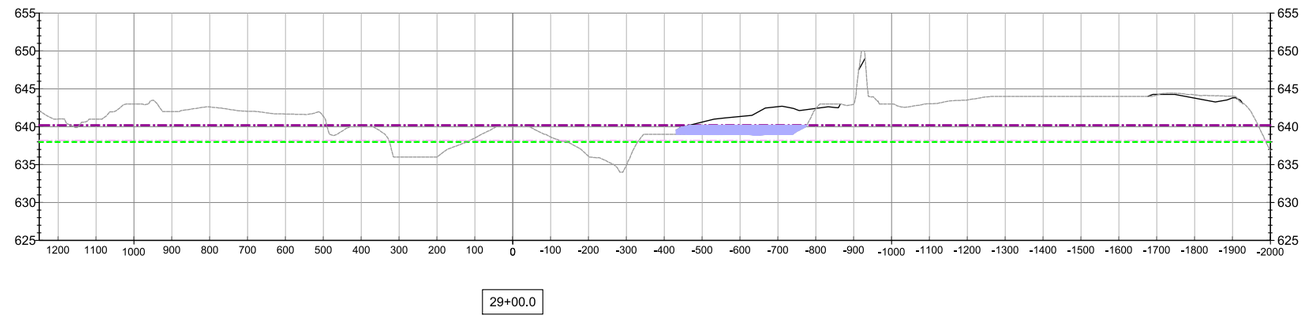
DRAWN BY

DRAWING NO.
7



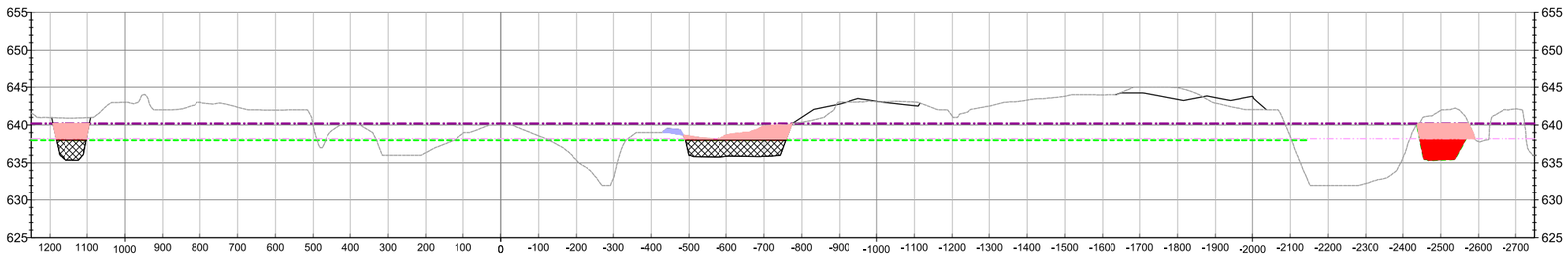
28+00.0

MATERIAL(S) AT STATION 28+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	97.69	14437.46
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	0.00	827.02	12308.99
10-100 YEAR FILL	12.80	24.06	2997.04
DETENTION CUT	0.00	460.47	5651.32
DETENTON FILL	0.00	0.00	1257.38



29+00.0

MATERIAL(S) AT STATION 29+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	14437.46
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	0.00	0.00	12308.99
10-100 YEAR FILL	391.79	749.24	3746.28
DETENTION CUT	0.00	0.00	5651.32
DETENTON FILL	0.00	0.00	1257.38



30+00.0

MATERIAL(S) AT STATION 30+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	348.67	645.69	15083.15
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	695.07	1287.16	13596.15
10-100 YEAR FILL	26.03	773.74	4520.02
DETENTION CUT	719.86	1333.08	6984.40
DETENTON FILL	0.00	0.00	1257.38

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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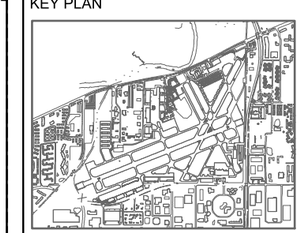
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 8

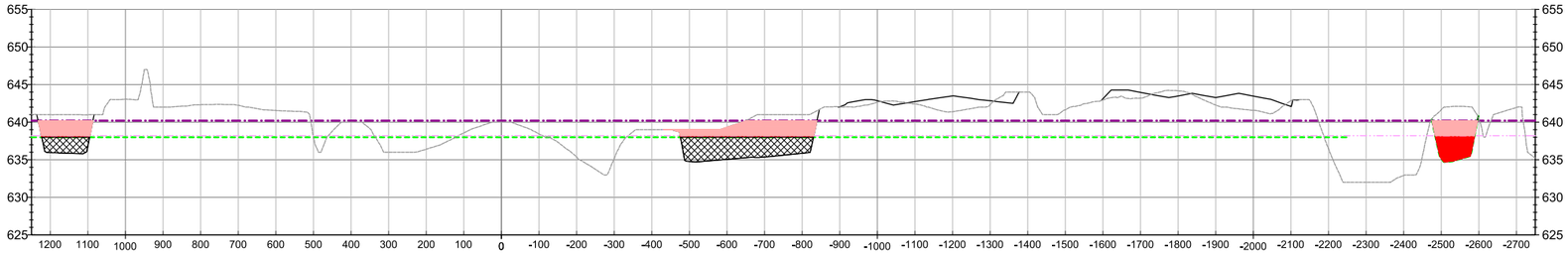
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

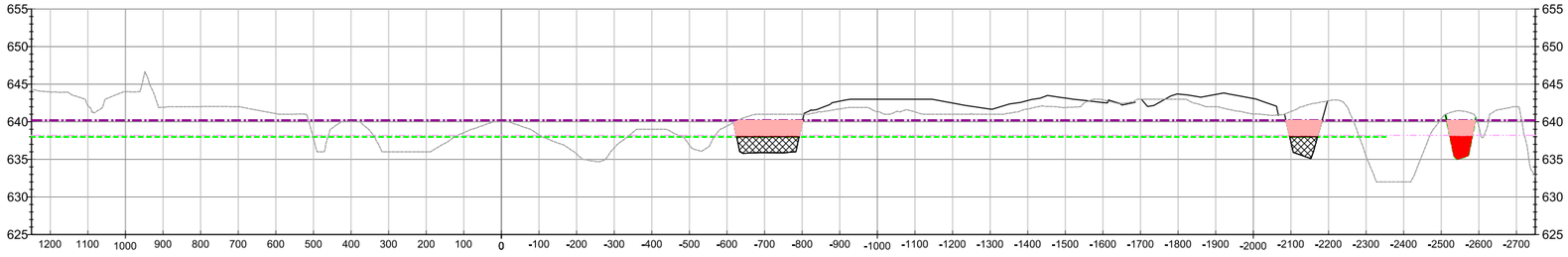
DRAWN BY

DRAWING NO.
8



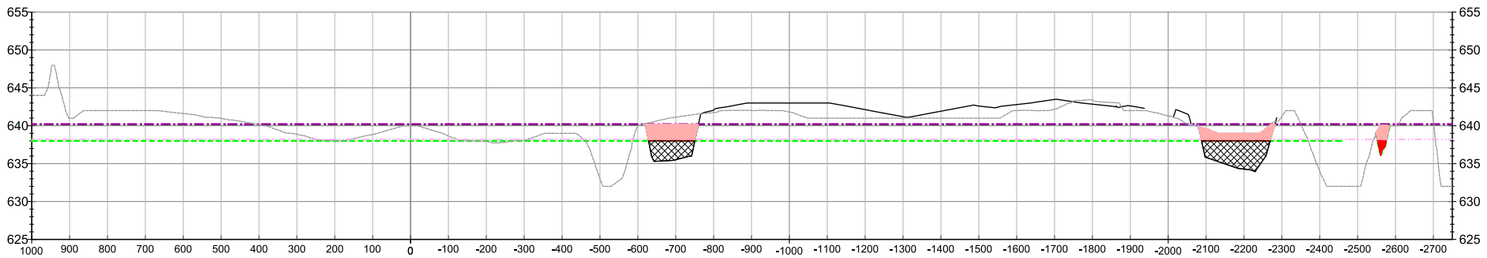
31+00.0

MATERIAL(S) AT STATION 31+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	386.08	1360.65	16443.80
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	1053.73	3238.51	16834.66
10-100 YEAR FILL	0.00	48.20	4568.21
DETENTION CUT	1194.42	3544.96	10529.35
DETENTON FILL	0.00	0.00	1257.38



32+00.0

MATERIAL(S) AT STATION 32+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	188.72	1064.45	17508.25
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	658.09	3170.04	20004.71
10-100 YEAR FILL	0.08	0.16	4568.37
DETENTION CUT	487.51	3114.69	13644.04
DETENTON FILL	0.00	0.00	1257.38



33+00.0

MATERIAL(S) AT STATION 33+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	89.06	514.41	18022.66
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	516,83	2175,78	22180.49
10-100 YEAR FILL	0,34	0.79	4569.16
DETENTION CUT	806,95	2397.15	16041.19
DETENTON FILL	0.00	0.00	1257.38

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

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100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

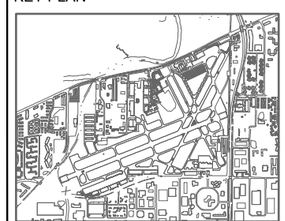
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 9

SHEET NO.
PRIMERA

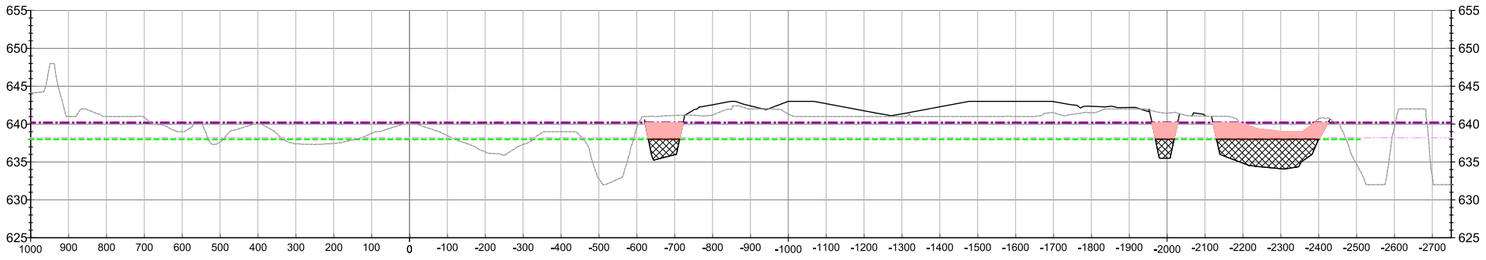
APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
9

PLOT STYLE TABLE: ctb
PLOT DEVICE DRIVER
FILENAME/LOCATION: P:\2022\20220845.00 IDA MASTER DRAINAGE\DRAWINGS\CURRENT DRAWING FILES\CAD\PWK-5060-CROSS SECTIONS-COMP STORAGE - MATERIAL TABLES
PRINTED BY: KRIS SALVATERA
DATE PRINTED: 6/30/2025 1:28 PM
FILE SAVED: 6/30/2025 1:22 PM

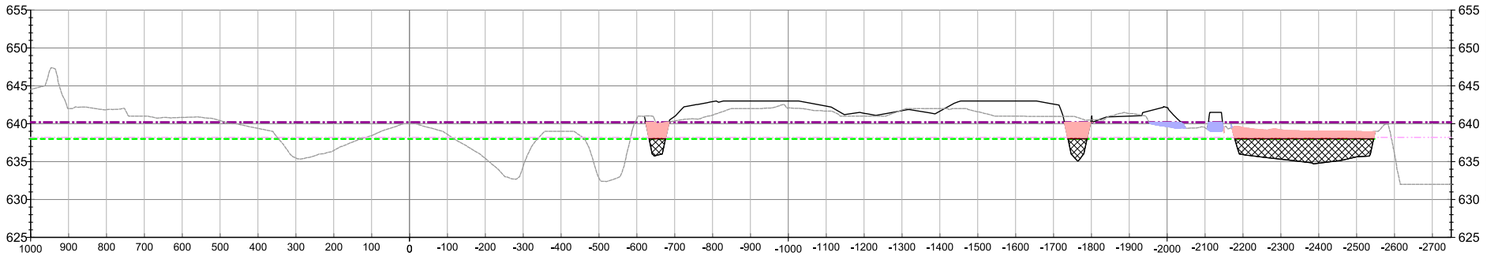


34+00.0

MATERIAL(S) AT STATION 34+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	80.99	314.91	18337.57
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	712.98	2277.41	24457.90
10-100 YEAR FILL	0.00	0.64	4569.80
DETENTION CUT	1090.70	3514.16	19555.35
DETENTON FILL	0.00	0.00	1257.38

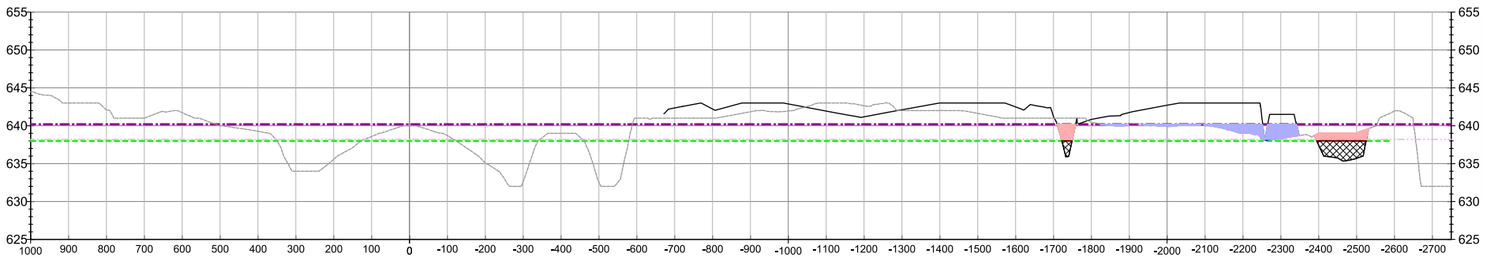
0 5 10
VERT. SCALE

0 100 200
HOR. SCALE



35+00.0

MATERIAL(S) AT STATION 35+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	92.52	321.33	18658.90
0-10 YEAR FILL	0.00	0.00	305.01
10-100 YEAR CUT	565.46	2367.47	26825.37
10-100 YEAR FILL	97.35	180.28	4750.07
DETENTION CUT	1124.35	4101.94	23657.29
DETENTON FILL	0.00	0.00	1257.38



36+00.0

MATERIAL(S) AT STATION 36+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	31.95	230.51	18889.41
0-10 YEAR FILL	1.83	3.38	308.39
10-100 YEAR CUT	196.68	1411.37	28236.74
10-100 YEAR FILL	335.34	801.28	5551.36
DETENTION CUT	302.81	2642.88	26300.17
DETENTON FILL	0.00	0.00	1257.38

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0415

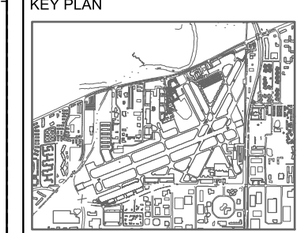
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 10

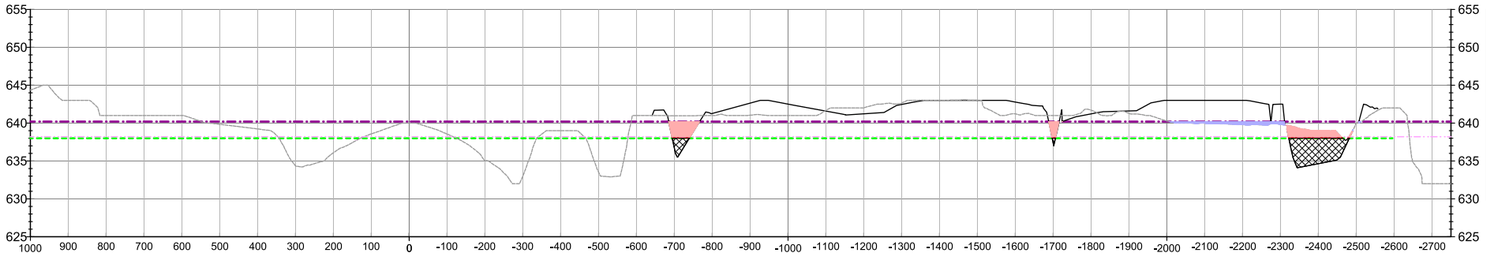
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
10

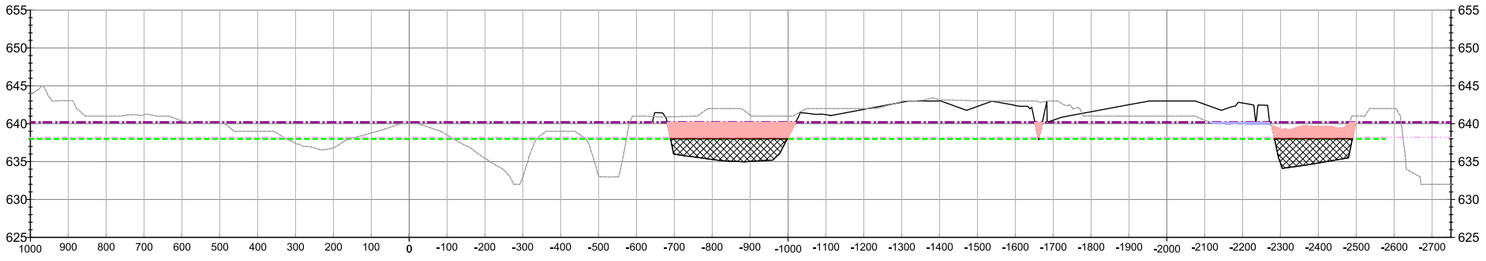


37+00.0

MATERIAL(S) AT STATION 37+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	40.22	133.65	19023.07
0-10 YEAR FILL	0.00	3.38	311.77
10-100 YEAR CUT	299.13	918.16	29154.90
10-100 YEAR FILL	94.24	795.53	6346.88
DETENTION CUT	523.18	1529.60	27829.77
DETENTON FILL	0.00	0.00	1257.38

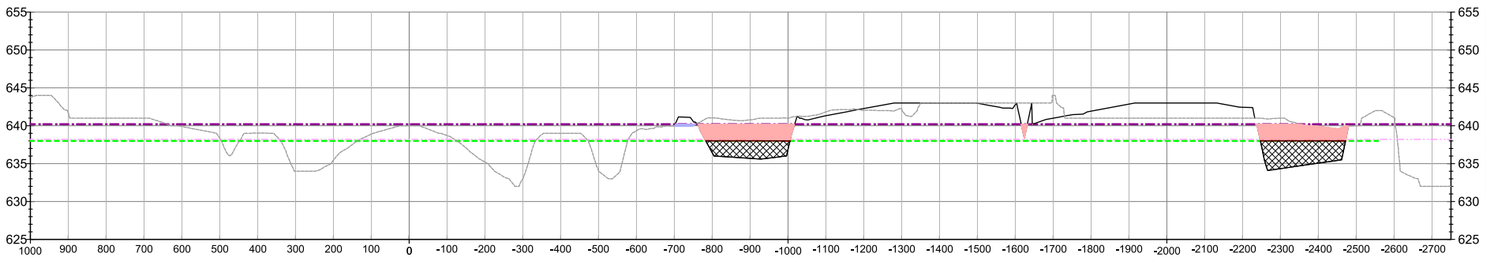
0 5 10
VERT. SCALE

0 100 200
HOR. SCALE



38+00.0

MATERIAL(S) AT STATION 38+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	103.55	266.24	19289.30
0-10 YEAR FILL	0.00	0.00	311.77
10-100 YEAR CUT	968.79	2347.99	31502.89
10-100 YEAR FILL	36.28	241.70	6588.59
DETENTION CUT	1399.60	3560.70	31390.47
DETENTON FILL	0.00	0.00	1257.38



39+00.0

MATERIAL(S) AT STATION 39+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	89.92	358.26	19647.56
0-10 YEAR FILL	0.00	0.00	311.77
10-100 YEAR CUT	924.83	3506.70	35009.59
10-100 YEAR FILL	11.75	88.94	6677.53
DETENTION CUT	1131.76	4687.70	36078.17
DETENTON FILL	0.00	0.00	1257.38

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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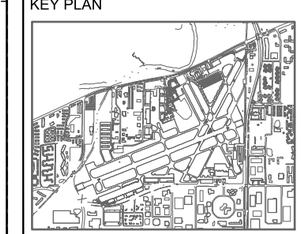
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 11

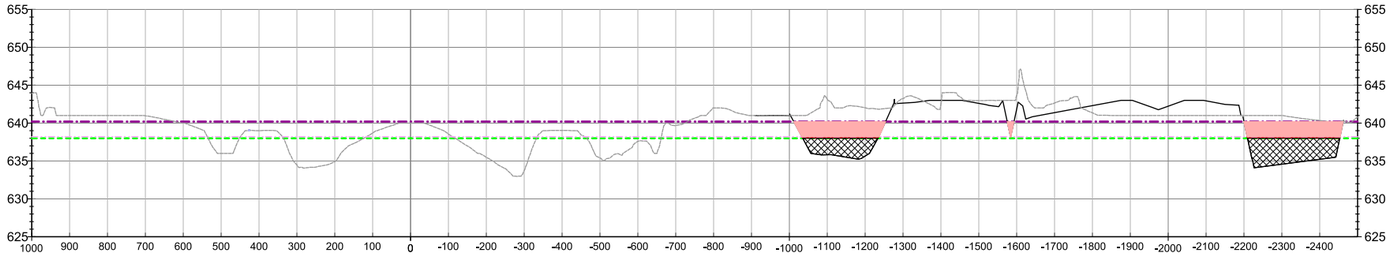
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

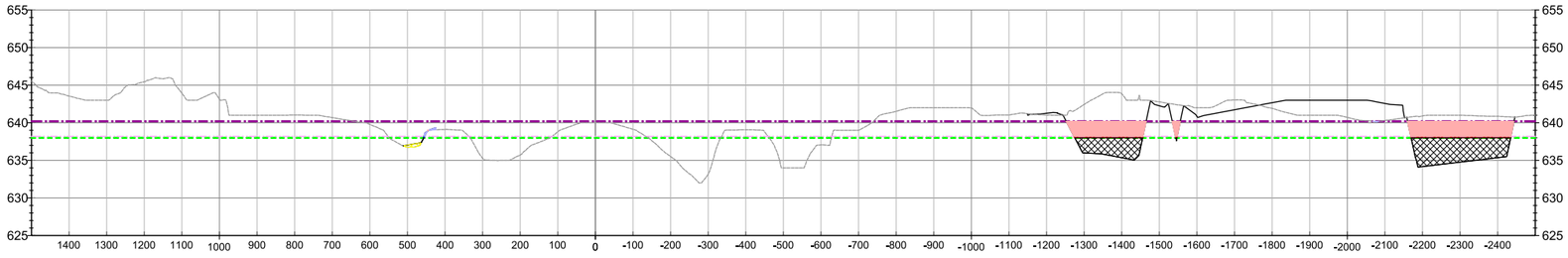
DRAWN BY

DRAWING NO.
11



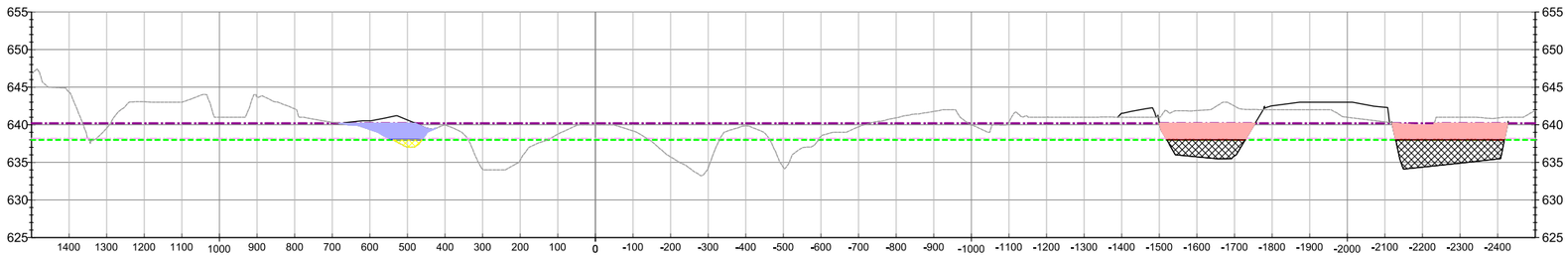
40+00.0

MATERIAL(S) AT STATION 40+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	89.12	331.55	19979.12
0-10 YEAR FILL	0.00	0.00	311.77
10-100 YEAR CUT	970.29	3509.48	38519.08
10-100 YEAR FILL	0.27	22.26	6699.79
DETENTION CUT	1149.79	4225.09	40303.26
DETENTON FILL	0.00	0.00	1257.38



41+00.0

MATERIAL(S) AT STATION 41+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	90.40	332.45	20311.57
0-10 YEAR FILL	0.16	0.31	312.08
10-100 YEAR CUT	973.20	3599.05	42118.13
10-100 YEAR FILL	4.90	9.57	6709.36
DETENTION CUT	1201.97	4355.10	44658.36
DETENTON FILL	14.28	26.44	1283.82



42+00.0

MATERIAL(S) AT STATION 42+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	100.17	352.91	20664.48
0-10 YEAR FILL	16.84	31.49	343.56
10-100 YEAR CUT	1053.28	3752.74	45870.87
10-100 YEAR FILL	287.95	542.31	7251.67
DETENTION CUT	1313.60	4658.46	49316.82
DETENTON FILL	50.16	119.33	1403.15

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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CHICAGO EXECUTIVE AIRPORT

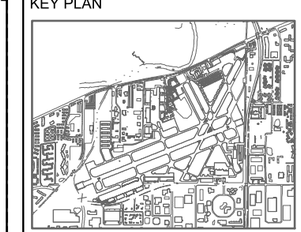
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 12

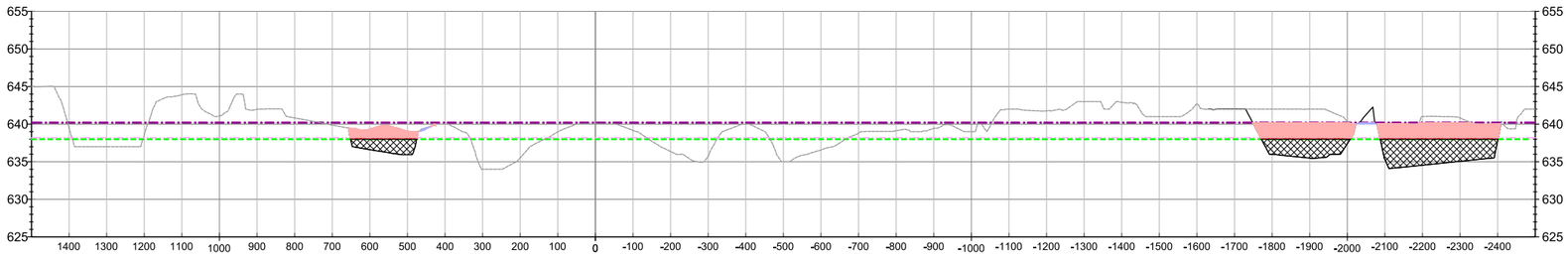
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

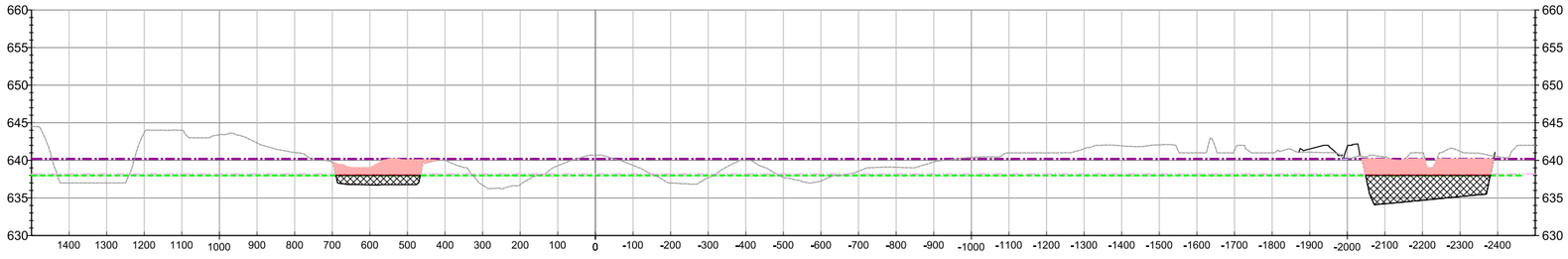
DRAWING NO.
12



43+00.0

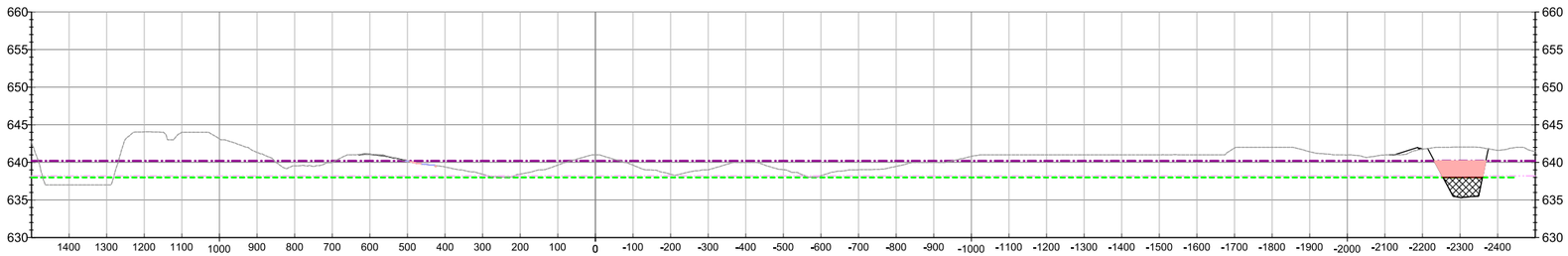
MATERIAL(S) AT STATION 43+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	145.90	455.68	21120.16
0-10 YEAR FILL	0.00	31.18	374.75
10-100 YEAR CUT	1349.70	4449.96	50320.83
10-100 YEAR FILL	10.23	552.18	7803.85
DETENTION CUT	1718.88	5615.71	54932.53
DETENTON FILL	0.00	92.89	1496.04

0 5 10
VERT. SCALE
0 100 200
HOR. SCALE



44+00.0

MATERIAL(S) AT STATION 44+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	111.36	476.40	21596.57
0-10 YEAR FILL	0.00	0.00	374.75
10-100 YEAR CUT	980.95	4316.03	54636.87
10-100 YEAR FILL	0.64	20.12	7823.96
DETENTION CUT	1286.99	5566.43	60498.96
DETENTON FILL	0.00	0.00	1496.04



45+00.0

MATERIAL(S) AT STATION 45+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	20.41	244.02	21840.58
0-10 YEAR FILL	0.00	0.00	374.75
10-100 YEAR CUT	246.71	2273.46	56910.33
10-100 YEAR FILL	0.91	2.86	7826.82
DETENTION CUT	222.39	2795.15	63294.11
DETENTON FILL	0.00	0.00	1496.04

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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CHICAGO EXECUTIVE AIRPORT

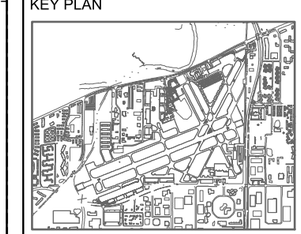
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 13

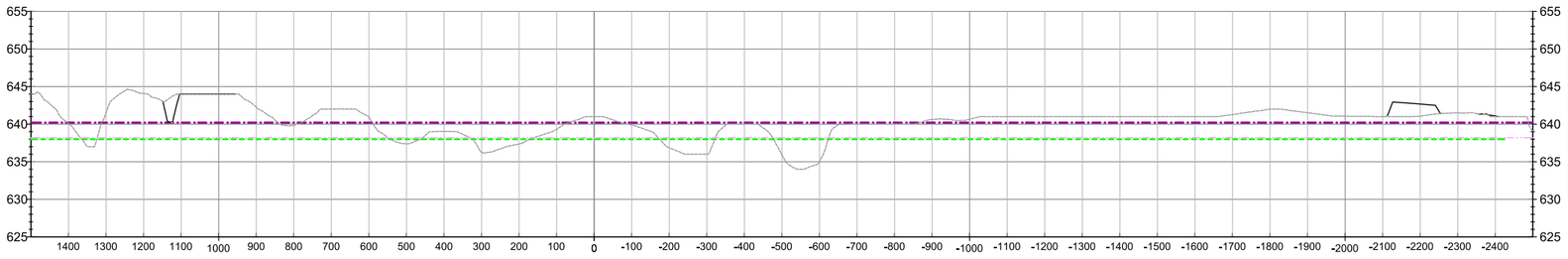
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
13

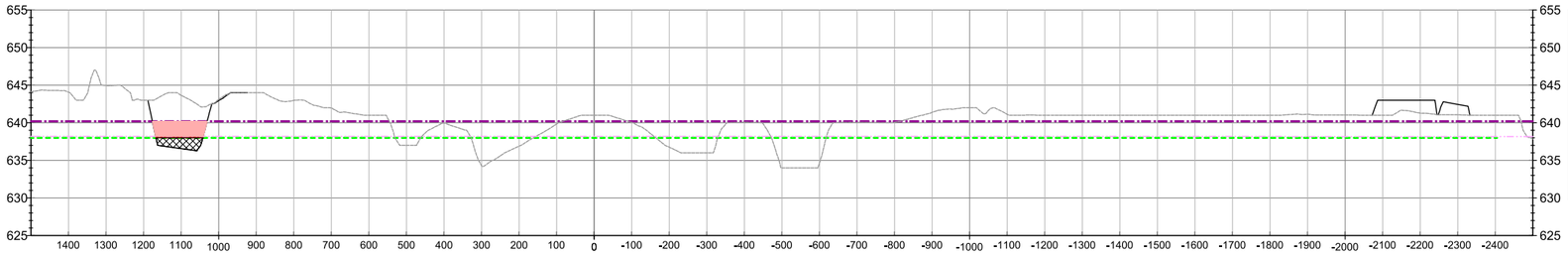


46+00.0

MATERIAL(S) AT STATION 46+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	37.80	21878.38
0-10 YEAR FILL	0.00	0.00	374.75
10-100 YEAR CUT	0.06	457.00	57367.32
10-100 YEAR FILL	0.00	1.68	7828.50
DETENTION CUT	0.00	411.82	63705.93
DETENTON FILL	0.00	0.00	1496.04

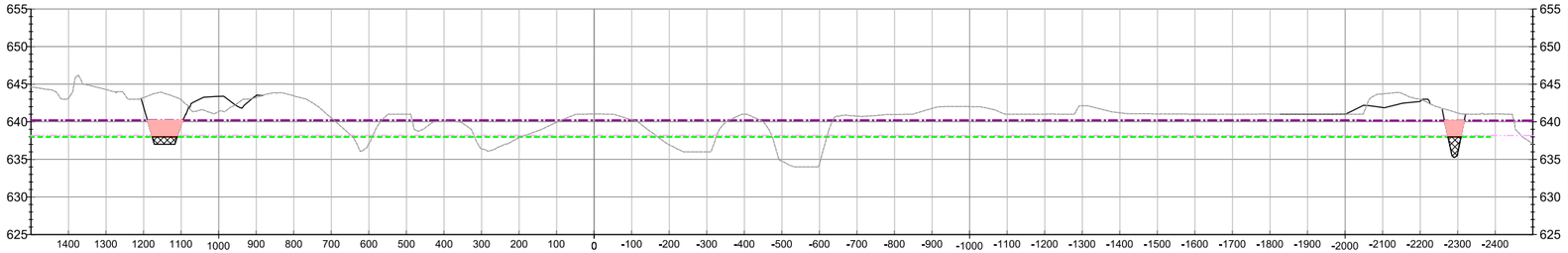
0 5 10
VERT. SCALE

0 100 200
HOR. SCALE



47+00.0

MATERIAL(S) AT STATION 47+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	25.16	46.59	21924.97
0-10 YEAR FILL	0.00	0.00	374.75
10-100 YEAR CUT	272.70	505.12	57872.44
10-100 YEAR FILL	0.00	0.00	7828.50
DETENTION CUT	162.53	300.97	64006.90
DETENTON FILL	0.00	0.00	1496.04



48+00.0

MATERIAL(S) AT STATION 48+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	18.77	81.35	22006.32
0-10 YEAR FILL	0.00	0.00	374.75
10-100 YEAR CUT	252.62	972.82	58845.27
10-100 YEAR FILL	0.00	0.00	7828.50
DETENTION CUT	124.08	530.74	64537.65
DETENTON FILL	0.00	0.00	1496.04

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

CHICAGO EXECUTIVE AIRPORT

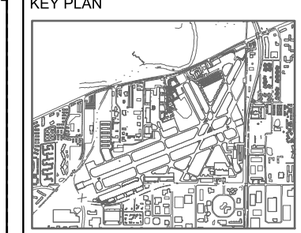
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 14

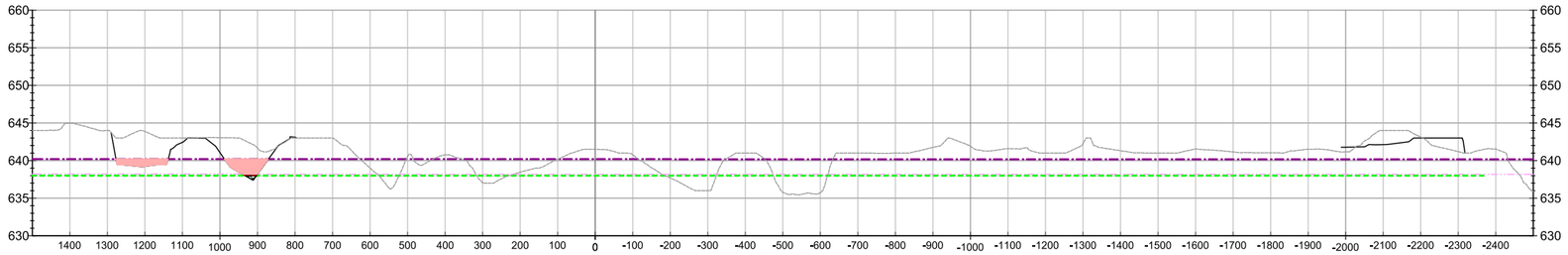
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

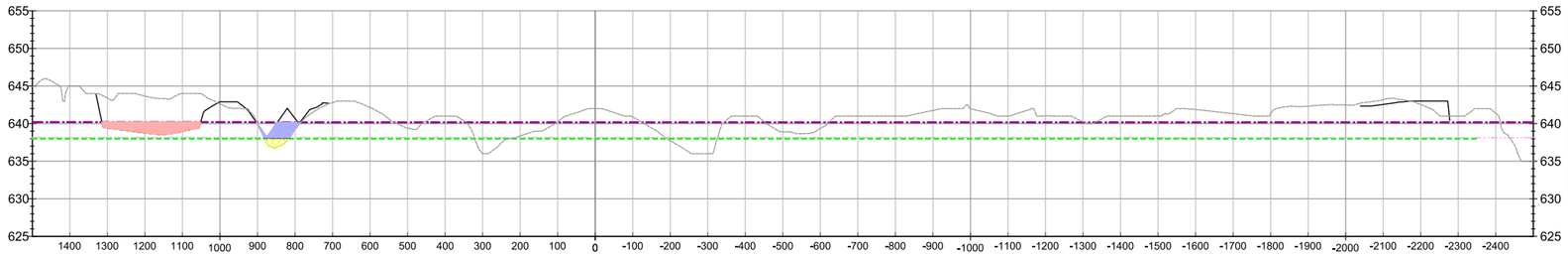
DRAWN BY

DRAWING NO.
14



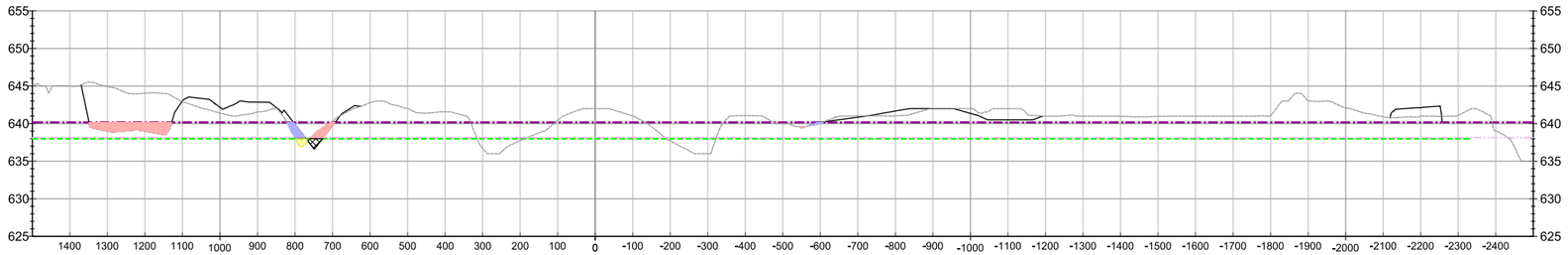
49+00.0

MATERIAL(S) AT STATION 49+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	6.20	46.25	22052.57
0-10 YEAR FILL	0.00	0.00	374.75
10-100 YEAR CUT	279.10	984.68	59829.95
10-100 YEAR FILL	0.00	0.00	7828.50
DETENTION CUT	8.98	246.41	64784.05
DETENTON FILL	0.00	0.00	1496.04



50+00.0

MATERIAL(S) AT STATION 50+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	11.48	22064.05
0-10 YEAR FILL	11.23	20.80	395.54
10-100 YEAR CUT	316.02	1102.09	60932.04
10-100 YEAR FILL	130.11	240.95	8069.45
DETENTION CUT	0.00	16.64	64800.69
DETENTON FILL	52.04	96.36	1592.40



51+00.0

MATERIAL(S) AT STATION 51+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	5.18	9.60	22073.65
0-10 YEAR FILL	4.32	28.79	424.34
10-100 YEAR CUT	306.49	1152.80	62084.83
10-100 YEAR FILL	51.07	335.52	8404.97
DETENTION CUT	29.49	54.61	64855.31
DETENTON FILL	22.78	138.54	1730.94

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0415

CHICAGO EXECUTIVE AIRPORT

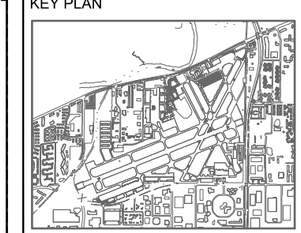
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 15

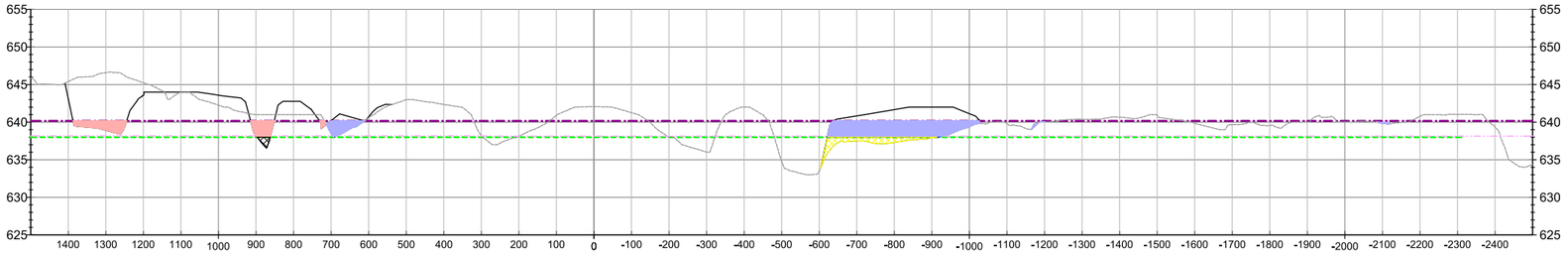
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

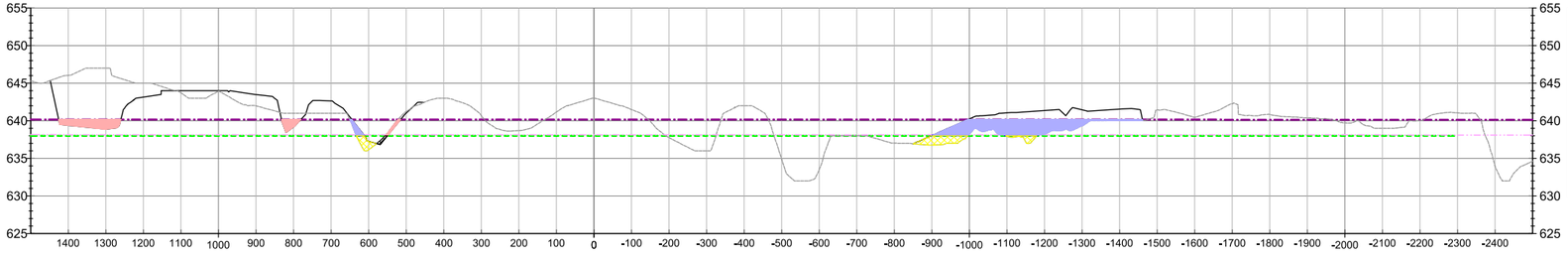
DRAWN BY

DRAWING NO.
15



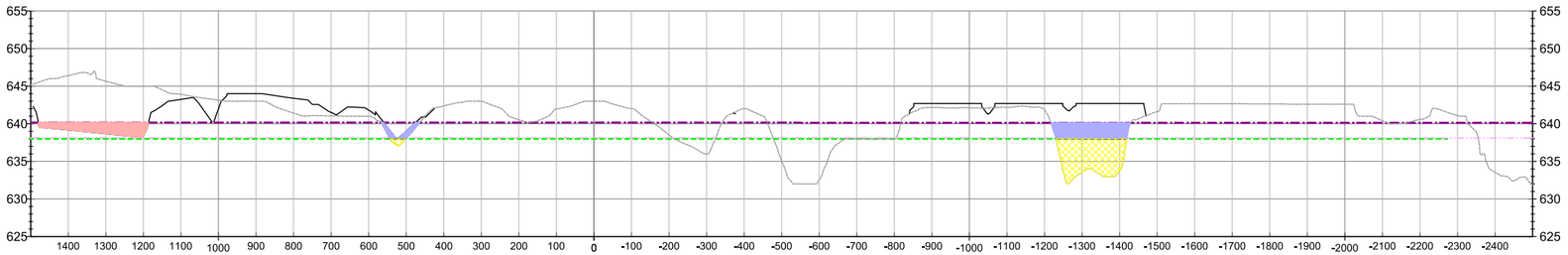
52+00.0

MATERIAL(S) AT STATION 52+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	5.36	19.51	22093.16
0-10 YEAR FILL	40.37	82.76	507.10
10-100 YEAR CUT	269.45	1066.54	63151.37
10-100 YEAR FILL	855.08	1678.06	10083.03
DETENTION CUT	26.84	104.32	64959.62
DETENTON FILL	199.34	411.34	2142.28



53+00.0

MATERIAL(S) AT STATION 53+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.88	11.55	22104.71
0-10 YEAR FILL	24.69	120.49	627.59
10-100 YEAR CUT	226.18	917.83	64069.20
10-100 YEAR FILL	656.31	2798.88	12881.91
DETENTION CUT	9.87	67.98	65027.61
DETENTON FILL	206.07	750.77	2893.05



54+00.0

MATERIAL(S) AT STATION 54+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	1.63	22106.35
0-10 YEAR FILL	24.60	91.27	718.86
10-100 YEAR CUT	375.11	1113.50	65182.70
10-100 YEAR FILL	465.37	2077.18	14959.09
DETENTION CUT	0.00	18.28	65045.89
DETENTON FILL	835.56	1928.95	4822.00

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

CHICAGO EXECUTIVE AIRPORT

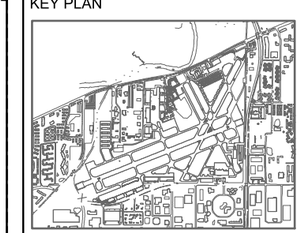
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 16

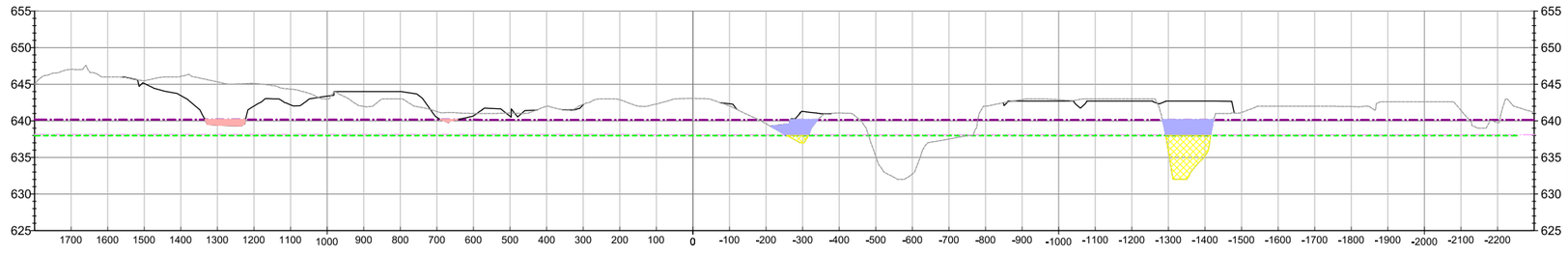
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

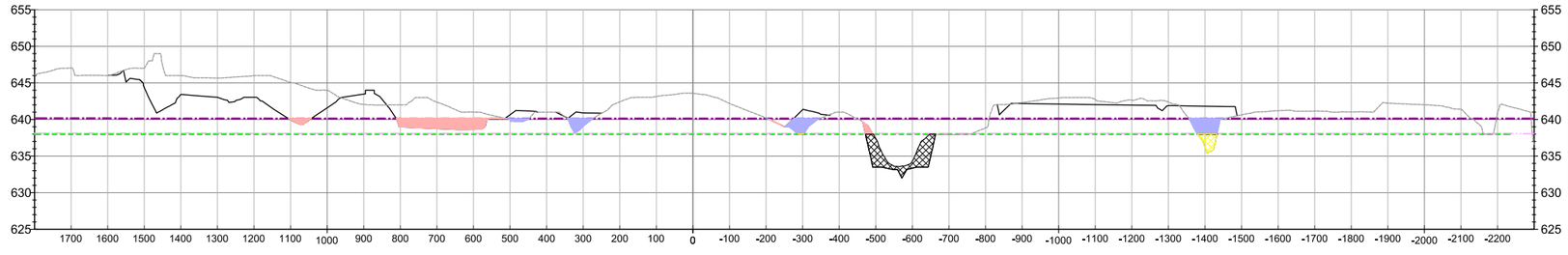
DRAWN BY

DRAWING NO.
16



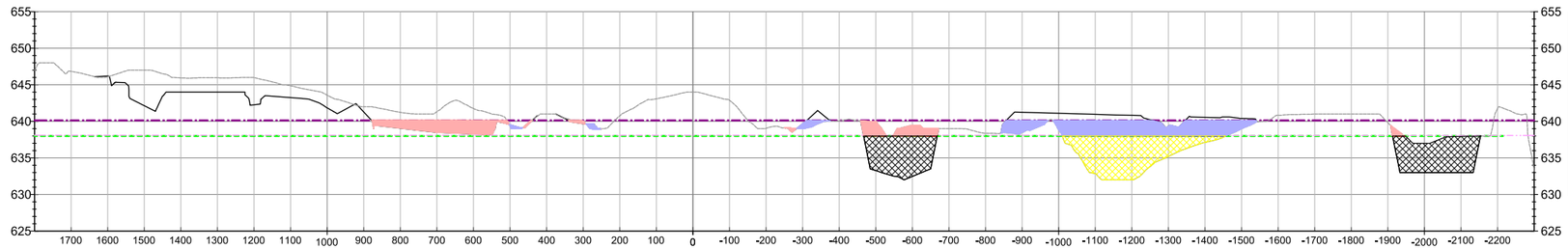
55+00.0

MATERIAL(S) AT STATION 55+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22106.35
0-10 YEAR FILL	18.18	79.22	798.08
10-100 YEAR CUT	87.26	856.24	66038.93
10-100 YEAR FILL	440.62	1677.76	16636.84
DETENTION CUT	0.00	0.00	65045.89
DETENTON FILL	561.72	2587.56	7409.56



56+00.0

MATERIAL(S) AT STATION 56+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	2.06	3.81	22110.16
0-10 YEAR FILL	6.26	45.25	843.33
10-100 YEAR CUT	384.61	873.84	66912.77
10-100 YEAR FILL	342.38	1450.00	18086.84
DETENTION CUT	375.26	694.92	65740.81
DETENTON FILL	80.75	1189.77	8599.33



57+00.0

MATERIAL(S) AT STATION 57+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	16.74	34.82	22144.97
0-10 YEAR FILL	33.15	72.98	916.31
10-100 YEAR CUT	777.70	2152.42	69065.19
10-100 YEAR FILL	1228.50	2909.03	20995.87
DETENTION CUT	1957.37	4319.68	70060.49
DETENTON FILL	1485.21	2899.93	11499.25

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

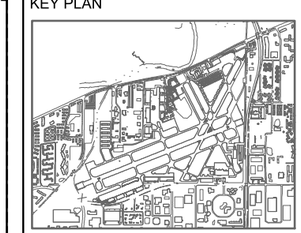
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 17

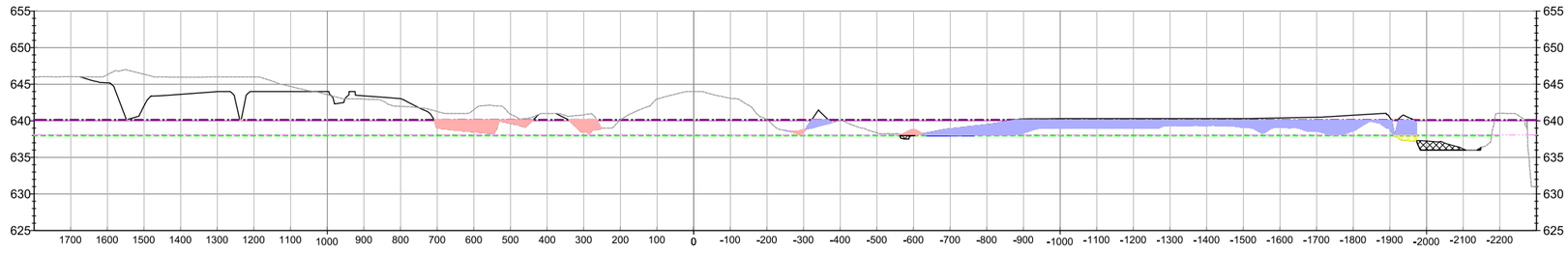
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

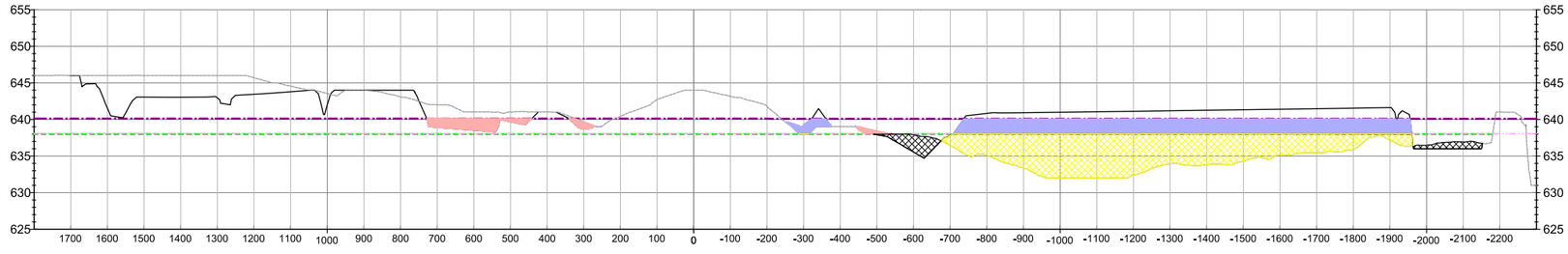
DRAWN BY

DRAWING NO.
17



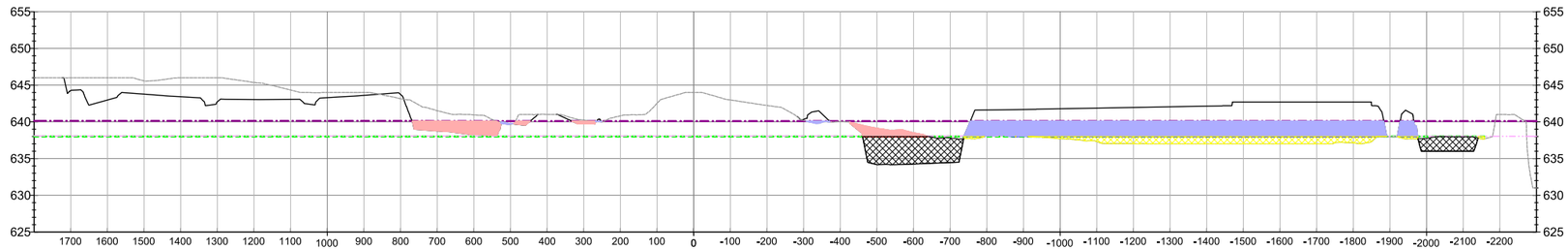
58+00.0

MATERIAL(S) AT STATION 58+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	3.07	36.69	22181.67
0-10 YEAR FILL	16.18	91.36	1007.67
10-100 YEAR CUT	448.90	2271.48	71336.67
10-100 YEAR FILL	1605.93	5248.94	26244.81
DETENTION CUT	129.13	3863.88	73924.37
DETENTON FILL	36.80	2818.53	14317.78



59+00.0

MATERIAL(S) AT STATION 59+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	3.14	11.50	22193.17
0-10 YEAR FILL	66.53	153.16	1160.83
10-100 YEAR CUT	410.72	1591.90	72928.57
10-100 YEAR FILL	2651.67	7884.46	34129.27
DETENTION CUT	399.29	978.54	74902.91
DETENTON FILL	4722.83	8814.12	23131.90



60+00.0

MATERIAL(S) AT STATION 60+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	8.58	21.70	22214.86
0-10 YEAR FILL	45.48	207.42	1368.25
10-100 YEAR CUT	573.33	1822.31	74750.88
10-100 YEAR FILL	2451.91	9451.09	43580.35
DETENTION CUT	1245.82	3046.50	77949.41
DETENTON FILL	829.07	10281.29	33413.19

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

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PLOT STYLE TABLE: ctb
PLOT DEVICE DRIVER
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PRINTED BY: KRIS SALVATIERA
DATE PRINTED: 6/30/2025 1:27 PM
FILE SAVED: 6/30/2025 1:22 PM

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105 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3900 F:312-466-3915

CHICAGO EXECUTIVE AIRPORT

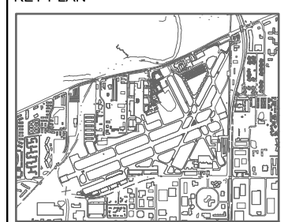
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 18

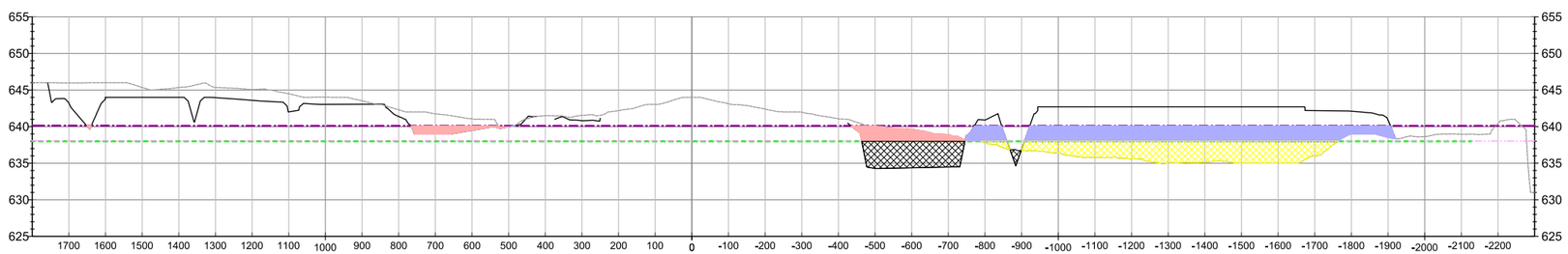
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

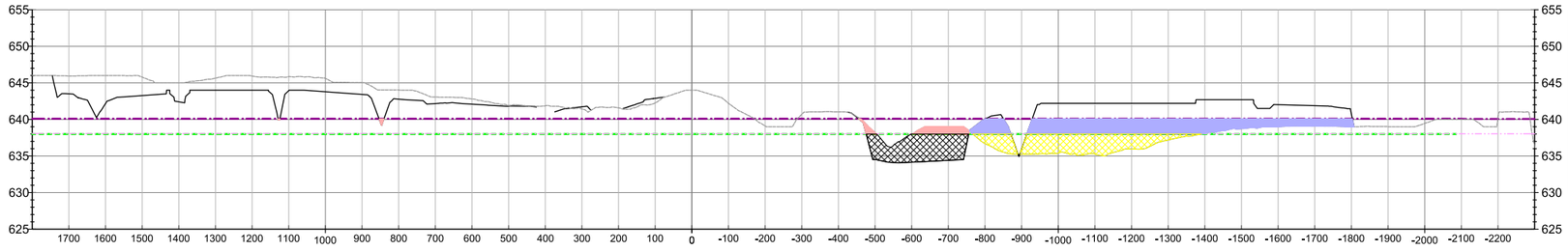
DRAWN BY

DRAWING NO.
18



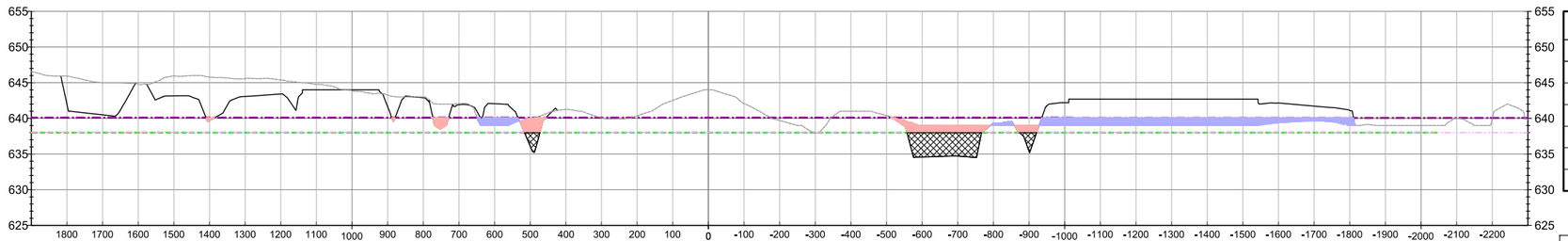
61+00.0

MATERIAL(S) AT STATION 61+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	10.52	35.37	22250.23
0-10 YEAR FILL	28.64	137.25	1505.50
10-100 YEAR CUT	614.35	2199.39	76950.28
10-100 YEAR FILL	2135.42	8495.05	52075.41
DETENTION CUT	1000.94	4160.68	82110.09
DETENTON FILL	2113.66	5449.50	38862.68



62+00.0

MATERIAL(S) AT STATION 62+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	4.87	28.51	22278.74
0-10 YEAR FILL	12.80	76.74	1582.24
10-100 YEAR CUT	165.17	1443.54	78393.82
10-100 YEAR FILL	1653.99	7017.43	59092.84
DETENTION CUT	891.75	3504.98	85615.07
DETENTON FILL	1177.32	6094.42	44957.10



63+00.0

MATERIAL(S) AT STATION 63+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	5.43	19.07	22297.81
0-10 YEAR FILL	0.00	23.71	1605.94
10-100 YEAR CUT	482.49	1199.36	79593.17
10-100 YEAR FILL	974.75	4868.04	63960.88
DETENTION CUT	778.90	3093.79	88708.86
DETENTON FILL	0.00	2180.23	47137.33

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

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CHICAGO EXECUTIVE AIRPORT

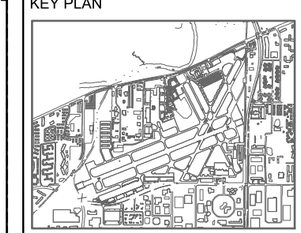
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 19

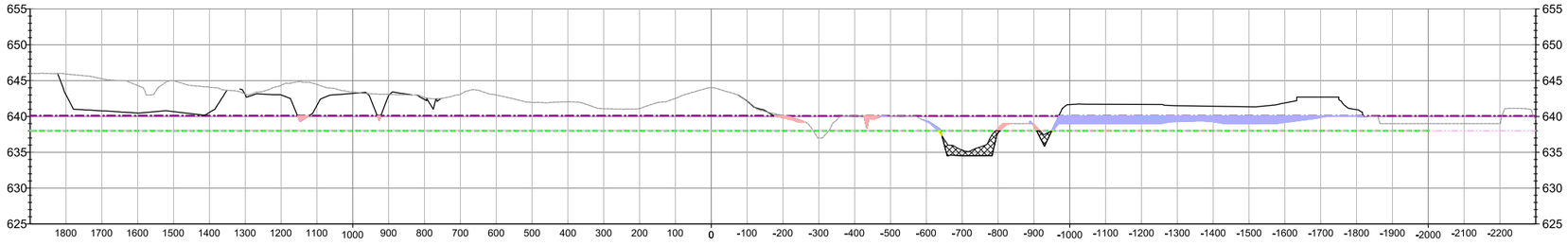
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

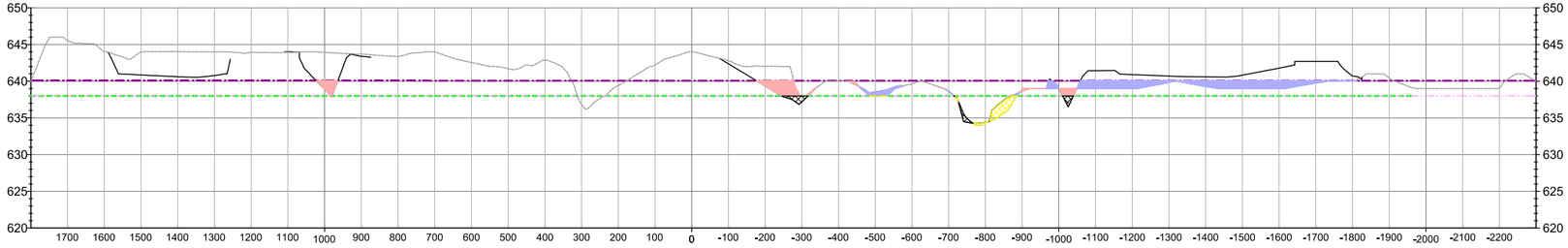
DRAWN BY

DRAWING NO.
19



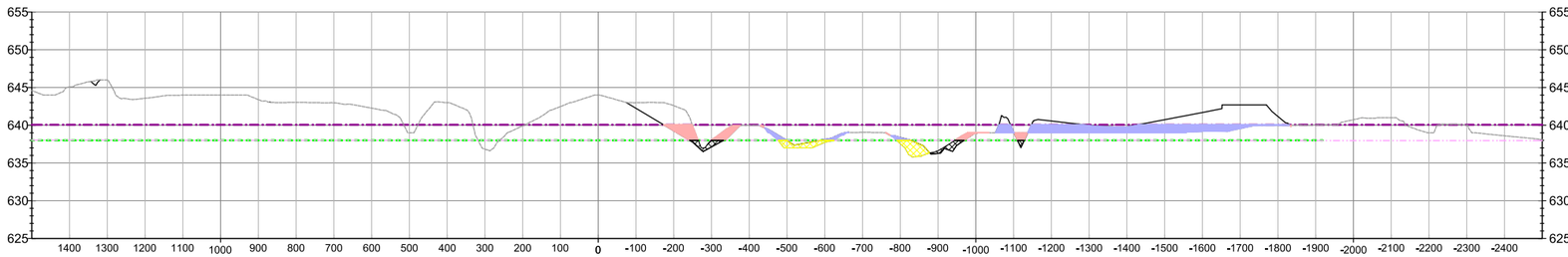
64+00.0

MATERIAL(S) AT STATION 64+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.10	10.24	22308.05
0-10 YEAR FILL	0.05	0.10	1606.04
10-100 YEAR CUT	79.46	1040.65	80633.83
10-100 YEAR FILL	718.28	3135.24	67096.12
DETENTION CUT	225.60	1860.18	90569.04
DETENTON FILL	2.69	4.98	47142.31



65+00.0

MATERIAL(S) AT STATION 65+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.09	0.35	22308.40
0-10 YEAR FILL	0.00	0.10	1606.14
10-100 YEAR CUT	272.66	652.09	81285.91
10-100 YEAR FILL	634.92	2505.92	69602.04
DETENTION CUT	80.41	566.69	91135.73
DETENTON FILL	111.64	211.72	47354.03



66+00.0

MATERIAL(S) AT STATION 66+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.16	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	215.69	904.36	82190.27
10-100 YEAR FILL	640.00	2360.96	71963.00
DETENTION CUT	98.02	330.43	91466.17
DETENTON FILL	184.97	549.27	47903.30

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

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100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

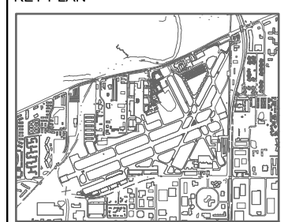
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 20

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
20

PLOT STYLE TABLE: ctb
PLOT DEVICE DRIVER
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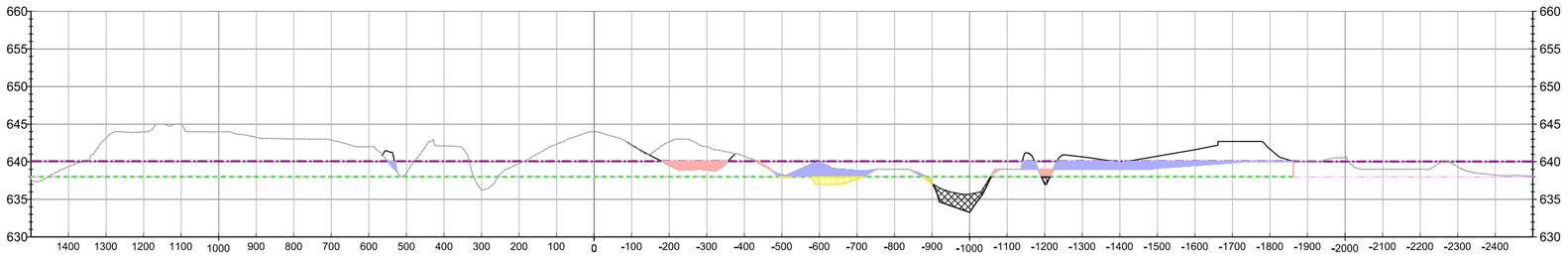
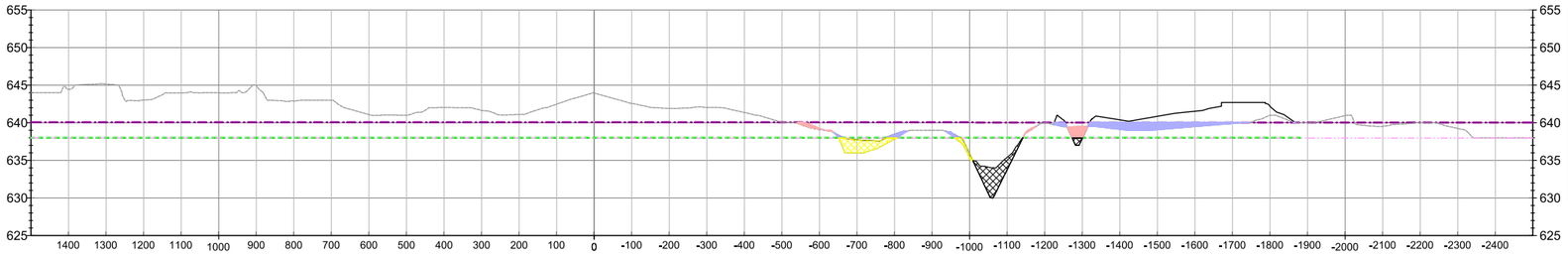


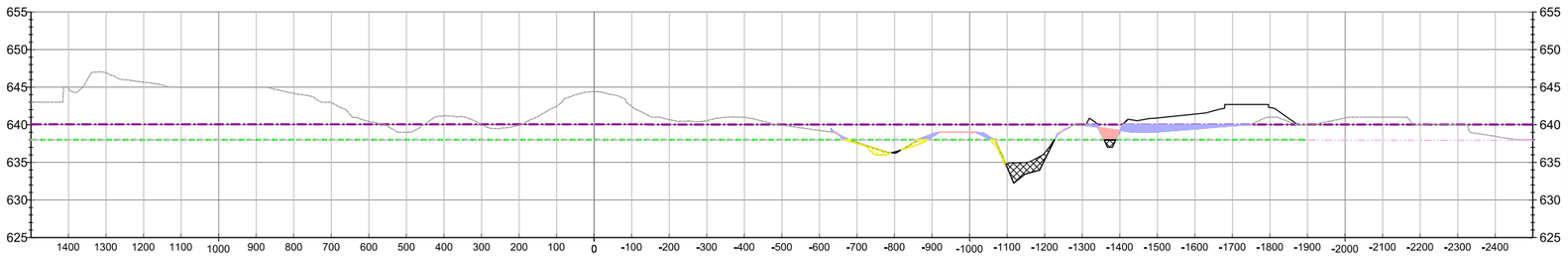
67+00.0

MATERIAL(S) AT STATION 67+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	209.90	788.12	82978.40
10-100 YEAR FILL	702.33	2485.80	74448.81
DETENTION CUT	242.85	631.25	92097.42
DETENTON FILL	116.53	558.34	48461.63



68+00.0

MATERIAL(S) AT STATION 68+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	87.86	551.40	83529.80
10-100 YEAR FILL	322.84	1898.46	76347.27
DETENTION CUT	270.39	950.46	93047.88
DETENTON FILL	206.56	598.32	49059.96



69+00.0

MATERIAL(S) AT STATION 69+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	66.20	285.31	83815.10
10-100 YEAR FILL	265.17	1088.90	77436.18
DETENTION CUT	209.20	888.15	93936.02
DETENTON FILL	84.58	539.15	49599.11

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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DATE PRINTED: 6/30/2025 1:27 PM
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Primera
100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

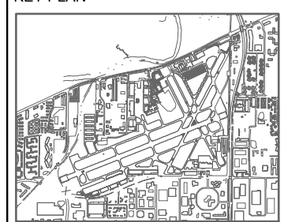
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 21

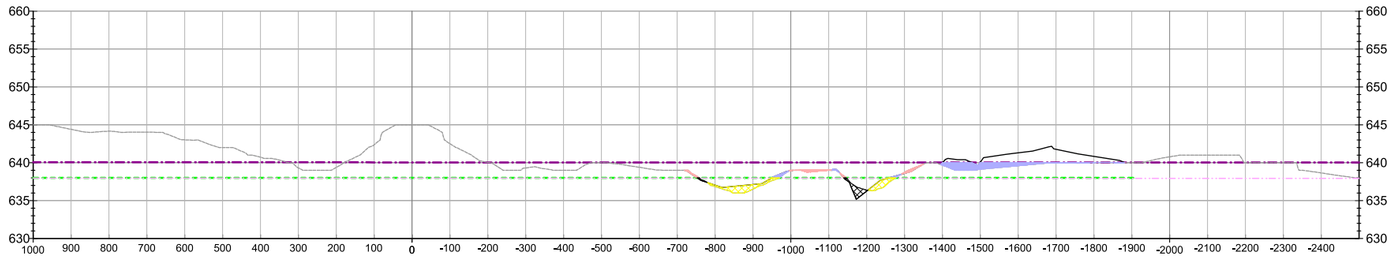
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

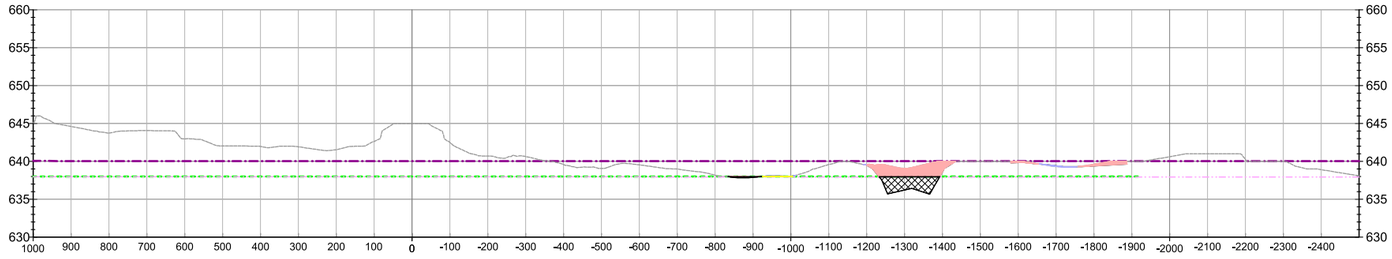
DRAWN BY

DRAWING NO.
21



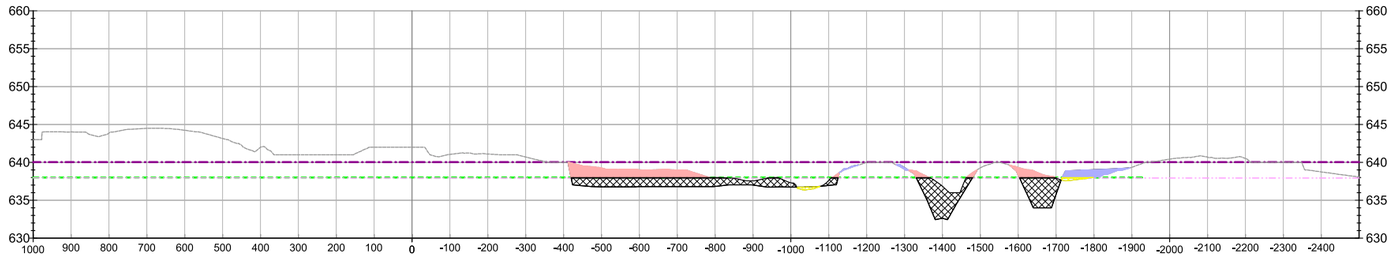
70+00.0

MATERIAL(S) AT STATION 70+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	28.95	176.21	83991.31
10-100 YEAR FILL	197.68	857.12	78293.29
DETENTION CUT	45.91	472.43	94408.45
DETENTON FILL	136.32	409.07	50008.18



71+00.0

MATERIAL(S) AT STATION 71+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	332.74	669.79	84661.10
10-100 YEAR FILL	8.85	382.45	78675.74
DETENTION CUT	283.16	609.38	95017.84
DETENTON FILL	1.73	255.64	50263.83



72+00.0

MATERIAL(S) AT STATION 72+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	498.09	1538.57	86199.66
10-100 YEAR FILL	128.81	254.93	78930.67
DETENTION CUT	1364.35	3050.94	98068.78
DETENTON FILL	37.80	73.19	50337.01

LEGEND
- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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PLOT DEVICE DRIVER DWG To PDF.pc3
PLOT STYLE TABLE CTB

Primera
108 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

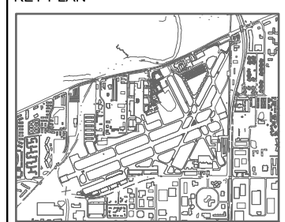
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 22

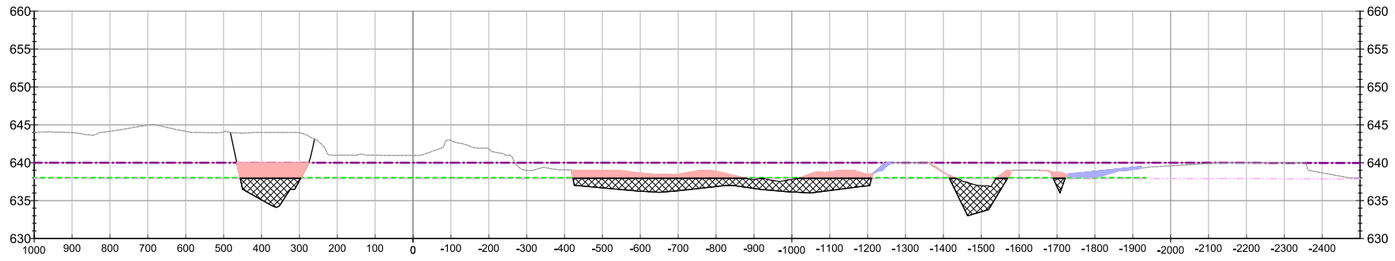
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

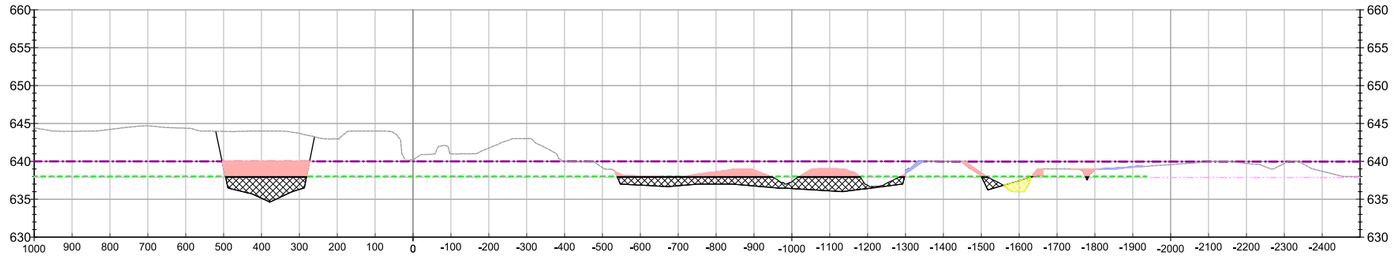
DRAWN BY

DRAWING NO.
22



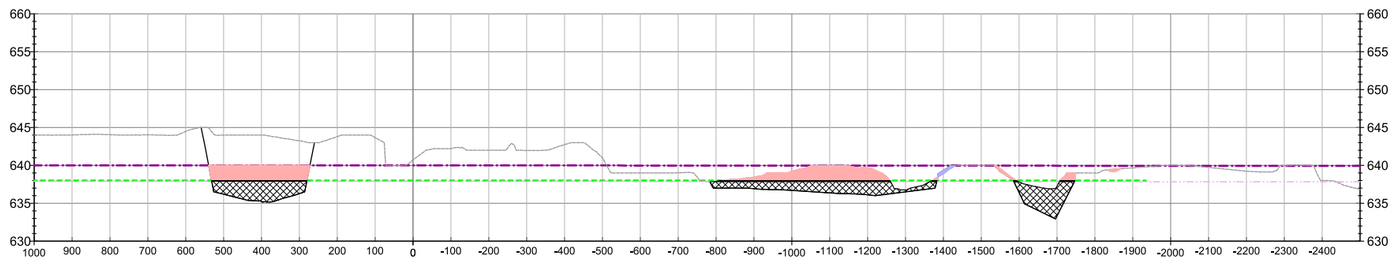
73+00.0

MATERIAL(S) AT STATION 73+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	890.71	2571.86	88771.52
10-100 YEAR FILL	108.52	439.50	79370.18
DETENTION CUT	1959.36	6155.02	104223.80
DETENTON FILL	0.00	69.99	50407.01



74+00.0

MATERIAL(S) AT STATION 74+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	797.64	3126.58	91898.11
10-100 YEAR FILL	25.63	248.43	79618.61
DETENTION CUT	1415.76	6250.22	110474.01
DETENTON FILL	75.53	139.88	50546.88



75+00.0

MATERIAL(S) AT STATION 75+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	1116.61	3544.90	95443.01
10-100 YEAR FILL	15.53	76.23	79694.84
DETENTION CUT	1711.41	5791.05	116265.06
DETENTON FILL	0.00	139.88	50686.76

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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CHICAGO EXECUTIVE AIRPORT

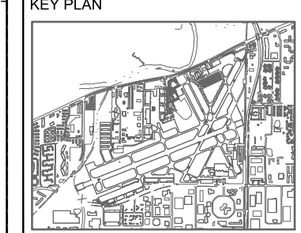
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 23

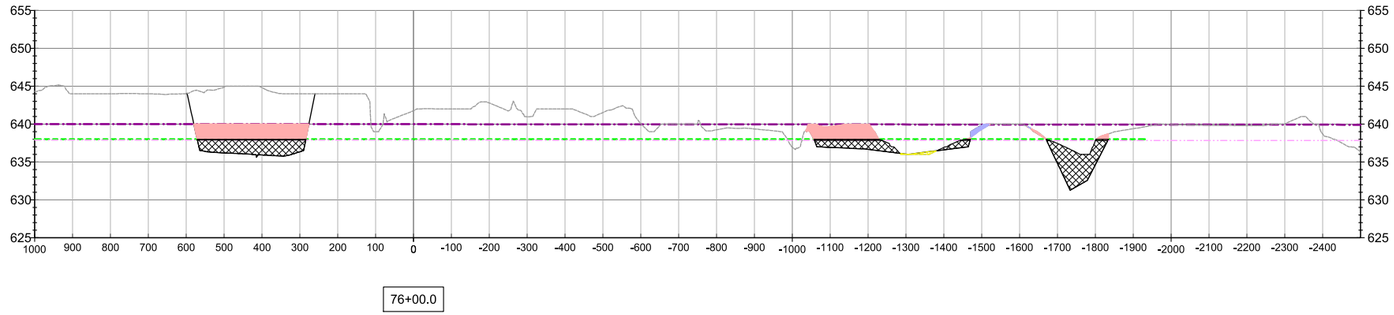
SHEET NO.
PRIMERA

APPROVED
PRIMERA

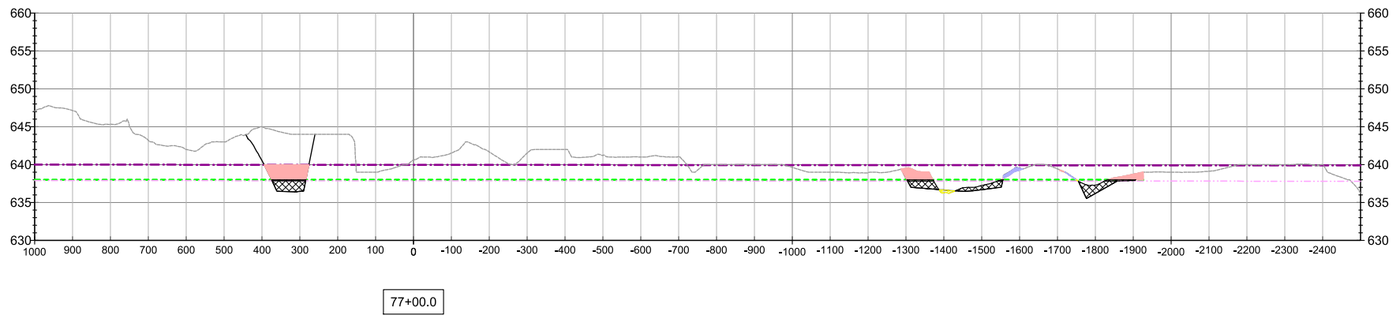
CHECKED
PRIMERA

DRAWN BY

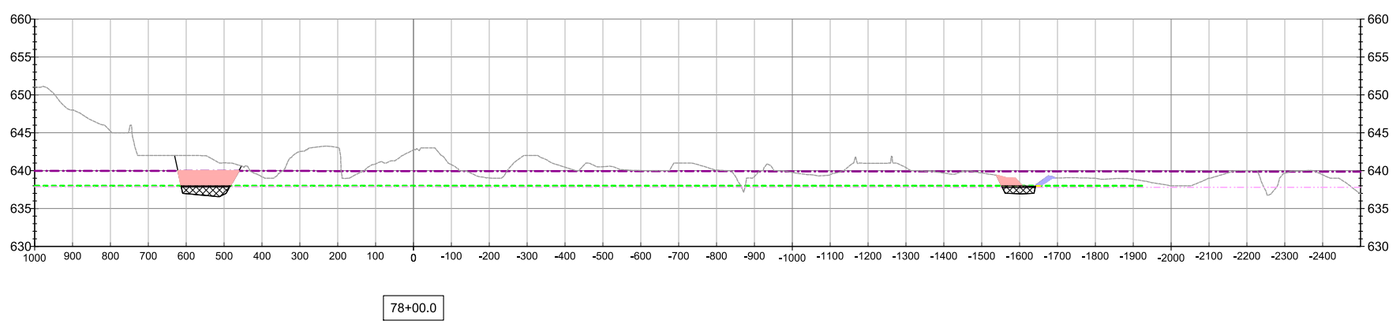
DRAWING NO.
23



MATERIAL(S) AT STATION 76+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	933.19	3795.93	99238.94
10-100 YEAR FILL	24.41	73.97	79768.81
DETENTION CUT	1334.07	5639.78	121904.84
DETENTON FILL	14.67	27.17	50713.93



MATERIAL(S) AT STATION 77+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	343.27	2363.82	101602.76
10-100 YEAR FILL	18.96	80.32	79849.13
DETENTION CUT	379.40	3173.10	125077.94
DETENTON FILL	11.92	49.25	50763.18



MATERIAL(S) AT STATION 78+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	341.40	1267.90	102870.65
10-100 YEAR FILL	20.08	72.30	79921.43
DETENTION CUT	231.43	1131.17	126209.10
DETENTON FILL	0.25	22.54	50785.72

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

VOLUMES ARE BASED OF THE APPROXIMATE AVERAGE END AREAS METHOD BETWEEN EACH CROSS SECTION AT 100-FOOT INTERVALS

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CHICAGO EXECUTIVE AIRPORT

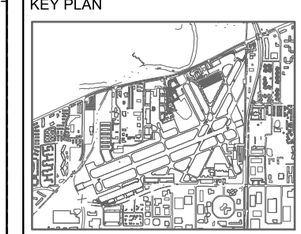
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 24

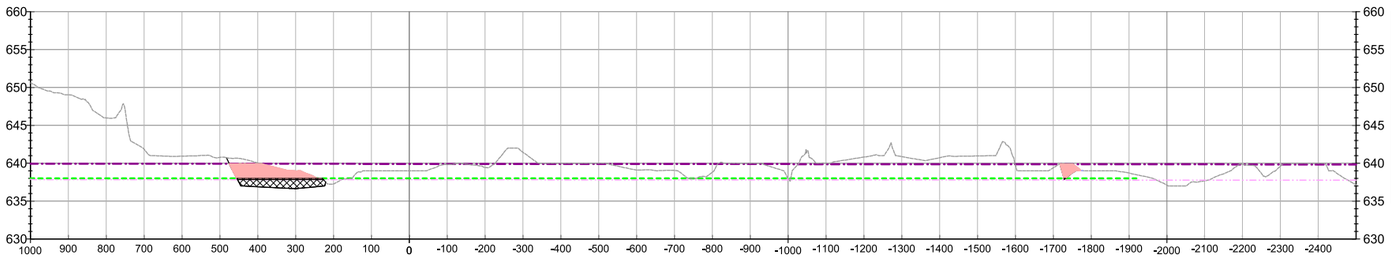
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

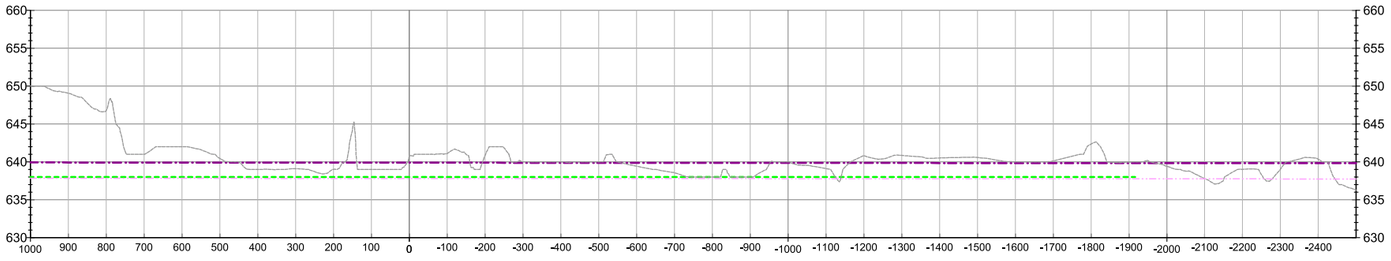
DRAWN BY

DRAWING NO.
24



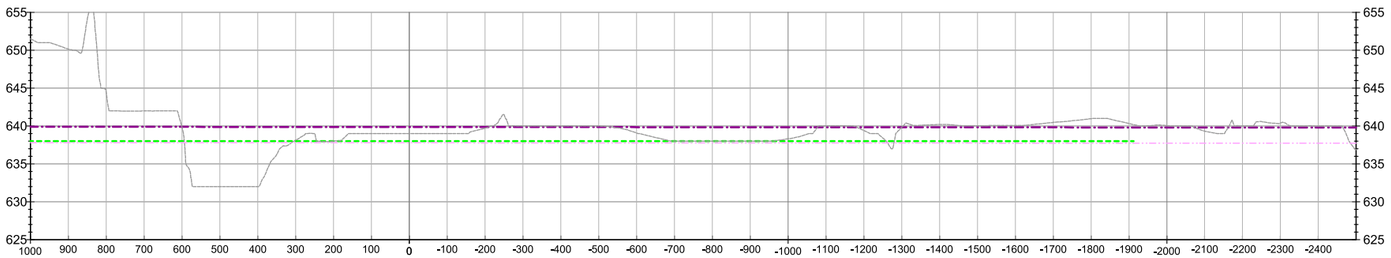
79+00.0

MATERIAL(S) AT STATION 79+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0,00	0,00	22308,57
0-10 YEAR FILL	0,00	0,00	1606,14
10-100 YEAR CUT	362,46	1303,44	104174,09
10-100 YEAR FILL	0,01	37,21	79958,63
DETENTION CUT	266,55	922,19	127131,29
DETENTON FILL	0,00	0,46	50786,18



80+00.0

MATERIAL(S) AT STATION 80+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0,00	0,00	22308.57
0-10 YEAR FILL	0,00	0,00	1606.14
10-100 YEAR CUT	0,00	671.23	104845,32
10-100 YEAR FILL	0,00	0,01	79958.65
DETENTION CUT	0,00	493.61	127624,91
DETENTON FILL	0,00	0,00	50786.18



81+00.0

MATERIAL(S) AT STATION 81+00.00			
MATERIAL NAME	AREA	VOLUME	CUMULATIVE VOL
0-10 YEAR CUT	0.00	0.00	22308.57
0-10 YEAR FILL	0.00	0.00	1606.14
10-100 YEAR CUT	0.00	0.00	104845.32
10-100 YEAR FILL	0.00	0.00	79958.65
DETENTION CUT	0.00	0.00	127624.91
DETENTON FILL	0.00	0.00	50786.18

LEGEND

- EXISTING GRADE
- PROPOSED GRADE
- EXISTING 10-YEAR BFE
- EXISTING 100-YEAR BFE
- DENTENTION ELEVATION AT 638.0
- 0-10 YEAR BFE CUT AREA
- 10-100 YEAR BFE CUT AREA
- 0-10 YEAR BFE FILL AREA
- 10-100 YEAR BFE FILL AREA
- DETENTION CUT
- DETENTION FILL

0 5 10
VERT. SCALE

0 100 200
HOR. SCALE

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PLOT DEVICE DRIVER PLOT STYLE TABLE — CTB

Primera
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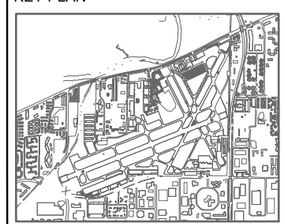
CHICAGO EXECUTIVE AIRPORT

No. Description By Chk. App. Date
Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

CROSS SECTION 25

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
25

APPENDIX E

CURVE NUMBER CALCULATIONS



Manhard CONSULTING

700 Springer Drive, Lombard, IL 60148 ph:630.691.8500 fx:630.691.8585 manhard.com
Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
Construction Managers • Environmental Scientists • Landscape Architects • Planners

CHICAGO EXECUTIVE AIRPORT

VILLAGE OF WHEELING, ILLINOIS

EXISTING CONDITIONS CN EXHIBIT

PROJ. MGR.: DEB
PROJ. ASSOC.: KMS
DRAWN BY: ARD
DATE: 01/03/2024
SCALE: 1"=250'

SHEET 1

PRI.WHIL01

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January 3, 2024 - 12:04 Dwg Name: P:\Prihil01\dwg\StormWater\Work Area\20231219-\20231219-Existing_CN.dwg Updated By: ADobkowski

Existing
Curve Number Calculations

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 1) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	D	80	2.57	205.49
TOTALS:			2.57	205.49

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{205.49}{2.57} \rightarrow \textbf{Composite CN} = \textbf{80.00}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 North) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	11.21	1098.38
Pervious Area, Open Space, Good Condition	D	80	1.95	156.37
Pervious Area, Open Space, Good Condition	B	61	1.19	72.73
Pervious Area, Open Space, Good Condition	C	74	4.16	307.51
		TOTALS:	18.51	1635.00

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{1635.00}{18.51} \rightarrow \textbf{Composite CN} = \textbf{88.33}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 South) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.25	24.45
Pervious Area, Open Space, Good Condition	D	80	0.03	2.57
Pervious Area, Open Space, Good Condition	B	61	2.26	137.78
Pervious Area, Open Space, Good Condition	C	74	1.58	117.28
		TOTALS:	4.13	282.08

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{282.08}{4.13} \rightarrow \textbf{Composite CN} = \textbf{68.38}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 3) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA ___ MAJOR STORMWATER SYSTEM

___ UNRESTRICTED AREA ___ OTHER:

___ UPSTREAM AREA

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION **X** EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	16.66	1632.36
Pervious Area, Open Space, Good Condition	D	80	10.34	827.10
Pervious Area, Open Space, Good Condition	C	74	27.61	2042.90
TOTALS:			54.60	4502.36

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{4502.36}{54.60} \rightarrow \textbf{Composite CN} = \textbf{82.46}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 4) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	1.26	123.76
Pervious Area, Open Space, Good Condition	D	80	4.09	327.16
Pervious Area, Open Space, Good Condition	C	74	8.20	607.09
TOTALS:			13.56	1058.02

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{1058.02}{13.56} \rightarrow \textbf{Composite CN} = \textbf{78.05}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5 North) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	2.46	240.79
Pervious Area, Open Space, Good Condition	D	80	10.66	852.40
TOTALS:			13.11	1093.20

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{1093.20}{13.11} \rightarrow \textbf{Composite CN} = \textbf{83.37}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5 South) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	13.20	1293.63
Pervious Area, Open Space, Good Condition	D	80	19.22	1537.73
Pervious Area, Open Space, Good Condition	C	74	0.17	12.62
TOTALS:			32.59	2843.98

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{2843.98}{32.59} \rightarrow \textbf{Composite CN} = \textbf{87.26}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 10) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.54	52.50
Pervious Area, Open Space, Good Condition	D	80	1.34	106.94
Pervious Area, Open Space, Good Condition	C	74	0.04	2.60
TOTALS:			1.91	162.04

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{162.04}{1.91} \rightarrow \textbf{Composite CN} = \textbf{84.95}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 11) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.38	37.66
Pervious Area, Open Space, Good Condition	D	80	1.64	131.44
TOTALS:			2.03	169.10

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{169.10}{2.03} \rightarrow \textbf{Composite CN} = \textbf{83.41}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 12) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	D	80	0.62	49.76
Pervious Area, Open Space, Good Condition	B	61	1.07	65.33
TOTALS:			1.69	115.10

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{115.10}{1.69} \rightarrow \textbf{Composite CN} = \textbf{67.98}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 13) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.53	52.42
Pervious Area, Open Space, Good Condition	D	80	1.71	136.91
Pervious Area, Open Space, Good Condition	C	74	0.24	17.88
TOTALS:			2.49	207.20

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{207.20}{2.49} \rightarrow \textbf{Composite CN} = \textbf{83.29}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 14) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	1.21	118.60
Pervious Area, Open Space, Good Condition	C	74	1.78	132.08
		TOTALS:	3.00	250.68

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{250.68}{3.00} \rightarrow \textbf{Composite CN} = \textbf{83.70}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 15) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	C	74	0.99	73.58
		TOTALS:	0.99	73.58

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{73.58}{0.99} \rightarrow \textbf{Composite CN} = \textbf{74.00}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 16) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION

X EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.02	2.22
Pervious Area, Open Space, Good Condition	C	74	0.13	9.42
TOTALS:			0.15	11.64

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{11.64}{0.15} \rightarrow \textbf{Composite CN} = \textbf{77.63}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Combined Areas 1-16) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA ___ MAJOR STORMWATER SYSTEM

___ UNRESTRICTED AREA ___ OTHER:

___ UPSTREAM AREA

CONDITION (SELECT WITH DROP-DOWN)

___ PROPOSED CONDITION **X** EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	49.07	4808.86
Pervious Area, Open Space, Good Condition	B	61	4.52	275.72
Pervious Area, Open Space, Good Condition	C	74	42.13	3117.62
Pervious Area, Open Space, Good Condition	D	80	51.60	4128.00
		TOTALS:	147.32	12330.20

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{12330.20}{147.32} \rightarrow \textbf{Composite CN} = \textbf{83.70}$$

Existing
Nomograph Calculations

Existing

NOMOGRAPH SUMMARY TABLE

PRI.WHIL01

Wheeling, Illinois

01/16/2024 ARD

Zero Release BULLETIN-70 (1989)			
Area ID.	Detained Area (AC)	CN	Required Detention (AC-ft)
1	2.57	80	1.12
2 North	18.51	88	9.50
2 South	4.13	68	1.34
3	54.60	82	24.86
4	13.56	78	5.66
5 North	13.11	87	6.60
5 South	32.59	87	16.42
10	1.91	85	0.93
11	2.03	83	0.94
12	1.69	68	0.55
13	2.49	83	1.16
16	0.15	78	0.06
∑=	147.34		69.14
Combined	147.32	84	69.93

Note: Weighted Curve Numbers come up with slightly different detention. Will be defined in final.

NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 1) **DATE:** 1/16/2024

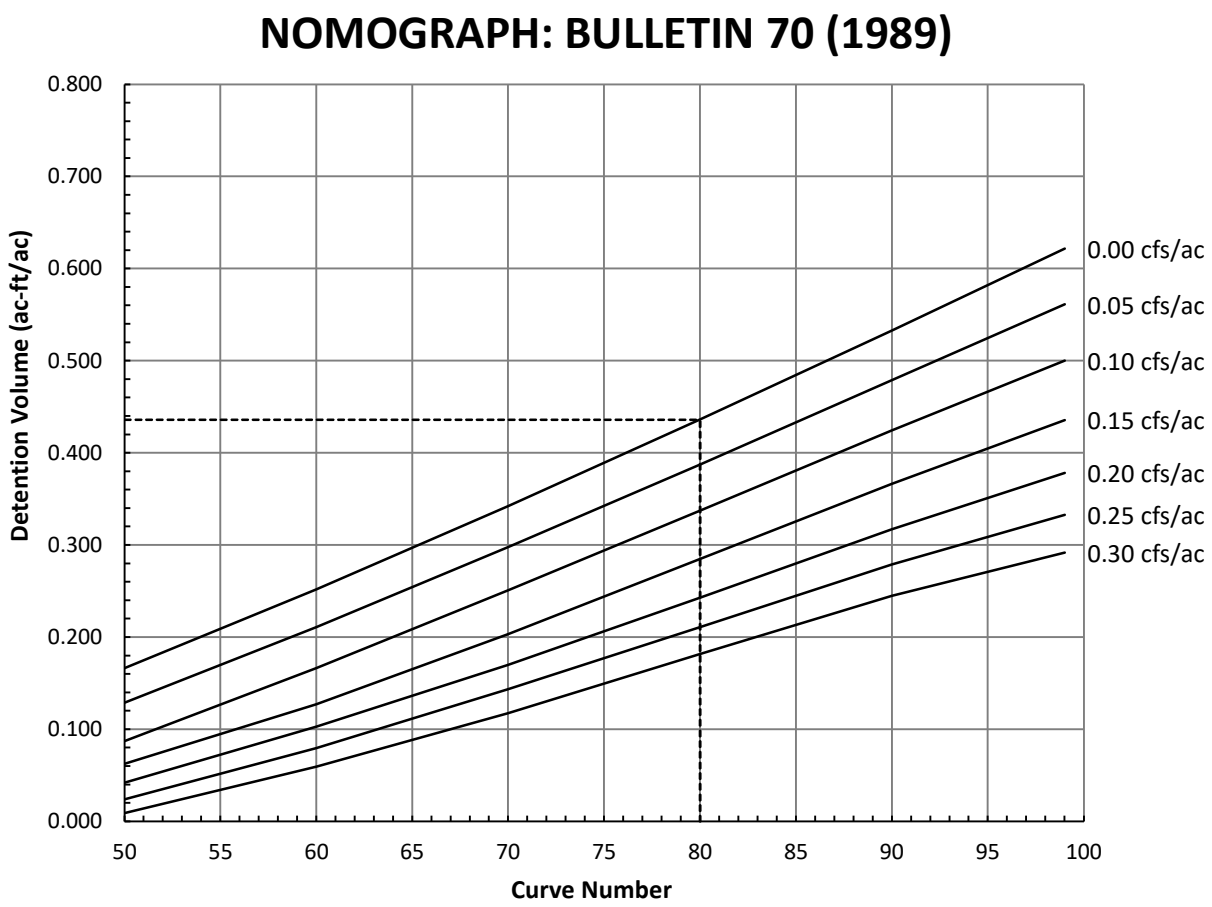
DEVELOPMENT INFORMATION

1.	Detained Area	2.57	acres
2.	Curve Number	80	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.121	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 North) **DATE:** 1/16/2024

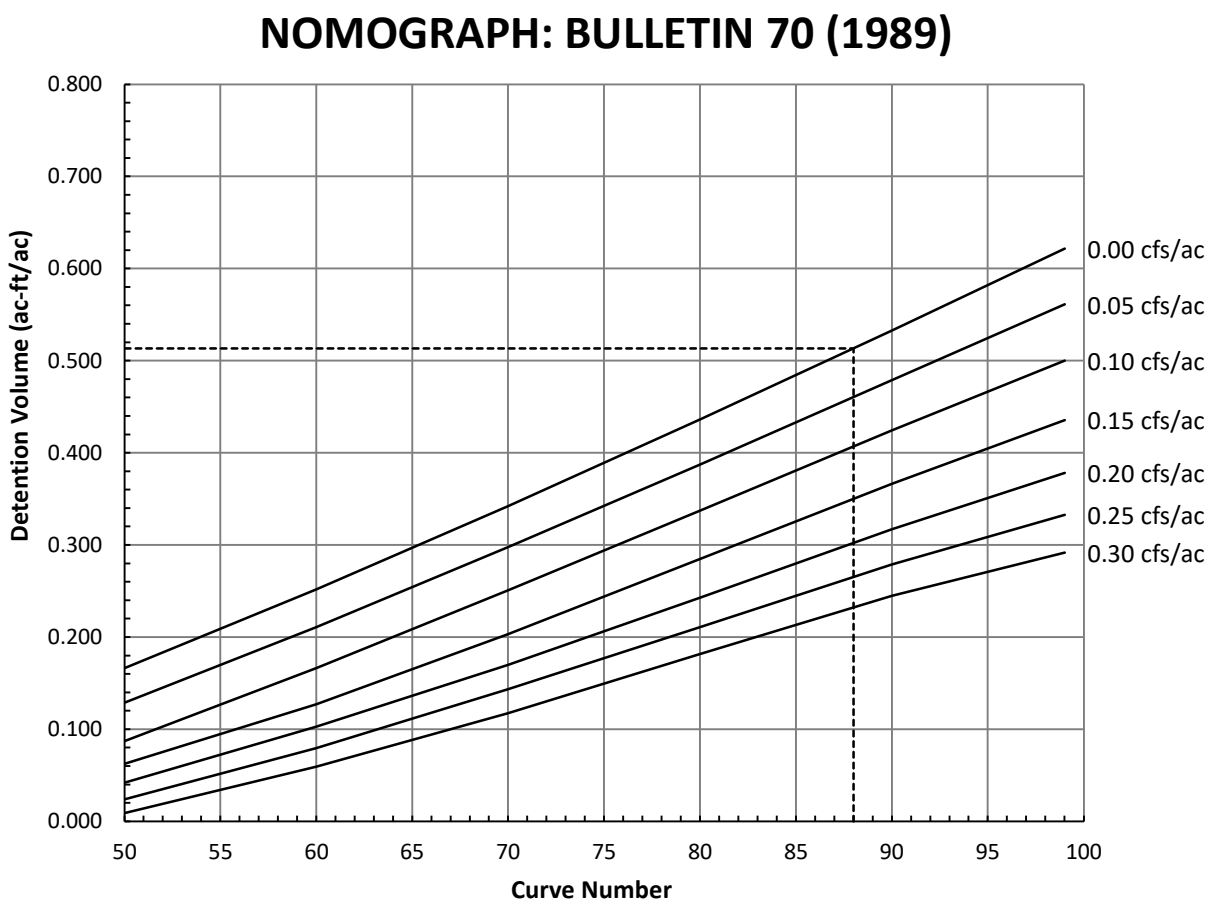
DEVELOPMENT INFORMATION

1.	Detained Area	18.51	acres
2.	Curve Number	88	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	9.502	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 South) **DATE:** 1/16/2024

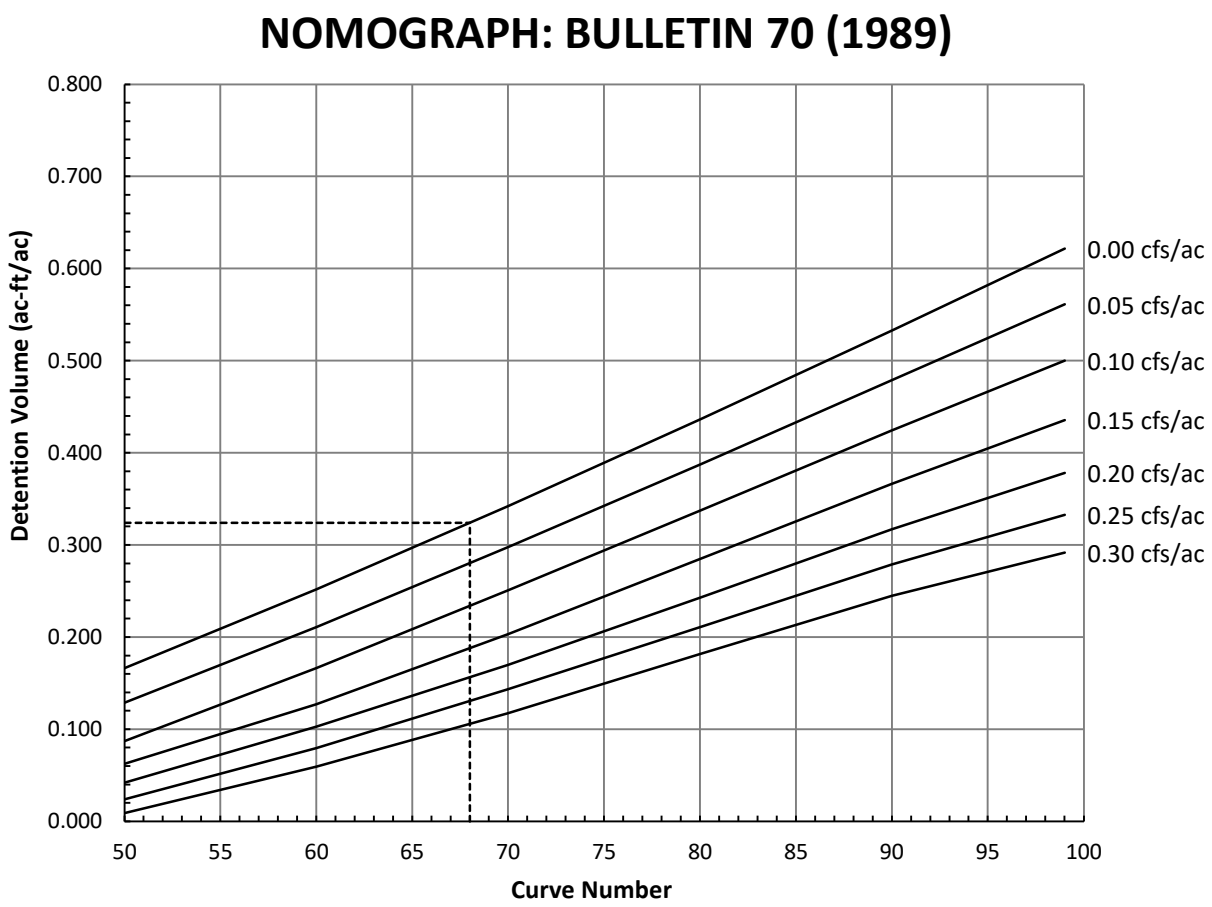
DEVELOPMENT INFORMATION

1.	Detained Area	4.13	acres
2.	Curve Number	68	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.338	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 3) **DATE:** 1/16/2024

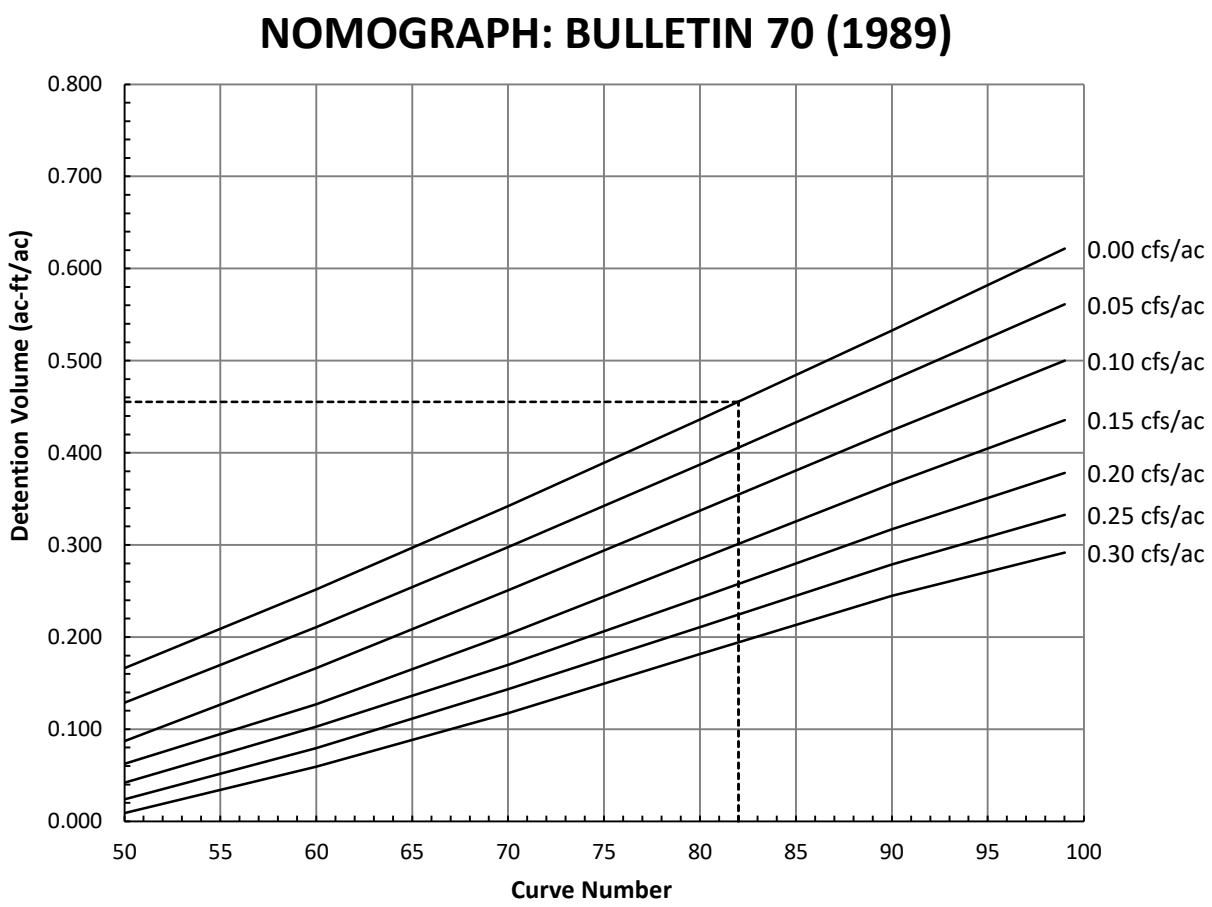
DEVELOPMENT INFORMATION

1.	Detained Area	54.60	acres
2.	Curve Number	82	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	24.863	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 4) **DATE:** 1/16/2024

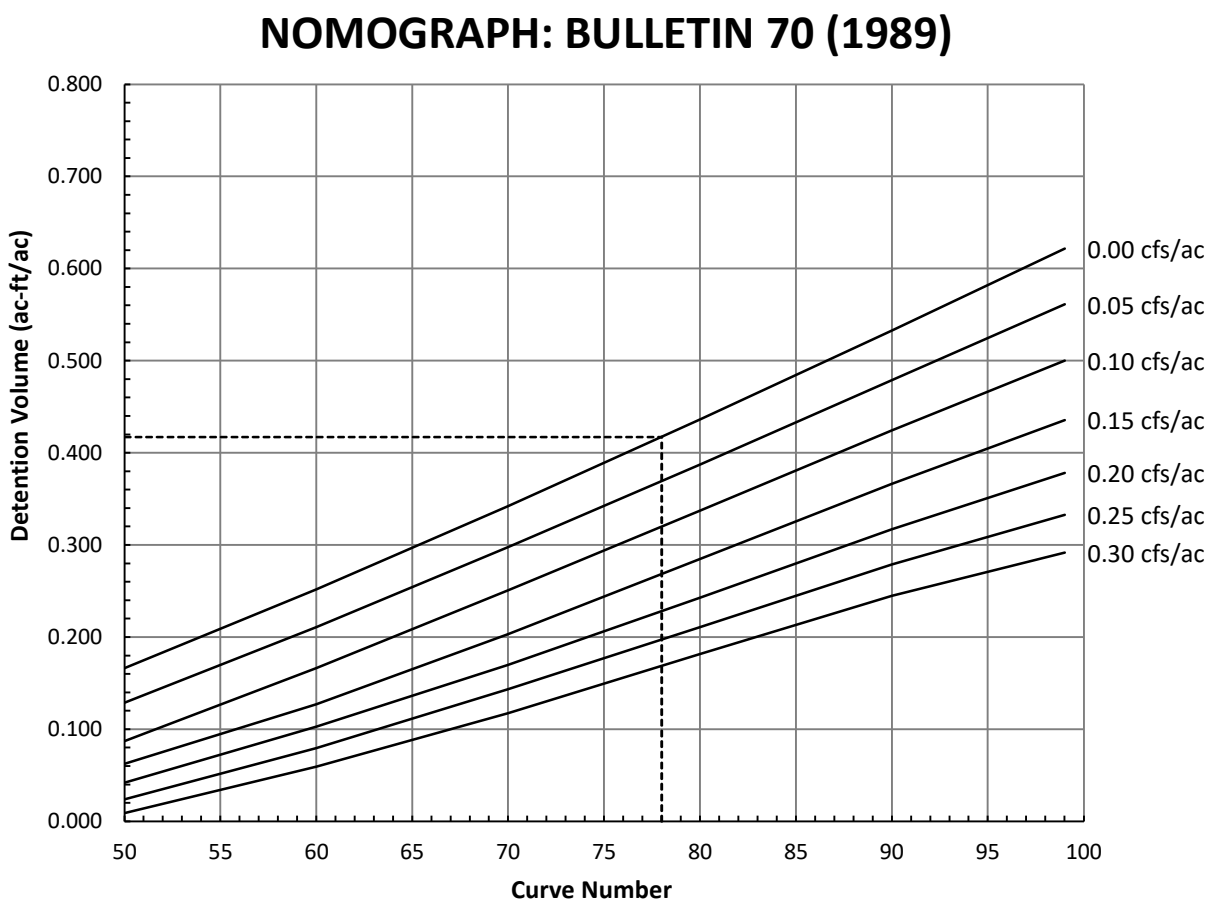
DEVELOPMENT INFORMATION

1.	Detained Area	13.56	acres
2.	Curve Number	78	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	5.658	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5N) **DATE:** 1/16/2024

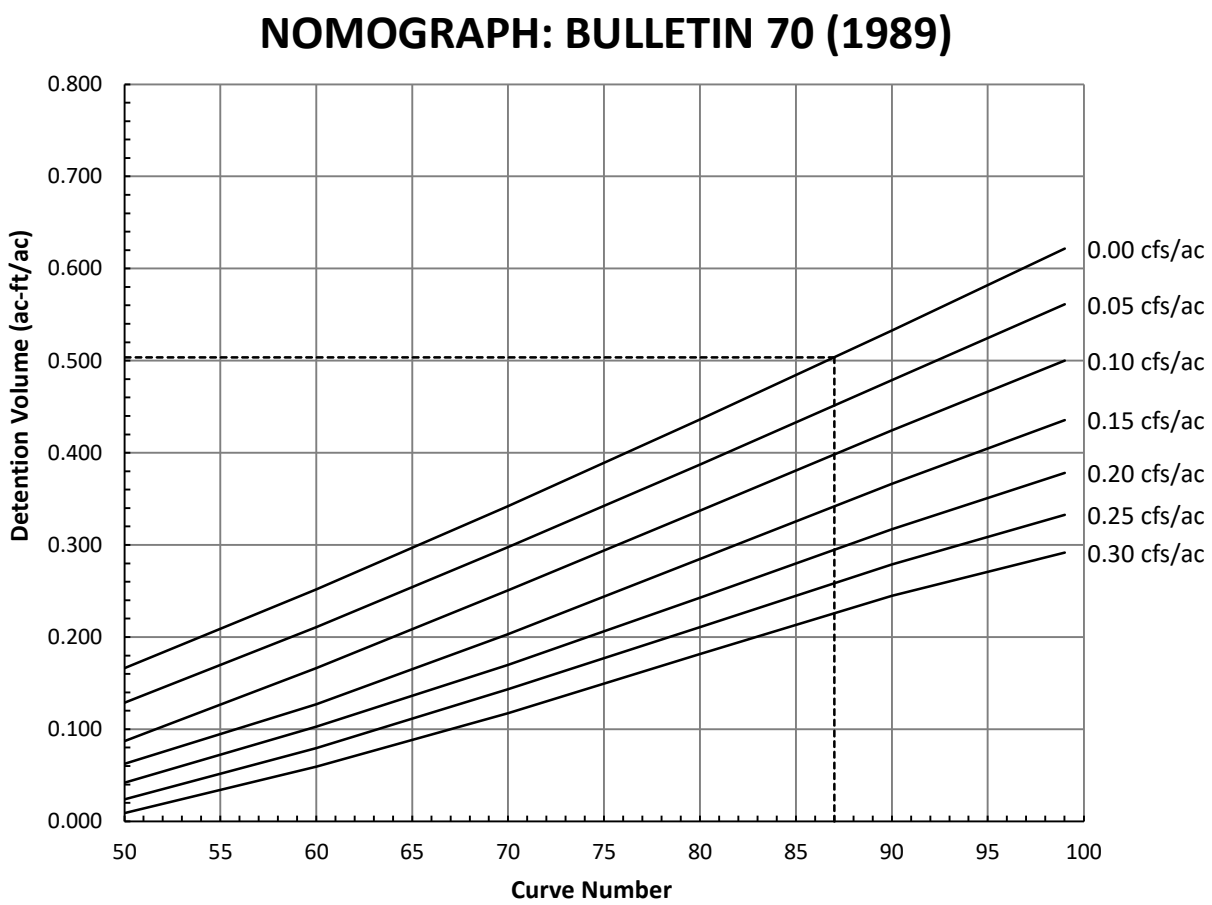
DEVELOPMENT INFORMATION

1.	Detained Area	13.11	acres
2.	Curve Number	87	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	6.604	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5S) **DATE:** 1/16/2024

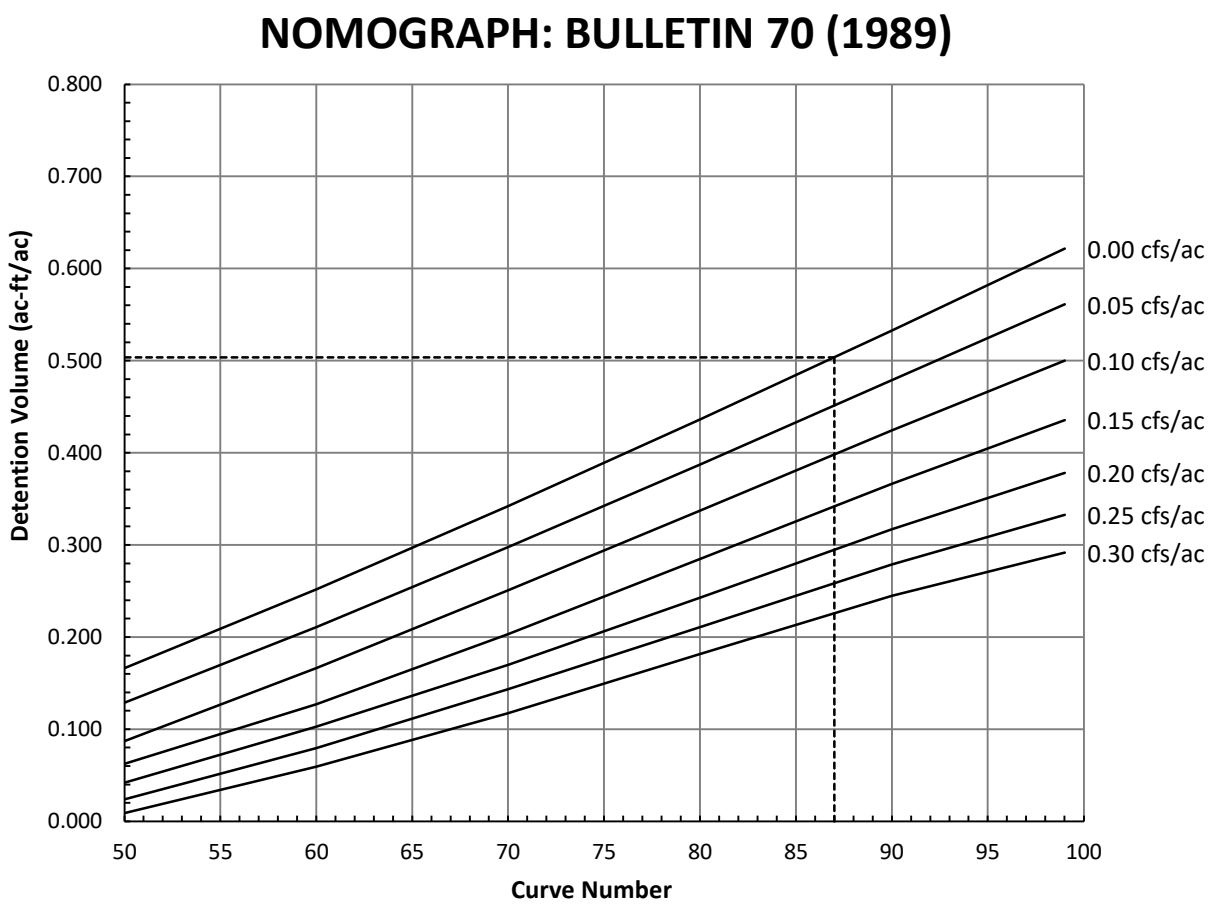
DEVELOPMENT INFORMATION

1.	Detained Area	32.59	acres
2.	Curve Number	87	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	16.416	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 10) **DATE:** 1/16/2024

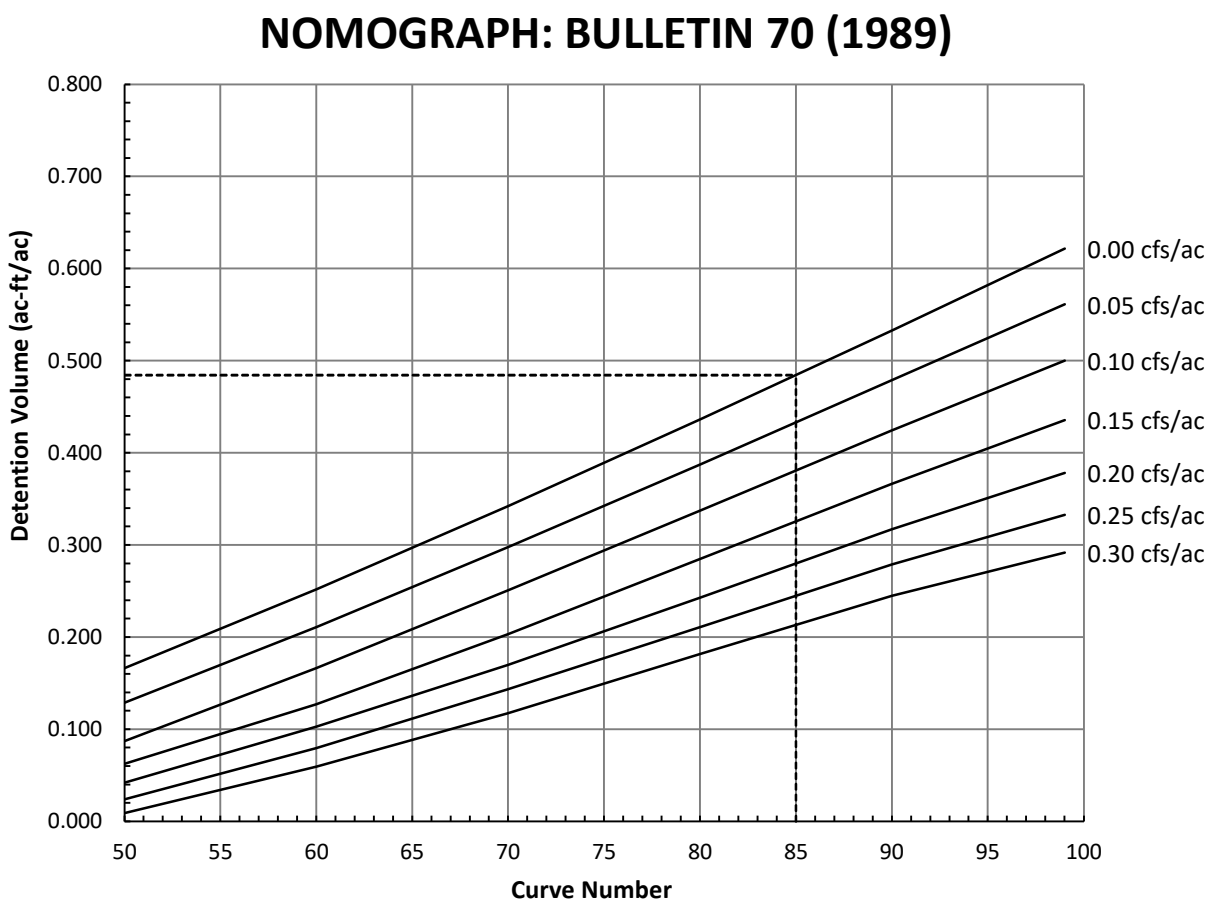
DEVELOPMENT INFORMATION

1.	Detained Area	1.91	acres
2.	Curve Number	85	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.925	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 11) **DATE:** 1/16/2024

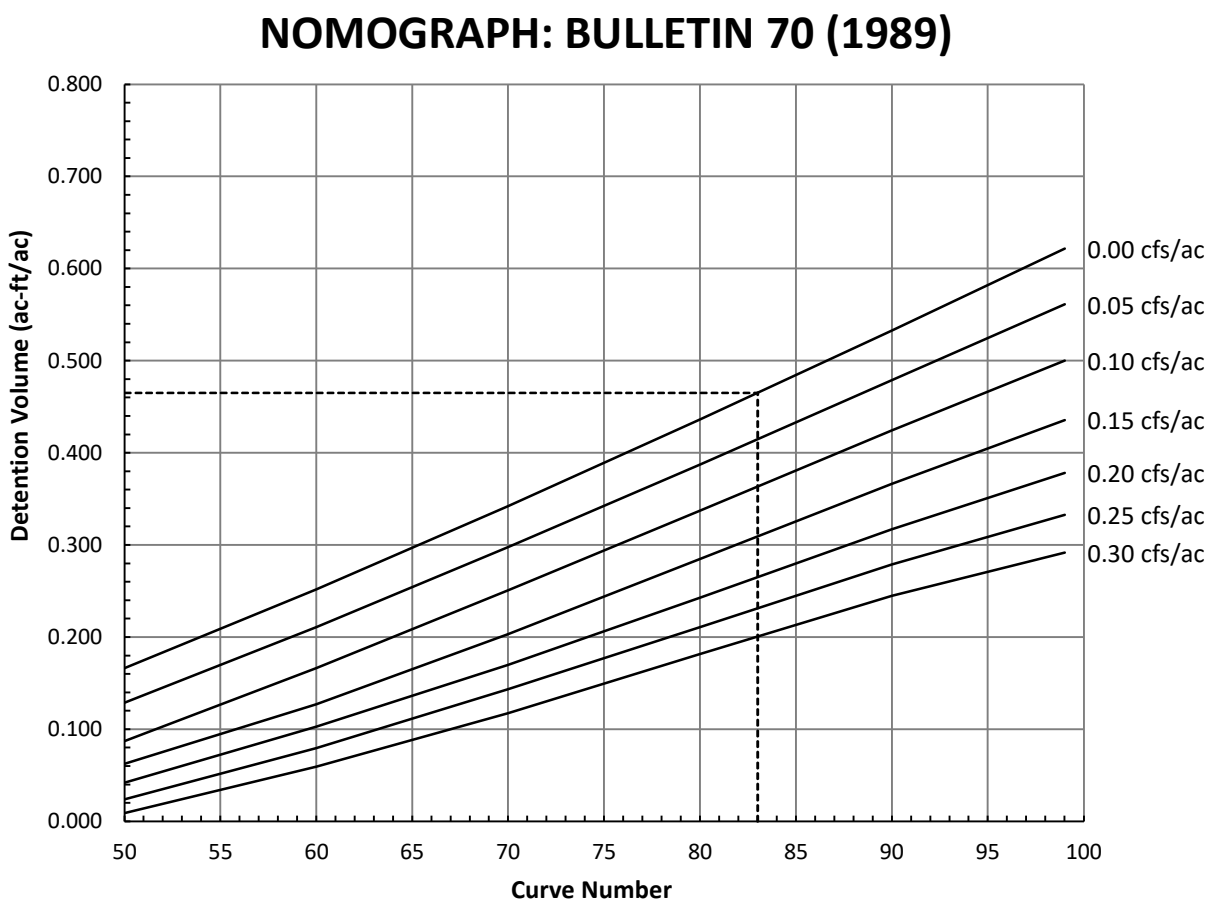
DEVELOPMENT INFORMATION

1.	Detained Area	2.03	acres
2.	Curve Number	83	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.944	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 12) **DATE:** 1/16/2024

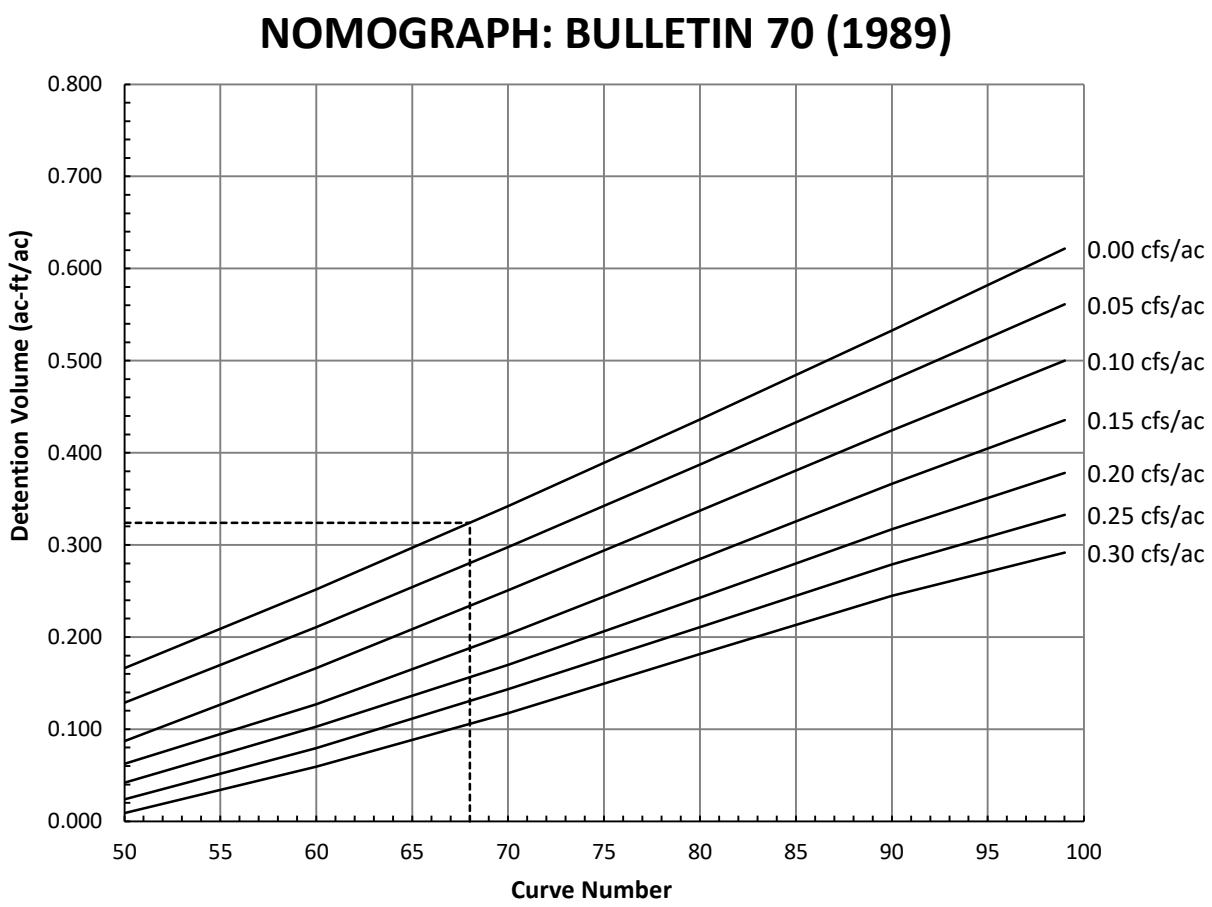
DEVELOPMENT INFORMATION

1.	Detained Area	1.69	acres
2.	Curve Number	68	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.548	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 13) **DATE:** 1/16/2024

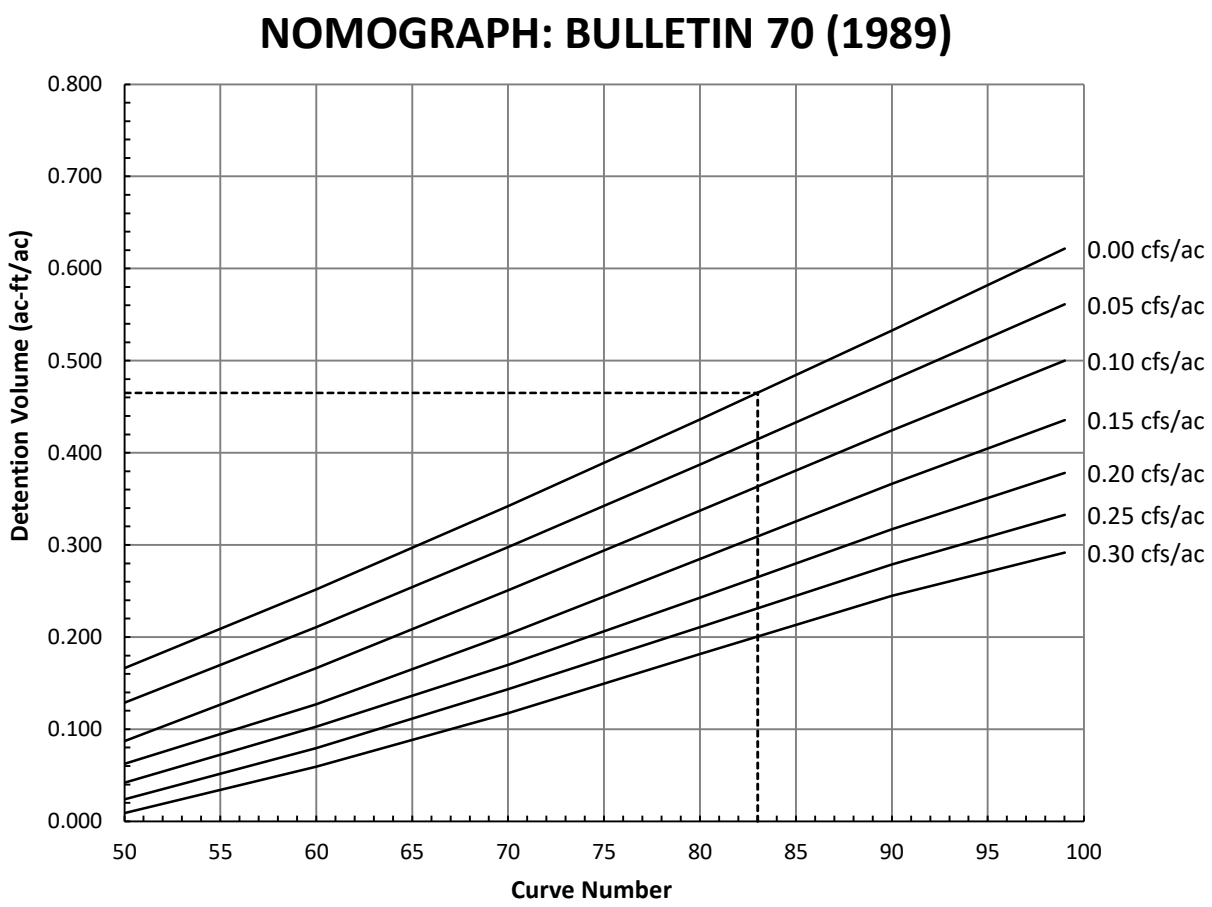
DEVELOPMENT INFORMATION

1.	Detained Area	2.49	acres
2.	Curve Number	83	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.158	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 14) **DATE:** 1/16/2024

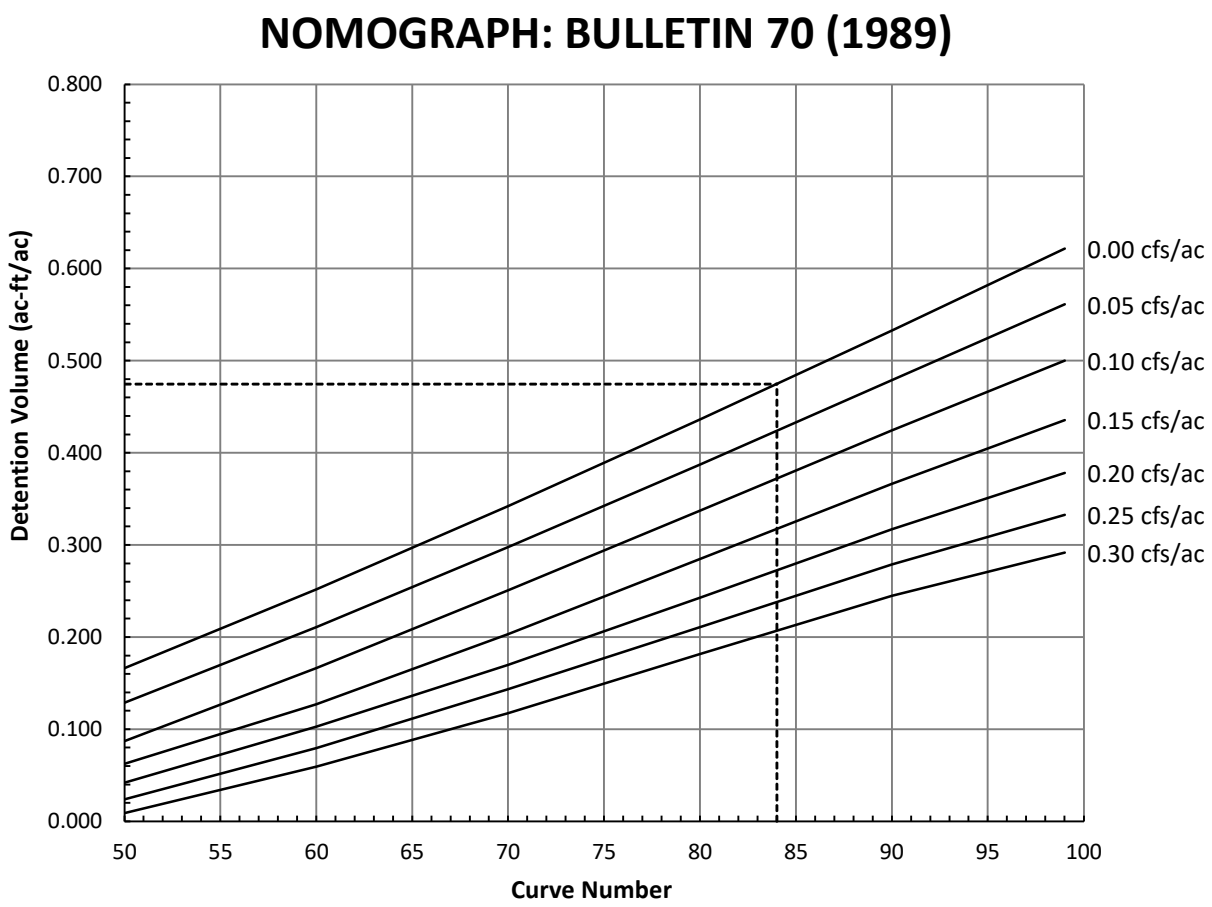
DEVELOPMENT INFORMATION

1.	Detained Area	3.00	acres
2.	Curve Number	84	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.424	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 15) **DATE:** 1/16/2024

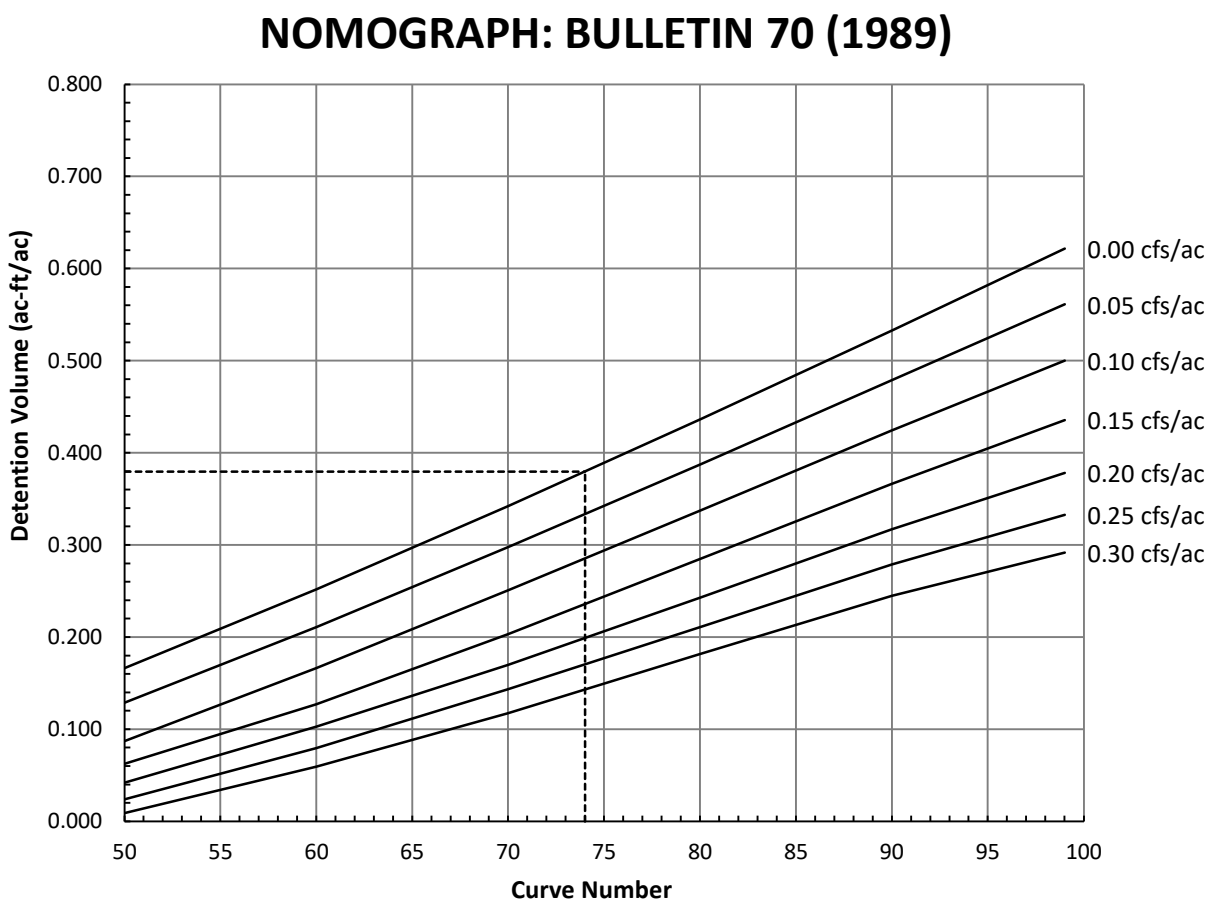
DEVELOPMENT INFORMATION

1.	Detained Area	0.99	acres
2.	Curve Number	74	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.376	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 16) **DATE:** 1/16/2024

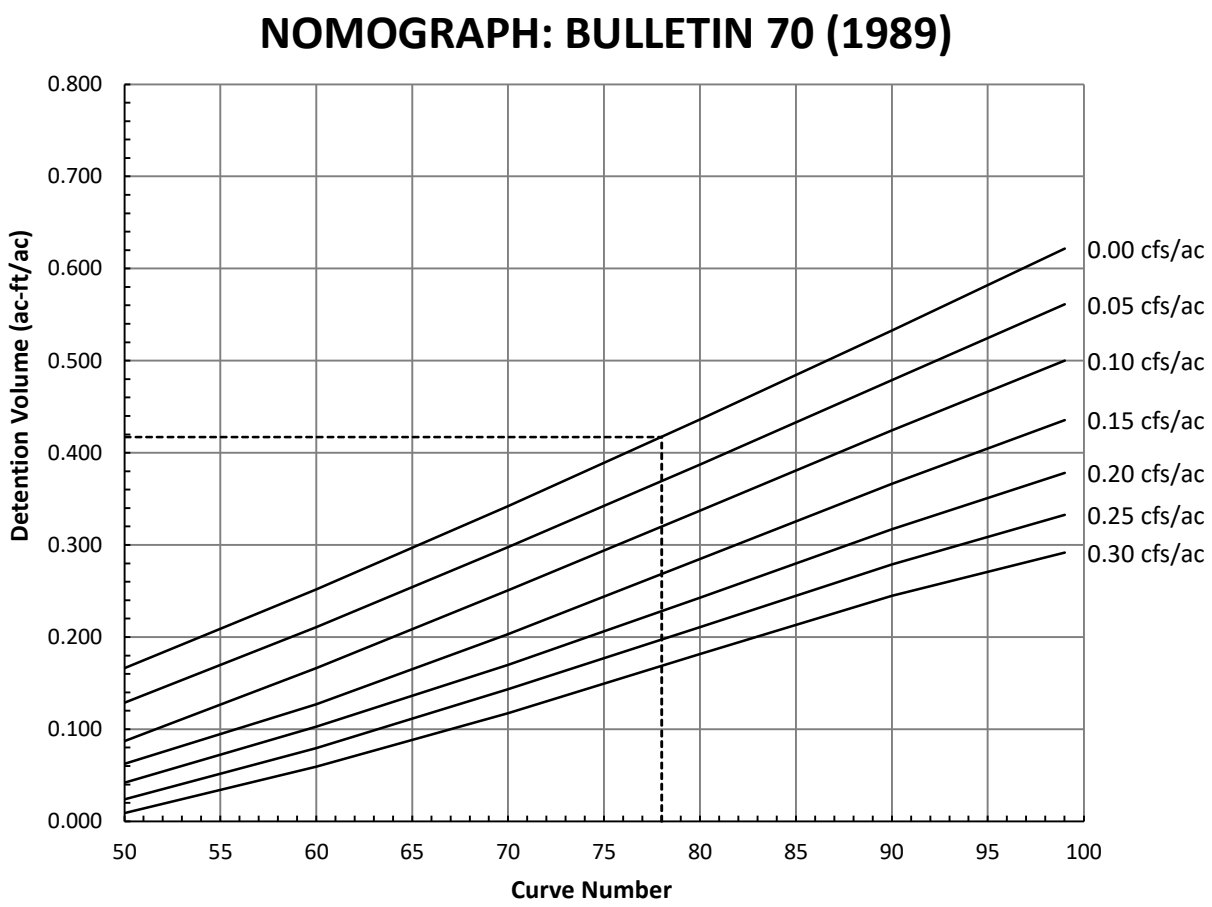
DEVELOPMENT INFORMATION

1.	Detained Area	0.15	acres
2.	Curve Number	78	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.063	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 70 RAINFALL DATA (1989)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Combined) **DATE:** 1/16/2024

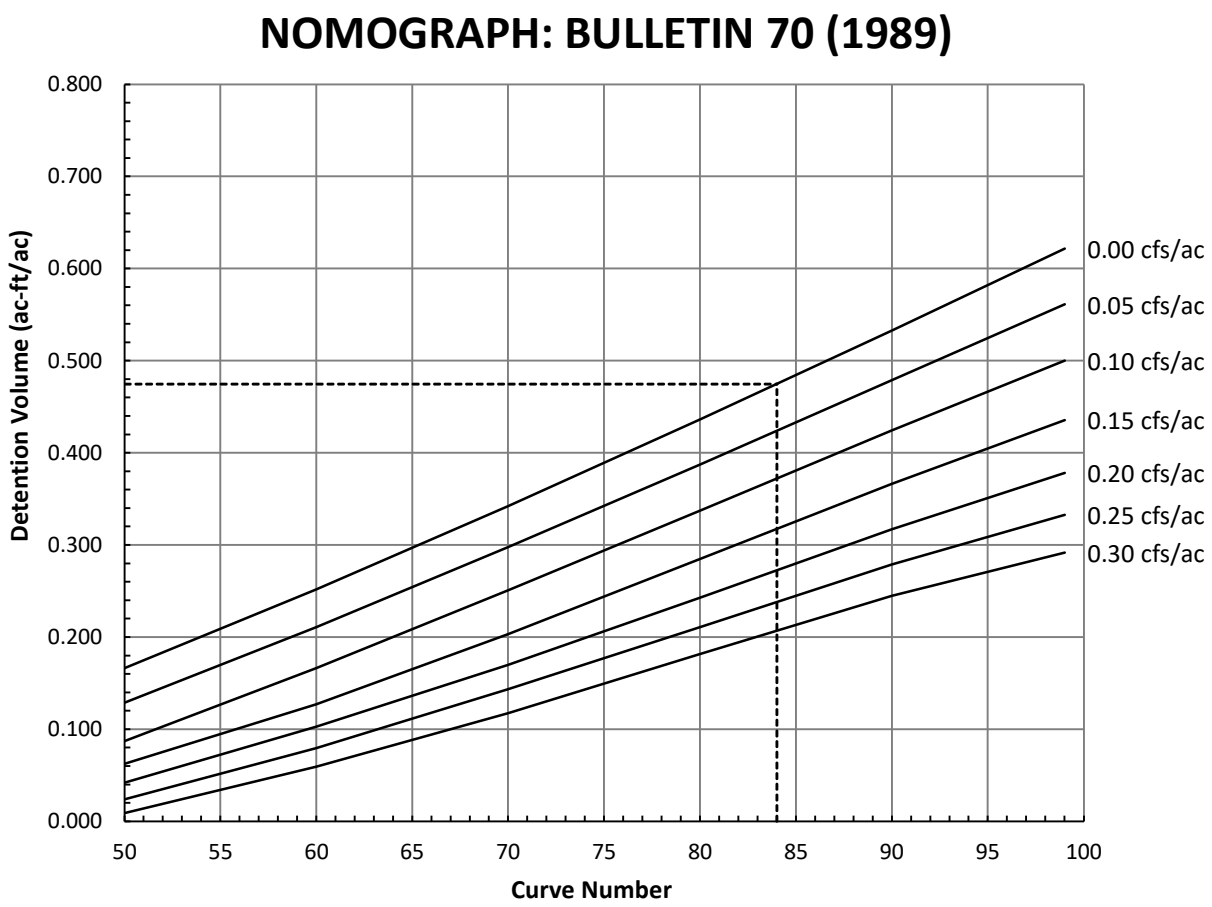
DEVELOPMENT INFORMATION

1.	Detained Area	147.32	acres
2.	Curve Number	84	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	69.933	ac-ft

NOMOGRAPH





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Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
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CHICAGO EXECUTIVE AIRPORT

VILLAGE OF WHEELING, ILLINOIS

PROPOSED CONDITIONS CN EXHIBIT

PROJ. MGR.: DEB
PROJ. ASSOC.: KMS
DRAWN BY: ARD
DATE: 01/03/2024
SCALE: 1"=250'

SHEET 1

PRI.WHIL01

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January 19, 2024 - 16:16 Dwg Name: P:\Priwhil01\dwg\StormWater\Work Area\20231219-\20231219-Proposed_CN.dwg Updated By: ADobkowski

Proposed
Curve Number Calculations

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 1) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.93	90.74
Pervious Area, Open Space, Good Condition	D	80	1.64	131.42
TOTALS:			2.57	222.16

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{222.16}{2.57} \rightarrow \textbf{Composite CN} = \textbf{86.49}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 North) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	26.70	2616.51
Pervious Area, Open Space, Good Condition	D	80	9.86	789.05
Pervious Area, Open Space, Good Condition	B	61	6.36	388.13
Pervious Area, Open Space, Good Condition	C	74	11.34	838.83
		TOTALS:	54.26	4632.53

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{4632.53}{54.26} \rightarrow \textbf{Composite CN} = \textbf{85.38}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 South) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	3.10	304.03
Pervious Area, Open Space, Good Condition	B	61	0.54	32.87
Pervious Area, Open Space, Good Condition	C	74	0.48	35.81
TOTALS:			4.13	372.71

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{372.71}{4.13} \rightarrow \textbf{Composite CN} = \textbf{90.35}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 3) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	34.31	3362.38
Pervious Area, Open Space, Good Condition	D	80	6.49	519.26
Pervious Area, Open Space, Good Condition	C	74	13.80	1021.31
TOTALS:			54.60	4902.95

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{4902.95}{54.60} \rightarrow \textbf{Composite CN} = \textbf{89.79}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 4) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.96	94.33
Pervious Area, Open Space, Good Condition	D	80	3.59	286.95
Pervious Area, Open Space, Good Condition	C	74	9.01	666.51
TOTALS:			13.56	1047.79

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{1047.79}{13.56} \rightarrow \textbf{Composite CN} = \textbf{77.29}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5 North) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	2.46	240.79
Pervious Area, Open Space, Good Condition	D	80	10.66	852.40
TOTALS:			13.11	1093.20

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{1093.20}{13.11} \rightarrow \textbf{Composite CN} = \textbf{83.37}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5 South) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	15.08	1478.30
Pervious Area, Open Space, Good Condition	D	80	17.35	1387.79
Pervious Area, Open Space, Good Condition	C	74	0.16	11.87
TOTALS:			32.59	2877.96

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{2877.96}{32.59} \rightarrow \textbf{Composite CN} = \textbf{88.30}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 6) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	B	61	2.42	147.79
Pervious Area, Open Space, Good Condition	D	80	1.17	93.74
TOTALS:			3.59	241.53

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{241.53}{3.59} \rightarrow \textbf{Composite CN} = \textbf{67.19}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 7) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	B	61	0.80	48.69
TOTALS:			0.80	48.69

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{48.69}{0.80} \rightarrow \textbf{Composite CN} = \textbf{61.00}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 8) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	D	80	0.26	20.97
TOTALS:			0.26	20.97

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{20.97}{0.26} \rightarrow \textbf{Composite CN} = \textbf{80.00}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 9) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	D	80	0.72	57.26
TOTALS:			0.72	57.26

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{57.26}{0.72} \rightarrow \textbf{Composite CN} = \textbf{80.00}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 10) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.62	60.39
Pervious Area, Open Space, Good Condition	D	80	1.29	103.11
TOTALS:			1.91	163.50

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{163.50}{1.91} \rightarrow \textbf{Composite CN} = \textbf{85.82}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 11) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.55	54.23
Pervious Area, Open Space, Good Condition	D	80	1.47	117.91
TOTALS:			2.03	172.15

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{172.15}{2.03} \rightarrow \textbf{Composite CN} = \textbf{84.91}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 12) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	D	80	0.62	49.76
Pervious Area, Open Space, Good Condition	B	61	1.07	65.33
TOTALS:			1.69	115.10

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{115.10}{1.69} \rightarrow \textbf{Composite CN} = \textbf{67.98}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 13) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	D	80	2.15	171.75
Pervious Area, Open Space, Good Condition	C	74	0.34	25.23
TOTALS:			2.49	196.98

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{196.98}{2.49} \rightarrow \textbf{Composite CN} = \textbf{79.18}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 14) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	C	74	3.00	221.64
		TOTALS:	3.00	221.64

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{221.64}{3.00} \rightarrow \textbf{Composite CN} = \textbf{74.00}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 15) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Pervious Area, Open Space, Good Condition	C	74	0.99	73.58
		TOTALS:	0.99	73.58

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{73.58}{0.99} \rightarrow \textbf{Composite CN} = \textbf{74.00}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 16) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	0.02	2.22
Pervious Area, Open Space, Good Condition	C	74	0.13	9.42
TOTALS:			0.15	11.64

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{11.64}{0.15} \rightarrow \textbf{Composite CN} = \textbf{77.63}$$

COMPOSITE RUNOFF CURVE NUMBER (*CN*)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Combined Areas 1-16) **DATE:** 1/3/2024

TYPE OF AREA (SELECT WITH DROP-DOWN)

___ DETAINED AREA

___ UNRESTRICTED AREA

___ UPSTREAM AREA

___ MAJOR STORMWATER SYSTEM

___ OTHER:

CONDITION (SELECT WITH DROP-DOWN)

X PROPOSED CONDITION

___ EXISTING CONDITION

RUNOFF CURVE NUMBER

Surface Description	Hydrologic Soil Group (HSG)	CN	Area (acres)	Product (CN)(Area)
Impervious Area	N/A	98	84.73	8303.54
Pervious Area, Open Space, Good Condition	B	61	7.97	486.17
Pervious Area, Open Space, Good Condition	C	74	39.25	2904.50
Pervious Area, Open Space, Good Condition	D	80	56.10	4488.00
		TOTALS:	188.05	16182.21

COMPOSITE RUNOFF CURVE NUMBER

$$\text{Composite CN} = \frac{\text{Total Product}}{\text{Total Area}} = \frac{16182.21}{188.05} \rightarrow \textbf{Composite CN} = \textbf{86.05}$$

Proposed
Adjusted Curve Number Calculations

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 1) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	2.57	acres
2.	Total Impervious Area	0.926	acres
3.	Composite CN	86	
4.	Volume Control Storage Provided, VC_P	0.077	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.63	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.88	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	1.47	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.077	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	1.397	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.52	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.05	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	83.01	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2N) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	54.26	acres
2.	Total Impervious Area	26.699	acres
3.	Composite CN	85	
4.	Volume Control Storage Provided, VC_P	2.225	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.76	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.76	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	30.59	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	2.225	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	28.361	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.27	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.36	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	80.92	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2S) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	4.13	acres
2.	Total Impervious Area	3.102	acres
3.	Composite CN	90	
4.	Volume Control Storage Provided, VC_P	0.259	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.11	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	7.37	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	2.54	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.259	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	2.277	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.62	inches
13.	Adjusted Maximum Retention, S_{ADJ}		1.94	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	83.77	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 3) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	54.60	acres
2.	Total Impervious Area	34.310	acres
3.	Composite CN	90	
4.	Volume Control Storage Provided, VC_P	2.859	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.11	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	7.37	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	33.52	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	2.859	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	30.662	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.74	inches
13.	Adjusted Maximum Retention, S_{ADJ}		1.79	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	84.79	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 4) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	13.56	acres
2.	Total Impervious Area	0.963	acres
3.	Composite CN	77	
4.	Volume Control Storage Provided, VC_P	0.080	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	2.99	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	5.80	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	6.55	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.080	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	6.473	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		5.73	inches
13.	Adjusted Maximum Retention, S_{ADJ}		3.09	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	76.41	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5N) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	13.11	acres
2.	Total Impervious Area	2.457	acres
3.	Composite CN	83	
4.	Volume Control Storage Provided, VC_P	0.205	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	2.05	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.52	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	7.13	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.205	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	6.922	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.34	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.28	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	81.45	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5S) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	32.59	acres
2.	Total Impervious Area	15.085	acres
3.	Composite CN	88	
4.	Volume Control Storage Provided, VC_P	1.257	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.36	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	7.13	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	19.35	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	1.257	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	18.096	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.66	inches
13.	Adjusted Maximum Retention, S_{ADJ}		1.88	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	84.16	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 6) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	3.59	acres
2.	Total Impervious Area	0.000	acres
3.	Composite CN	67	
4.	Volume Control Storage Provided, VC_P	0.000	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	4.93	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	4.60	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	1.38	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.000	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	1.376	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		4.60	inches
13.	Adjusted Maximum Retention, S_{ADJ}		4.93	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	67.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 7) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	0.80	acres
2.	Total Impervious Area	0.000	acres
3.	Composite CN	61	
4.	Volume Control Storage Provided, VC_P	0.000	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	6.39	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	3.88	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	0.26	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.000	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	0.259	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		3.88	inches
13.	Adjusted Maximum Retention, S_{ADJ}		6.39	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	61.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 8) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	0.26	acres
2.	Total Impervious Area	0.000	acres
3.	Composite CN	80	
4.	Volume Control Storage Provided, VC_P	0.000	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	2.50	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.16	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	0.13	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.000	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	0.133	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.16	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.50	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	80.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 9) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	0.72	acres
2.	Total Impervious Area	0.000	acres
3.	Composite CN	80	
4.	Volume Control Storage Provided, VC_P	0.000	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	2.50	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.16	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	0.37	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.000	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	0.370	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.16	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.50	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	80.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 10) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	1.91	acres
2.	Total Impervious Area	0.616	acres
3.	Composite CN	86	
4.	Volume Control Storage Provided, VC_P	0.051	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.63	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.88	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	1.10	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.051	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	1.045	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.56	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.00	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	83.33	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 11) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	2.03	acres
2.	Total Impervious Area	0.553	acres
3.	Composite CN	85	
4.	Volume Control Storage Provided, VC_P	0.046	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.76	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.76	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	1.14	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.046	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	1.098	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.49	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.09	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	82.74	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 12) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	1.69	acres
2.	Total Impervious Area	0.000	acres
3.	Composite CN	68	
4.	Volume Control Storage Provided, VC_P	0.000	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	4.71	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	4.72	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	0.66	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.000	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	0.664	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		4.72	inches
13.	Adjusted Maximum Retention, S_{ADJ}		4.71	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	68.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 13) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	2.49	acres
2.	Total Impervious Area	0.000	acres
3.	Composite CN	79	
4.	Volume Control Storage Provided, VC_P	0.000	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	2.66	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.04	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	1.25	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.000	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	1.253	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.04	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.66	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	79.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 14) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	3.00	acres
2.	Total Impervious Area	0.000	acres
3.	Composite CN	74	
4.	Volume Control Storage Provided, VC_P	0.000	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	3.51	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	5.44	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	1.36	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.000	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	1.360	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		5.44	inches
13.	Adjusted Maximum Retention, S_{ADJ}		3.51	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	74.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 15) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*		0.99	acres
2.	Total Impervious Area		0.000	acres
3.	Composite CN		74	
4.	Volume Control Storage Provided, VC_P		0.000	ac-ft
5.	Depth of Rainfall, *P*		8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	3.51	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	5.44	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	0.45	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R		0.000	ac-ft
10.	Additional Volume Control Storage Provided		0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	0.449	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		5.44	inches
13.	Adjusted Maximum Retention, S_{ADJ}		3.51	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	74.00	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 16) **DATE:** 1/16/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	0.15	acres
2.	Total Impervious Area	0.023	acres
3.	Composite CN	78	
4.	Volume Control Storage Provided, VC_P	0.002	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	2.82	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	5.92	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	0.07	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	0.002	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	0.072	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		5.77	inches
13.	Adjusted Maximum Retention, S_{ADJ}		3.03	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	76.73	

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER (CN_{ADJ})

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Combined) **DATE:** 1/23/2024

DEVELOPMENT INFORMTION

1.	Area Detained, *A*	188.048	acres
2.	Total Impervious Area	84.731	acres
3.	Composite CN	86.05	
4.	Volume Control Storage Provided, VC_P	7.061	ac-ft
5.	Depth of Rainfall, *P*	8.57	inches

RUNOFF VOLUME (NRCS EQUATIONS)

6.	Maximum Retention, *S*	$S = \frac{1000}{CN} - 10$	1.62	inches
7.	Runoff Depth, Q_D	$Q_D = \frac{(P - 0.2S)^2}{(P + 0.8S)}$	6.89	inches
8.	Runoff Volume, V_R	$V_R = Q_D A \left(\frac{1}{12\frac{in}{ft}}\right)$	107.99	ac-ft

VOLUME CONTROL STORAGE

9.	Volume Control Storage Required, VC_R	7.061	ac-ft
10.	Additional Volume Control Storage Provided	0.000	ac-ft

ADJUSTED RUNOFF VOLUME

11.	Adjusted Runoff Volume, V_{ADJ}	$V_{ADJ} = V_R - VC_P$	100.931	ac-ft
12.	Adjusted Runoff Depth, Q_{ADJ}		6.44	inches
13.	Adjusted Maximum Retention, S_{ADJ}		2.15	inches

ADJUSTED COMPOSITE RUNOFF CURVE NUMBER

14.	Adjusted Runoff Curve Number, CN_{ADJ}	82.32	

Proposed
Nomograph Calculations

Proposed

NOMOGRAPH SUMMARY TABLE

Priwhil01

Wheeling, Illinois

01/03/2024 ARD

Zero Release BULLETIN-75			
Area ID.	Detained Area (AC)	Adjusted CN	Required Detention (AC-ft)
1	2.57	83	1.40
2 North	54.26	81	28.44
2 South	4.13	84	2.29
3	54.60	85	30.80
4	13.56	76	6.43
5 North	13.11	81	6.87
5 South	32.59	84	18.06
8	0.26	80	0.13
9	0.72	80	0.37
10	1.91	83	1.04
11	2.03	83	1.10
12	1.69	68	0.66
13	2.49	79	1.26
14	3.00	74	1.36
15	0.99	74	0.45
16	0.15	77	0.07
∑=	188.06		100.74
Combined*	188.05	82	100.46

* Adjusted CN

NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 1) **DATE:** 1/3/2024

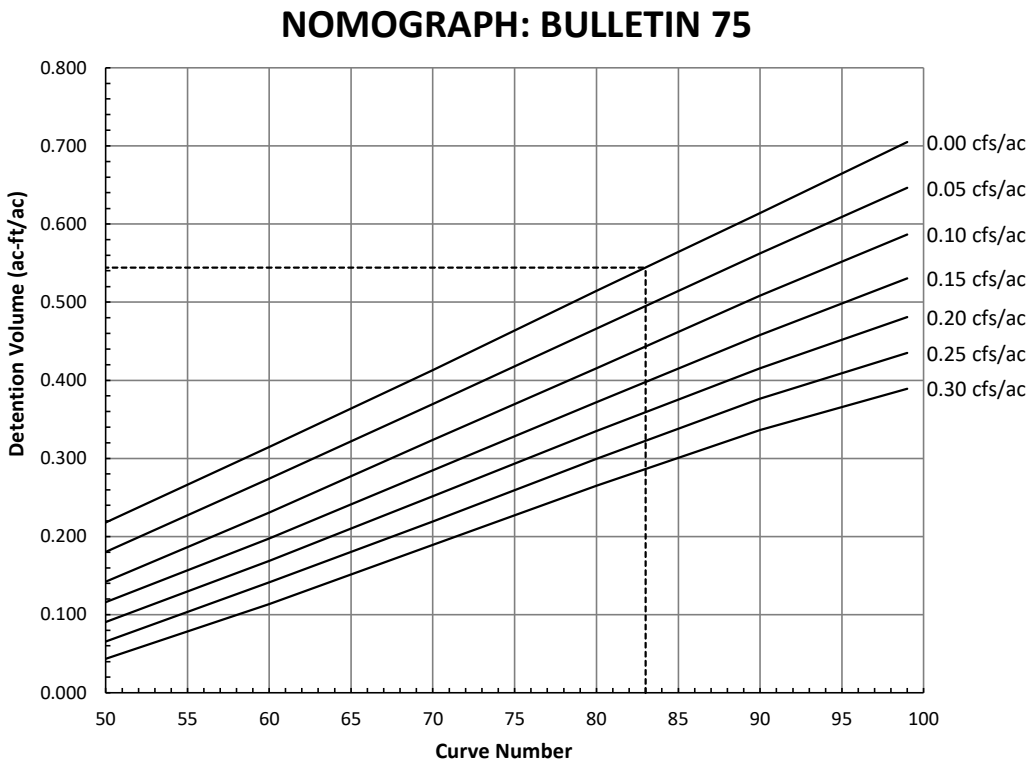
DEVELOPMENT INFORMATION

1.	Detained Area	2.57	acres
2.	Curve Number	83	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.40	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 North) **DATE:** 1/3/2024

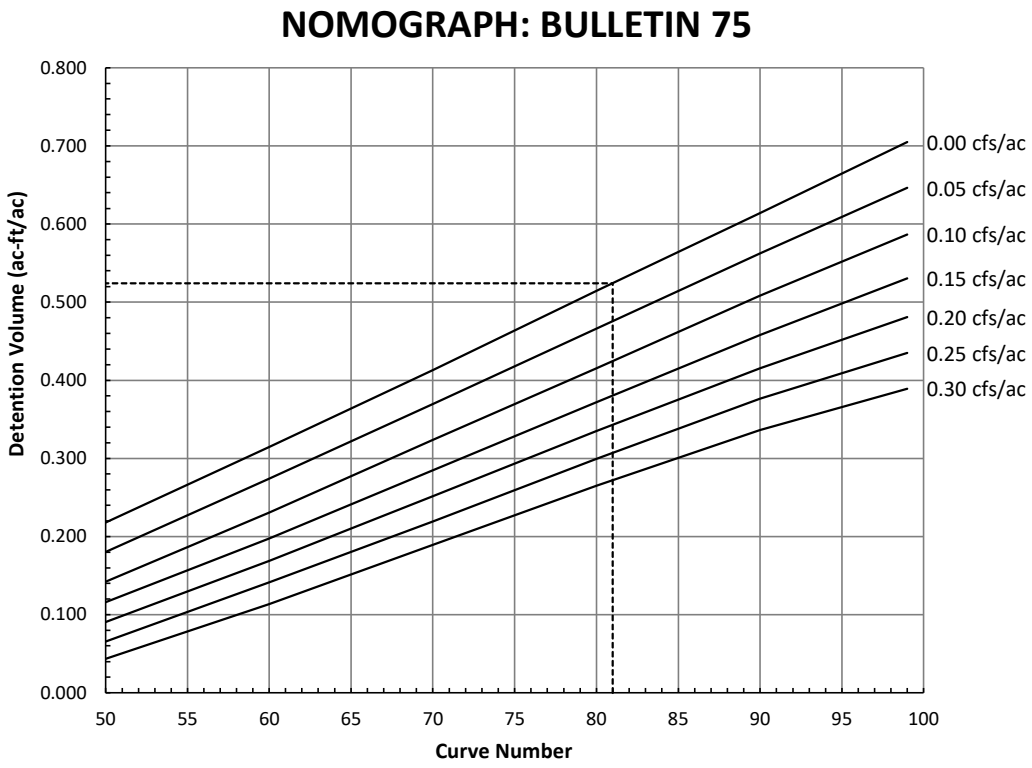
DEVELOPMENT INFORMATION

1.	Detained Area	54.26	acres
2.	Curve Number	81	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	28.44	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 2 South) **DATE:** 1/3/2024

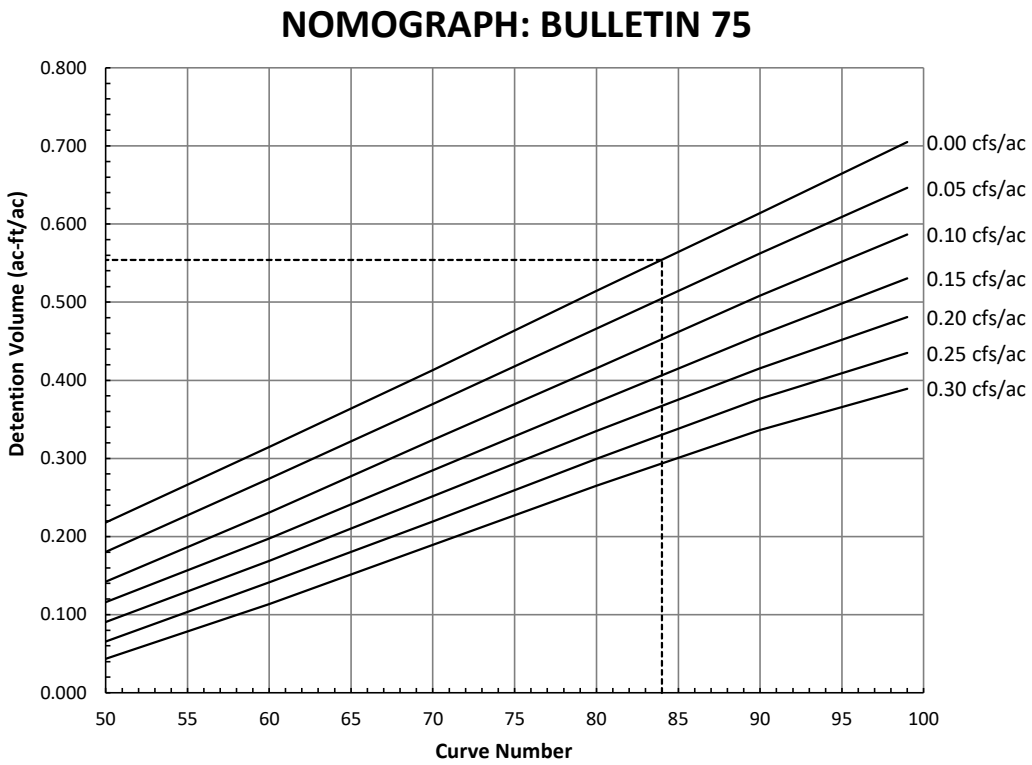
DEVELOPMENT INFORMATION

1.	Detained Area	4.13	acres
2.	Curve Number	84	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	2.29	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 3) **DATE:** 1/3/2024

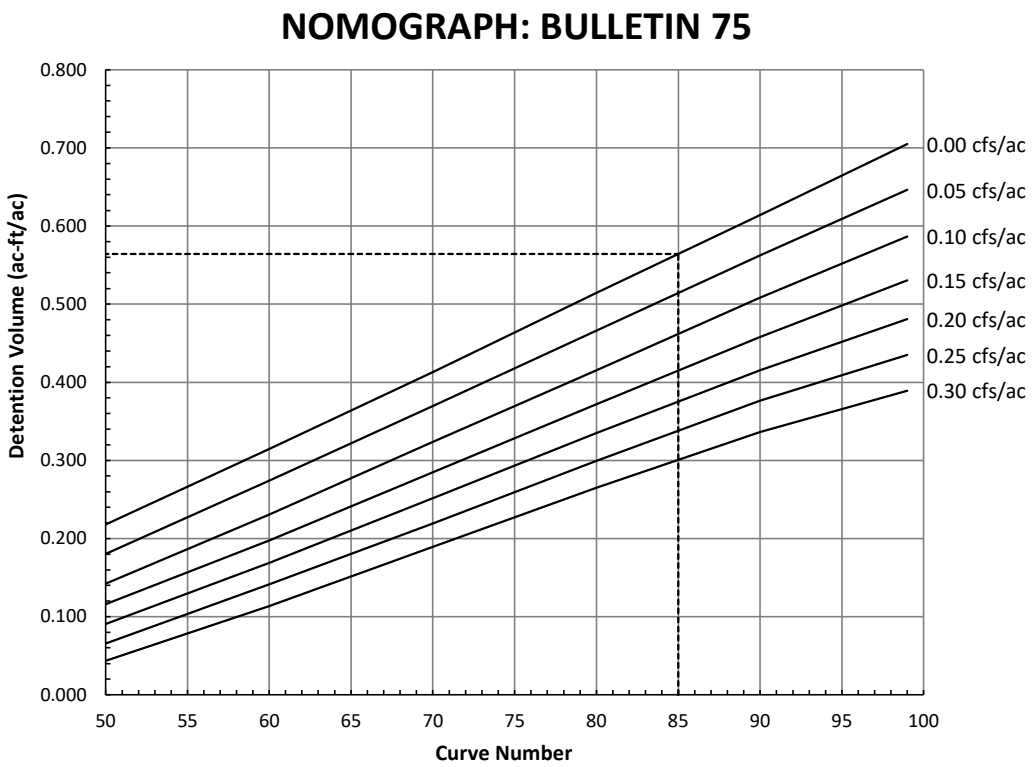
DEVELOPMENT INFORMATION

1.	Detained Area	54.60	acres
2.	Curve Number	85	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	30.80	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 4) **DATE:** 1/3/2024

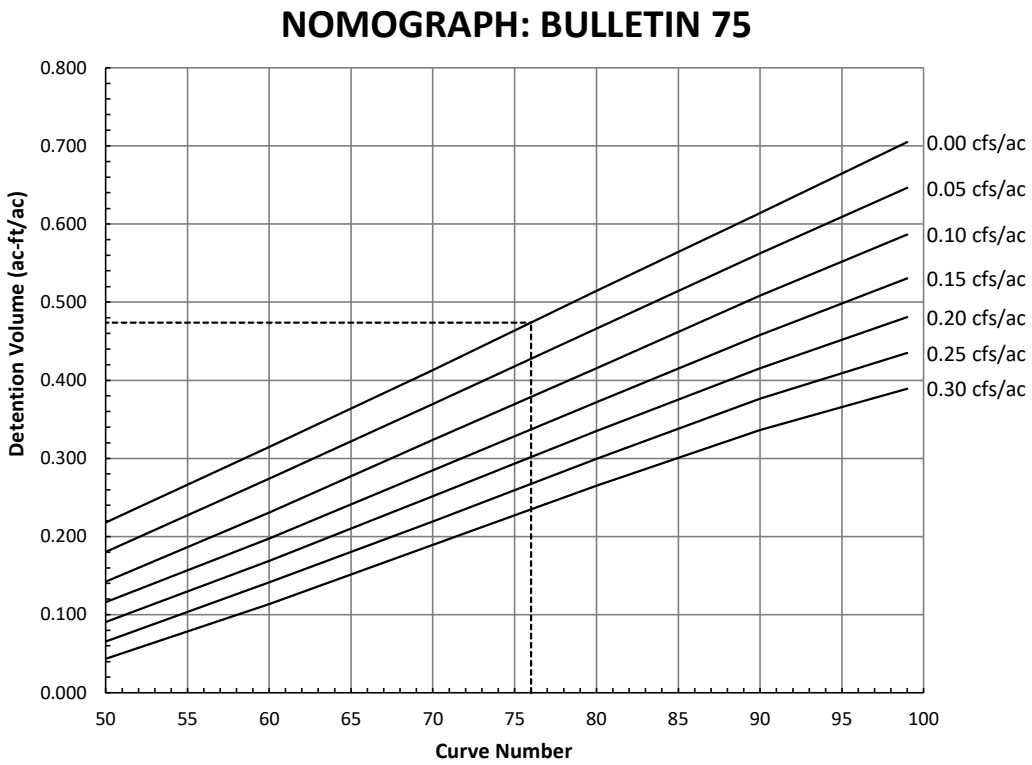
DEVELOPMENT INFORMATION

1.	Detained Area	13.56	acres
2.	Curve Number	76	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	6.43	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5 North) **DATE:** 1/3/2024

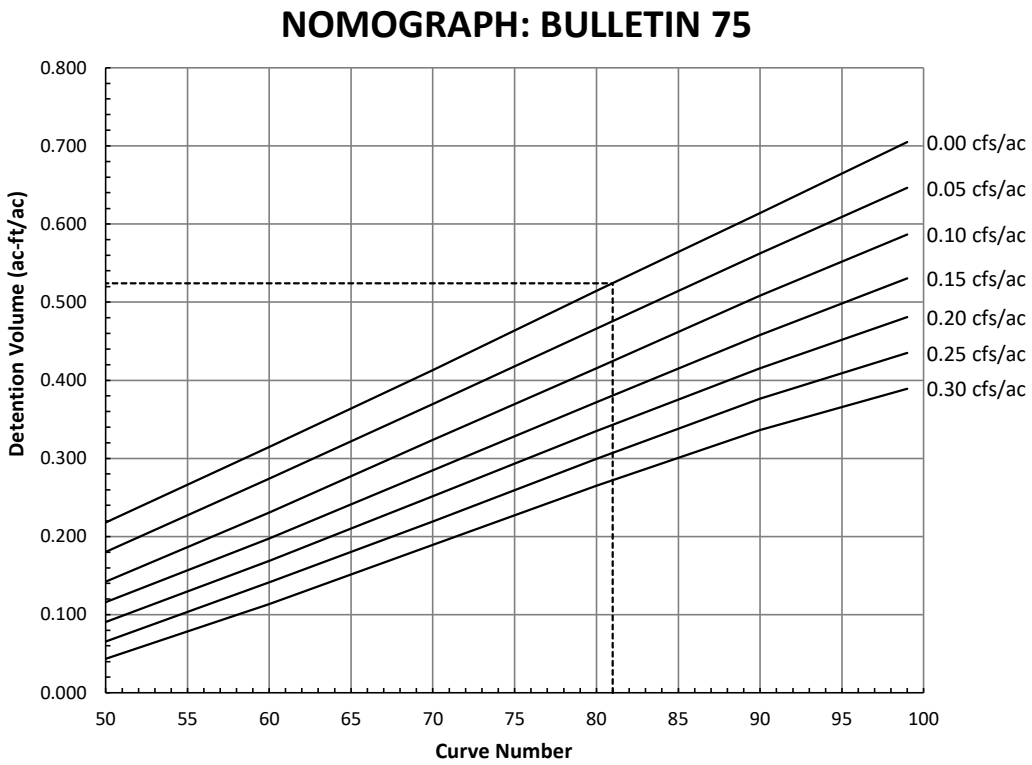
DEVELOPMENT INFORMATION

1.	Detained Area	13.11	acres
2.	Curve Number	81	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	6.87	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 5 South) **DATE:** 1/3/2024

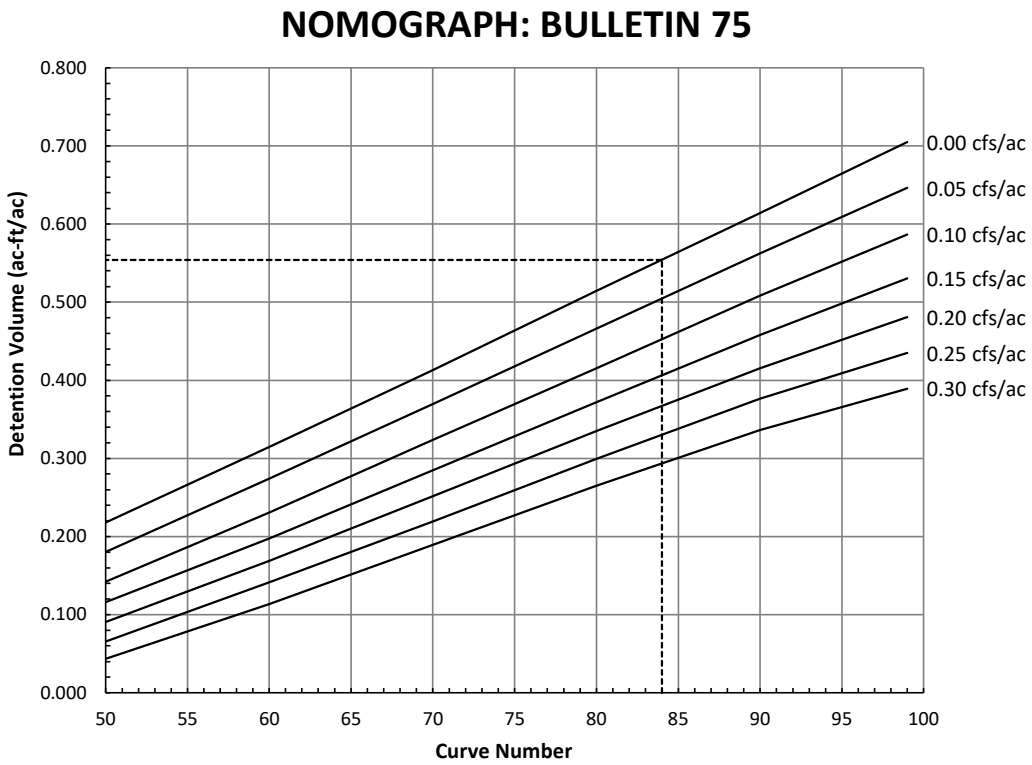
DEVELOPMENT INFORMATION

1.	Detained Area	32.59	acres
2.	Curve Number	84	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	18.06	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 6) **DATE:** 1/3/2024

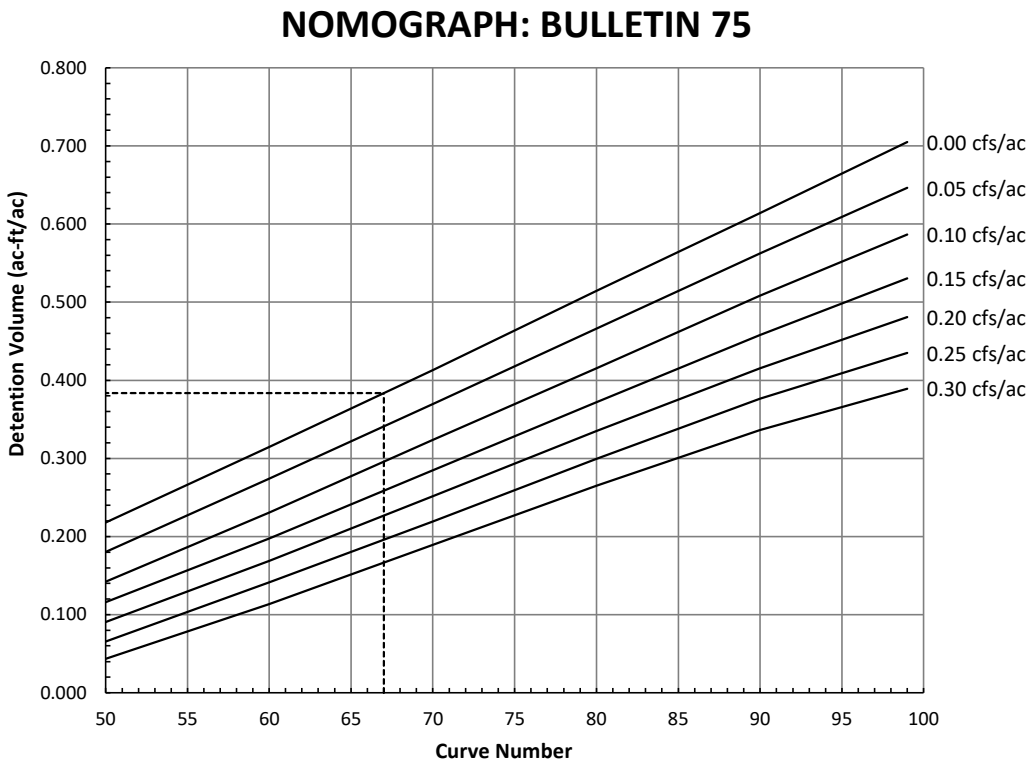
DEVELOPMENT INFORMATION

1.	Detained Area	3.59	acres
2.	Curve Number	67	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.38	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 7) **DATE:** 1/3/2024

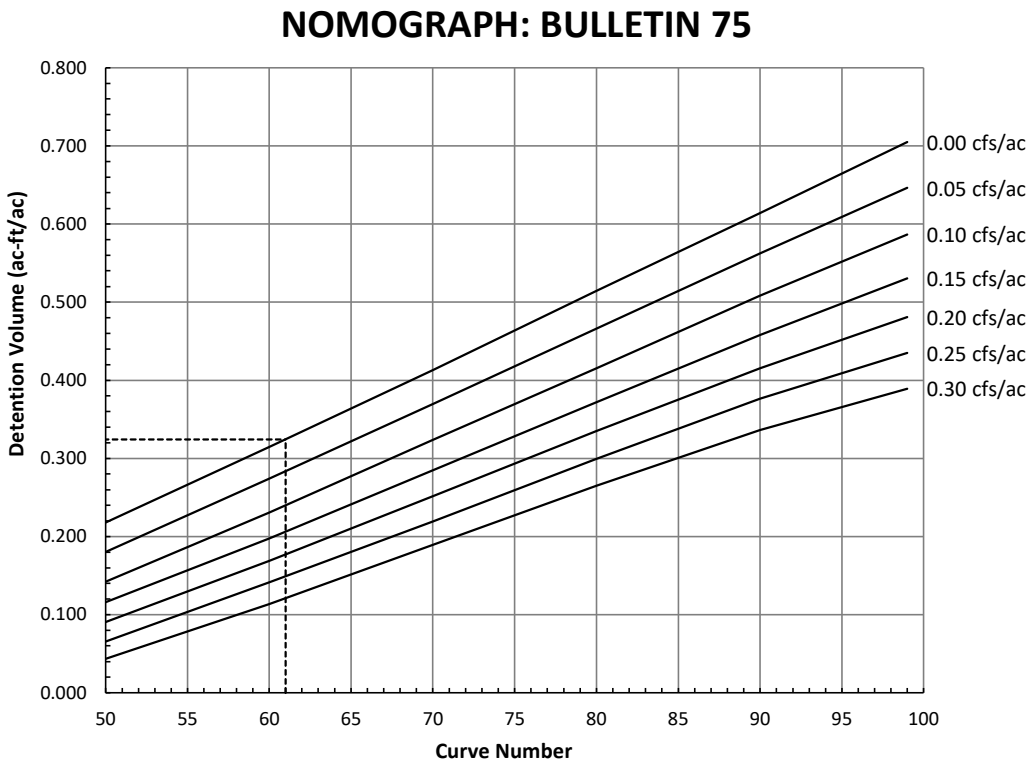
DEVELOPMENT INFORMATION

1.	Detained Area	0.80	acres
2.	Curve Number	61	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.26	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 8) **DATE:** 1/3/2024

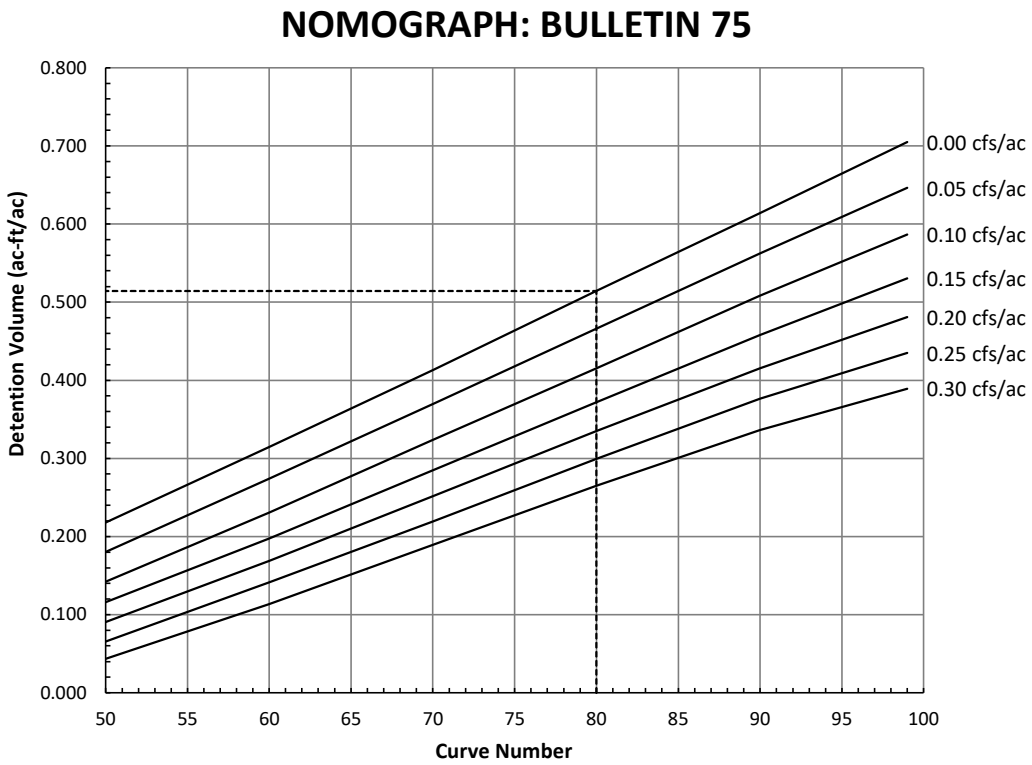
DEVELOPMENT INFORMATION

1.	Detained Area	0.26	acres
2.	Curve Number	80	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.13	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 9) **DATE:** 1/3/2024

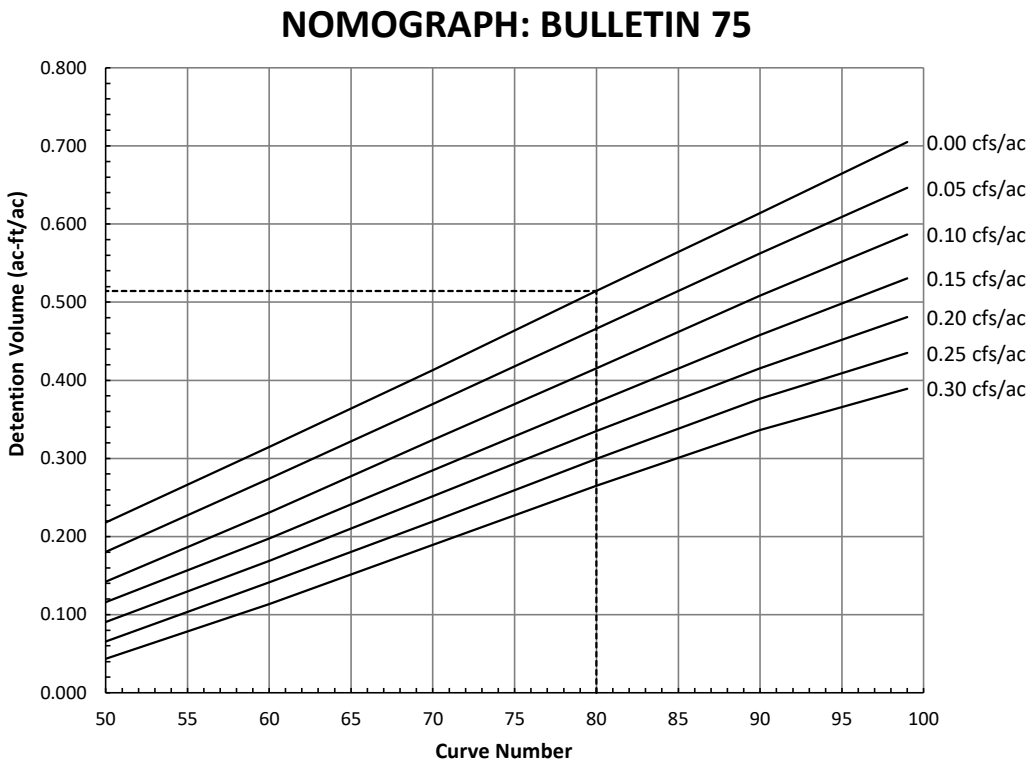
DEVELOPMENT INFORMATION

1.	Detained Area	0.72	acres
2.	Curve Number	80	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.37	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 10) **DATE:** 1/3/2024

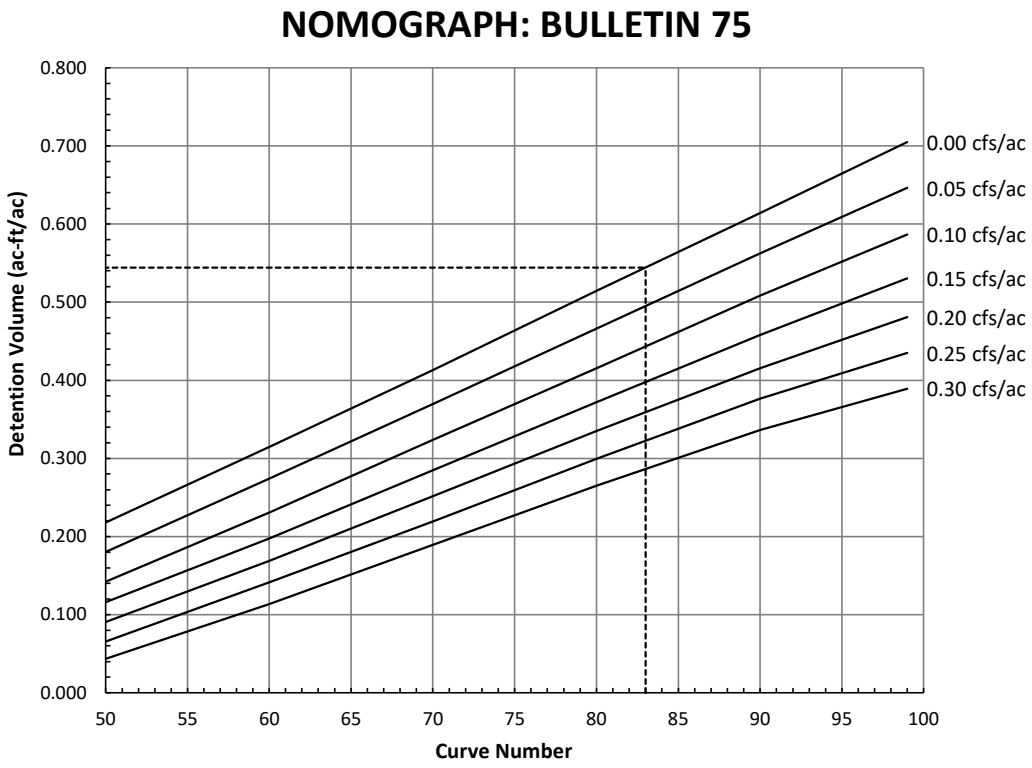
DEVELOPMENT INFORMATION

1.	Detained Area	1.91	acres
2.	Curve Number	83	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.04	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 11) **DATE:** 1/3/2024

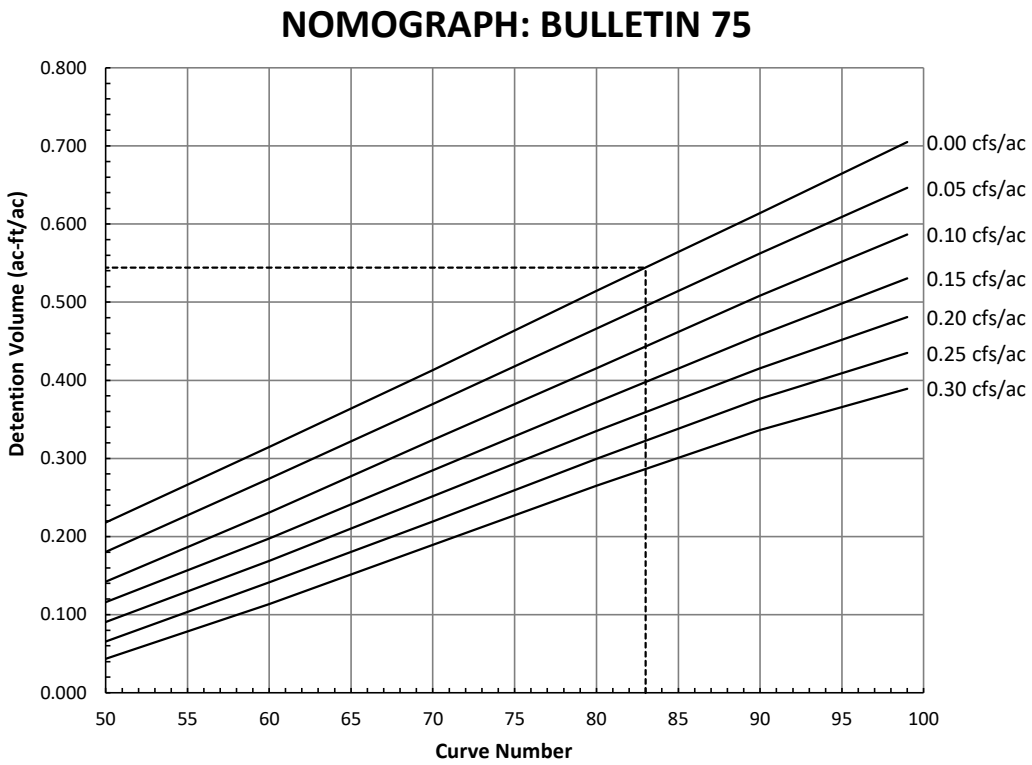
DEVELOPMENT INFORMATION

1.	Detained Area	2.03	acres
2.	Curve Number	83	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.10	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 12) **DATE:** 1/3/2024

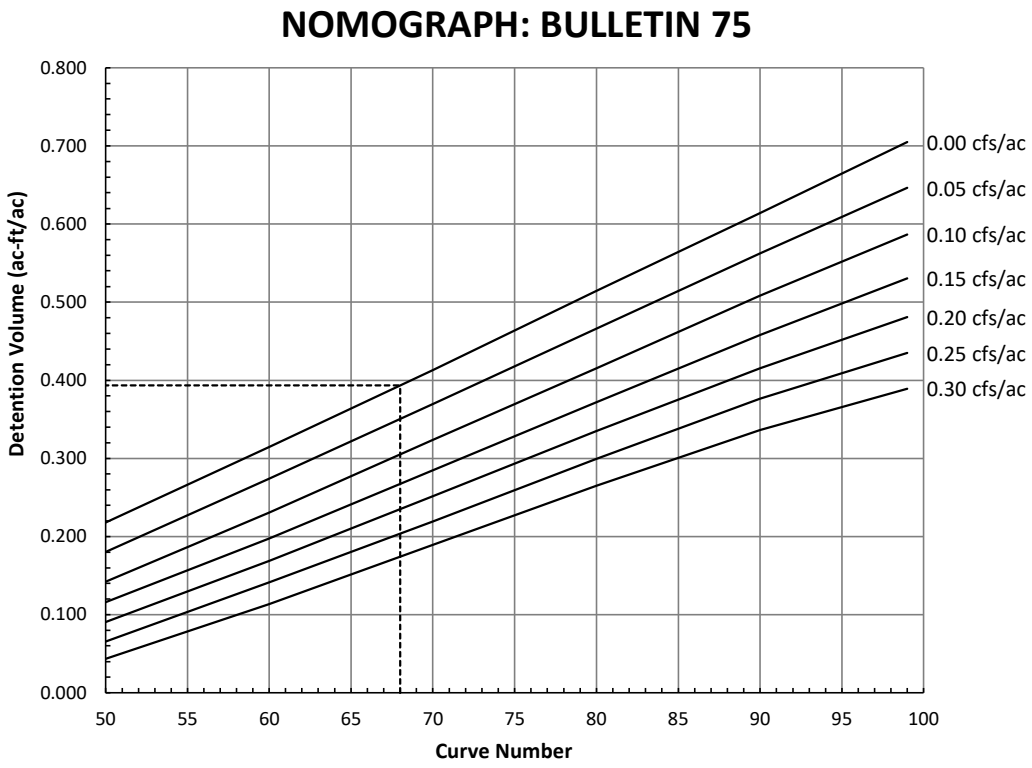
DEVELOPMENT INFORMATION

1.	Detained Area	1.69	acres
2.	Curve Number	68	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.665	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 13) **DATE:** 1/3/2024

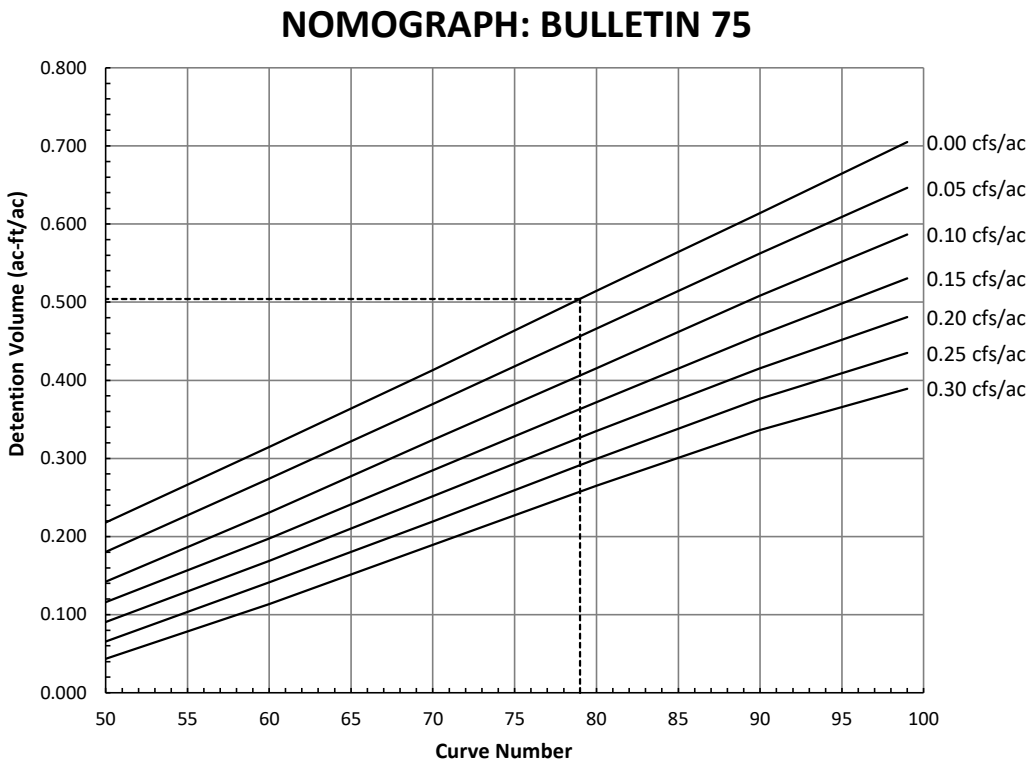
DEVELOPMENT INFORMATION

1.	Detained Area	2.49	acres
2.	Curve Number	79	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.26	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 14) **DATE:** 1/3/2024

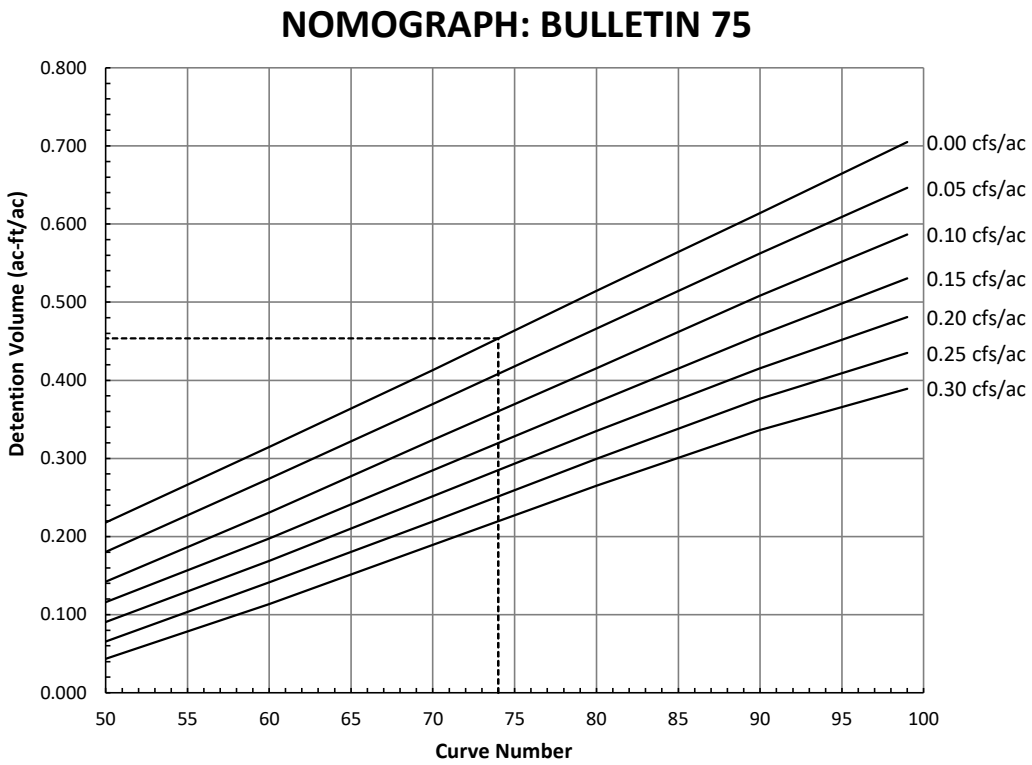
DEVELOPMENT INFORMATION

1.	Detained Area	3.00	acres
2.	Curve Number	74	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	1.36	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 15) **DATE:** 1/3/2024

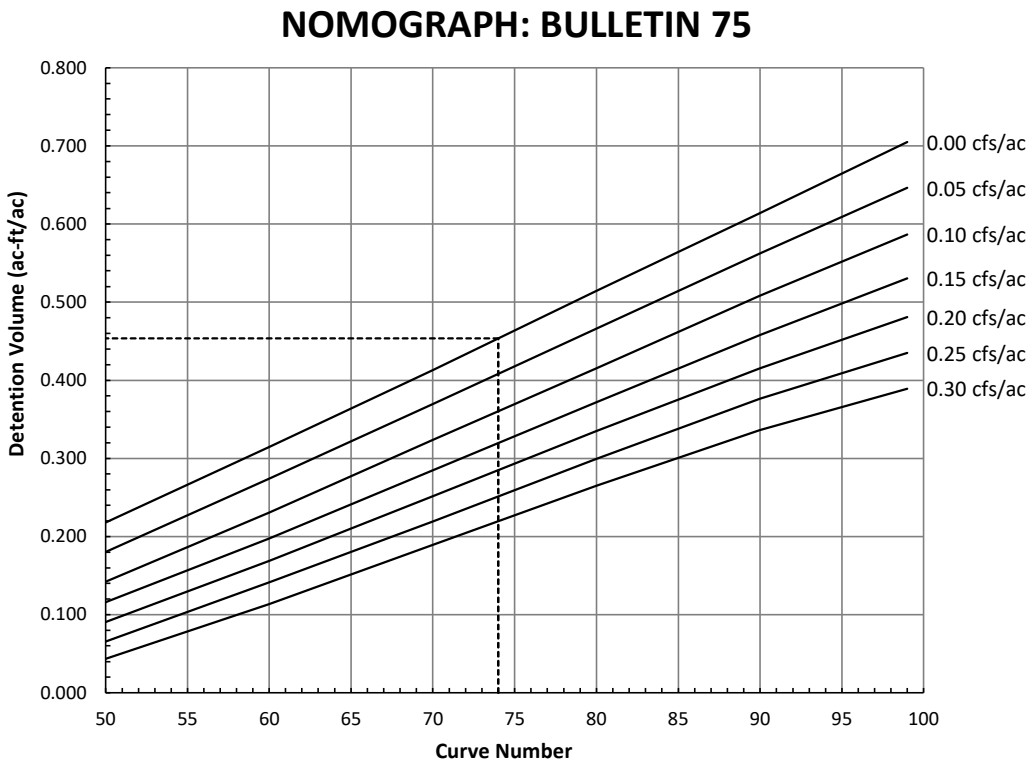
DEVELOPMENT INFORMATION

1.	Detained Area	0.99	acres
2.	Curve Number	74	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.45	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Area 16) **DATE:** 1/3/2024

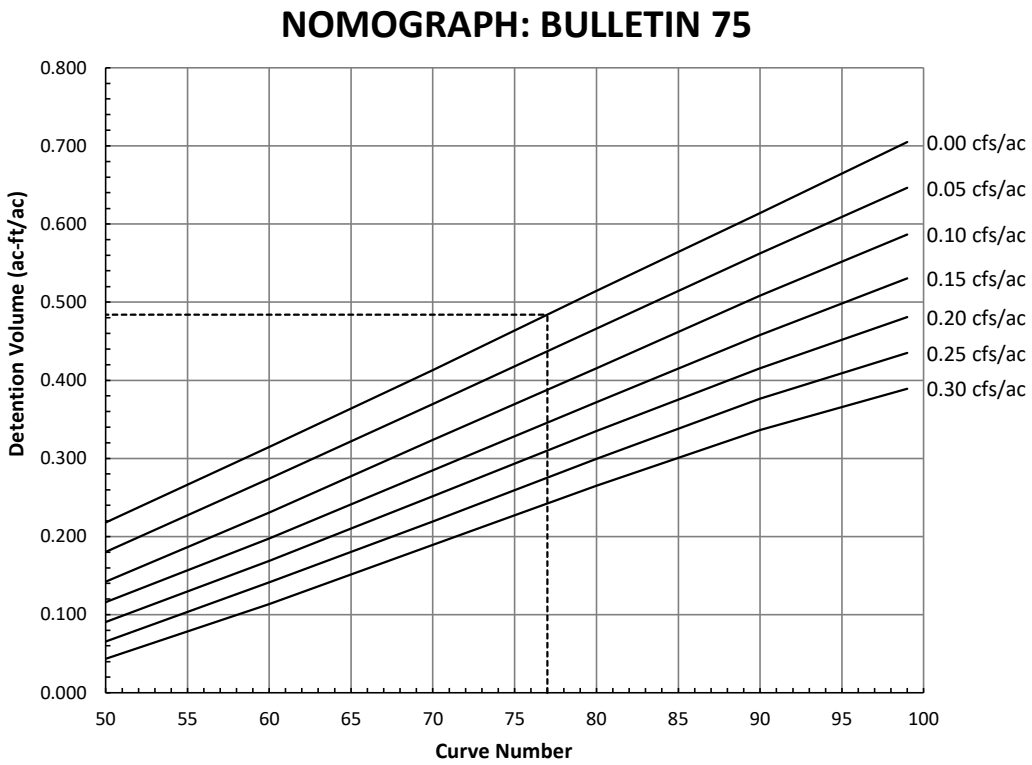
DEVELOPMENT INFORMATION

1.	Detained Area	0.15	acres
2.	Curve Number	77	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	0.07	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Combined Areas) **DATE:** 1/3/2024

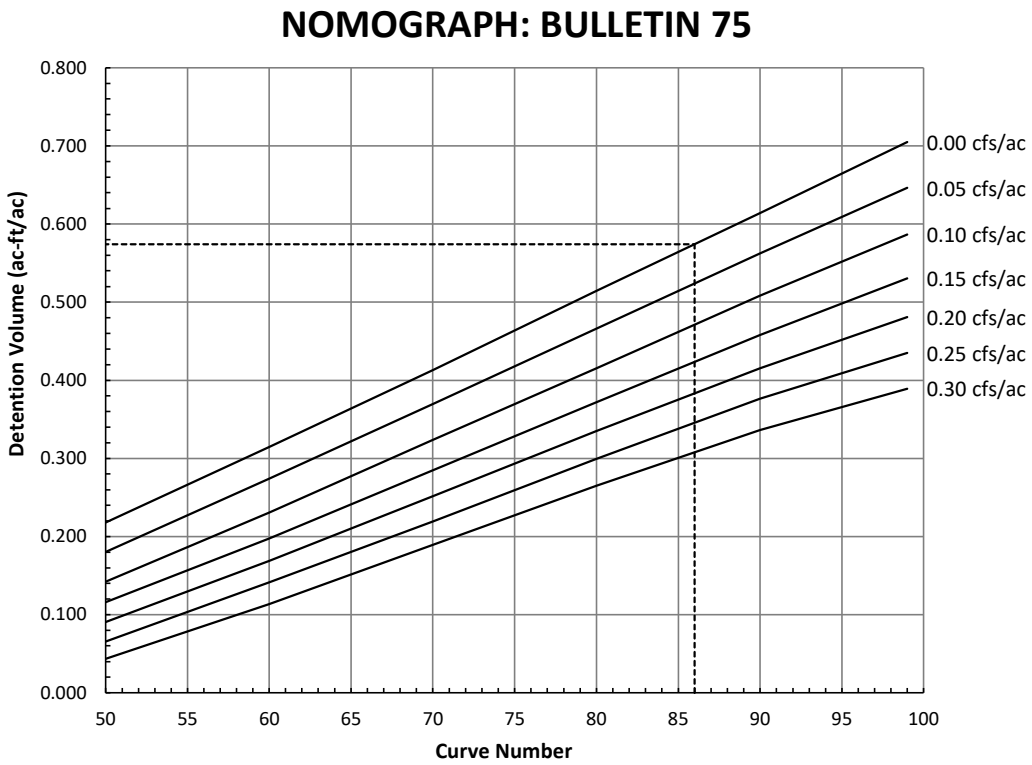
DEVELOPMENT INFORMATION

1.	Detained Area	188.05	acres
2.	Curve Number	86	
3.	Actual Release Rate	0.000	cfs

REQUIRED DETENTION VOLUME

4.	Required Detention Volume	107.97	ac-ft

NOMOGRAPH



NOMOGRAPH: BULLETIN 75 RAINFALL DATA (Zero Release)

PROJECT: PRI.WHIL01 - Chicago Executive Airport **PERMIT NUMBER:**

LOCATION: Wheeling, IL 60090 (Combined Areas) (Adj. CN) **DATE:** 1/3/2024

DEVELOPMENT INFORMATION

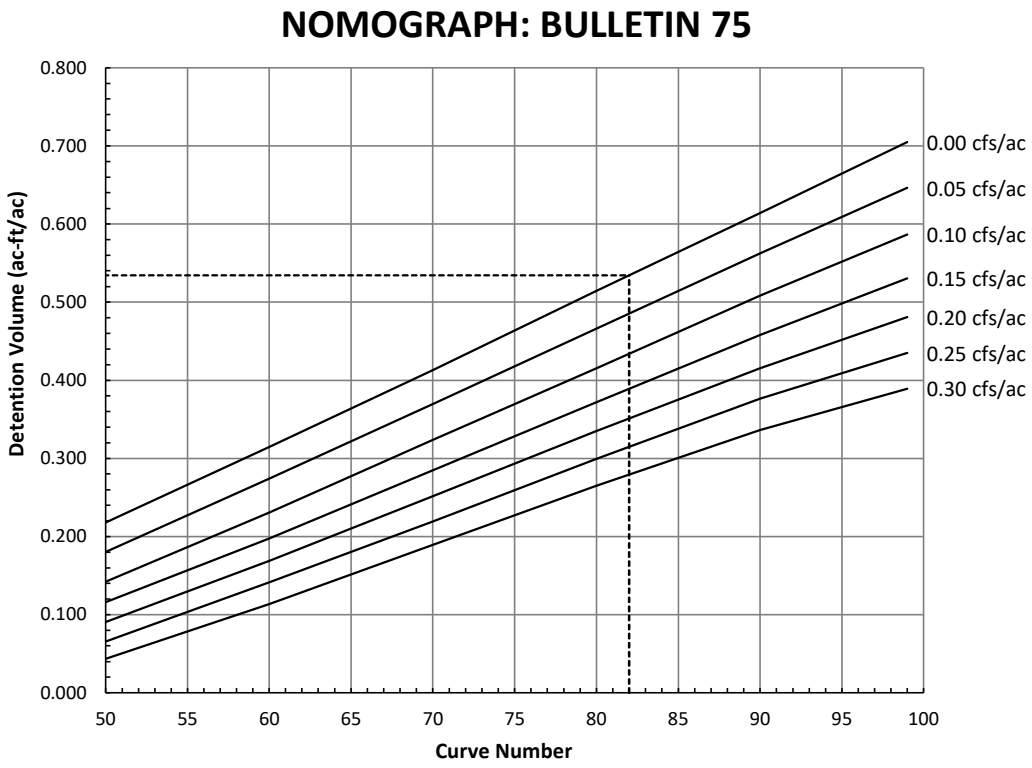
1. Detained Area	188.05	acres
2. Curve Number	82	
3. Actual Release Rate	0.000	cfs

.

REQUIRED DETENTION VOLUME

4. Required Detention Volume	100.46	ac-ft

NOMOGRAPH



Master Summary

Existing

Net Impervious Area (AC)	49.07
Net B Soil (AC)	4.52
Net C Soil (AC)	42.13
Net D Soil (AC)	51.60
Total Area (AC)	147.32
Composite CN	83.70

Proposed

Net Impervious Area (AC)	84.73	/12=	7.06
Net B Soil (AC)	7.97		
Net C Soil (AC)	39.25		
Net D Soil (AC)	56.10		
Total Area (AC)	188.05		
Composite CN	86.05		

Nomographs

B-70 (1989)	Detained Area (AC)	CN	Req Det. (AC-FT)
1	2.57	80	1.12
2 North	18.51	88	9.50
2 South	4.13	68	1.34
3	54.60	82	24.86
4	13.56	78	5.66
5 North	13.11	87	6.60
5 South	32.59	87	16.42
10	1.91	85	0.93
11	2.03	83	0.94
12	1.69	68	0.55
13	2.49	83	1.16
16	0.15	78	0.06
Net Detained Area (AC)	147.34		69.14
Composite CN		83.70	

Nomographs

B-75	Detained Area (AC)	CN	Adj. CN	Req Det. (AC-FT)
1	2.57	86	83	1.40
2 North	54.26	85	81	28.44
2 South	4.13	90	84	2.29
3	54.60	90	85	30.80
4	13.56	77	76	6.43
5 North	13.11	83	81	6.87
5 South	32.59	88	84	18.06
6	-	67	67	-
7	-	61	61	-
8	0.26	80	80	0.13
9	0.72	80	80	0.37
10	1.91	86	83	1.04
11	2.03	85	83	1.10
12	1.69	68	68	0.66
13	2.49	79	79	1.26
14	3.00	74	74	1.36
15	0.99	74	74	0.45
16	0.15	78	77	0.07
Net Detained Area (AC)	188.06			100.74
Composite CN		86.05	82	

Corresponding Pond Labels
10 & 16
2A-2E, 2G, 2H
2F
3A-3L
4A-4D
5A, 5D, 5F, 5G, 5H & 15
5B, 5C, 5E, 5I-5R
6
7
8
9
11B
11A
1
17
13
14
18

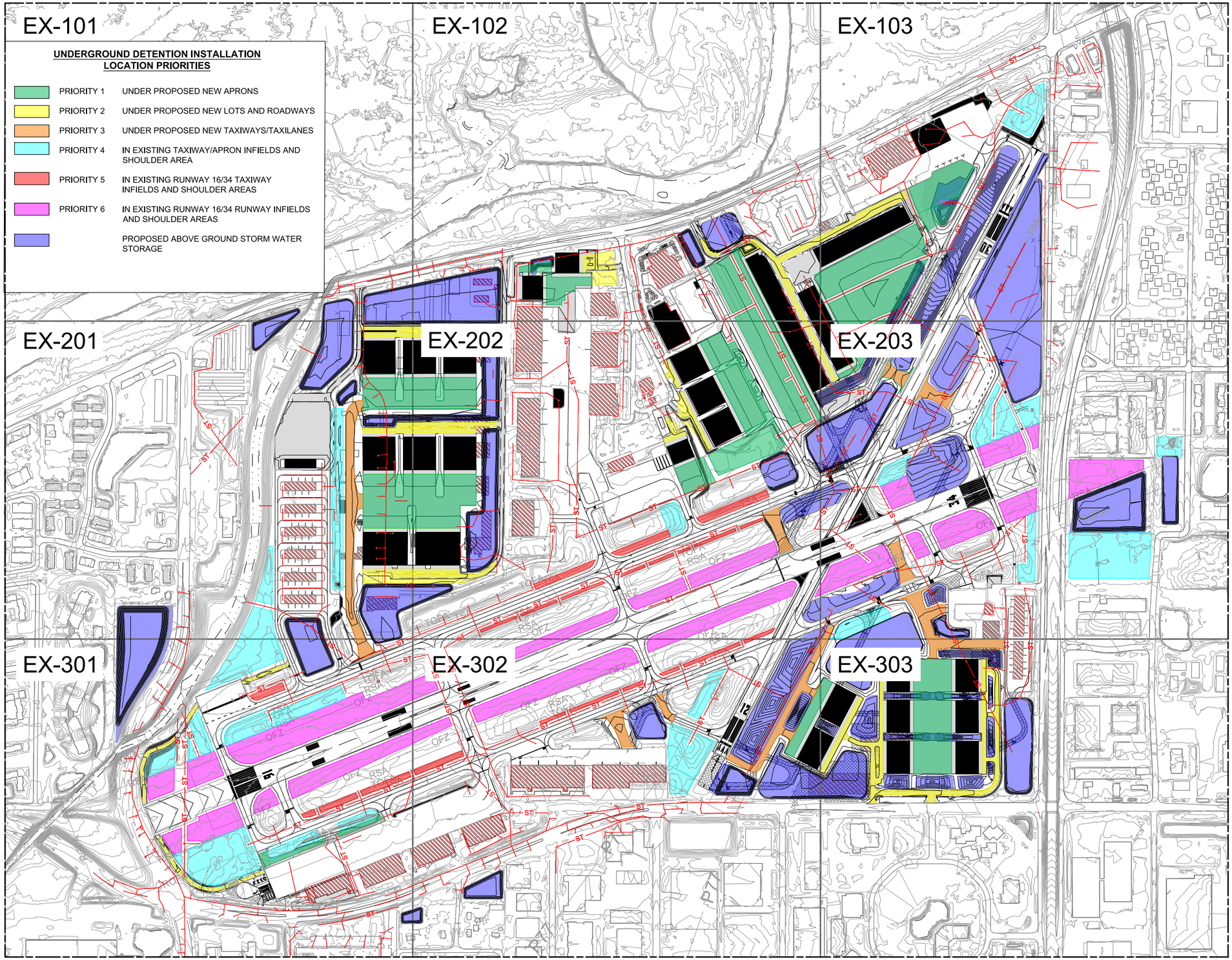
General Area ID.	Corresponding Pond Labels
1	10 & 16
2 North	2A-2E, 2G, 2H
2 South	2F
3	3A-3L
4	4A-4D
5 North	5A, 5D, 5F, 5G, 5H & 15
5 South	5B, 5C, 5E, 5I-5R
6	6
7	7
8	8
9	9
10	11B
11	11A
12	1
13	17
14	13
15	14
16	18

B-70 (1989)	Detained Area (AC)	CN	Req Det. (AC-FT)
Combined	147.32	84.00	69.93

B-75	Detained Area (AC)	CN	Adj. CN	Req Det. (AC-FT)
Combined	188.05	86.00	-	107.97
Combined *Adj. CN	188.05	-	82	100.46

APPENDIX F

UNDERGROUND STORAGE



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CHICAGO EXECUTIVE AIRPORT

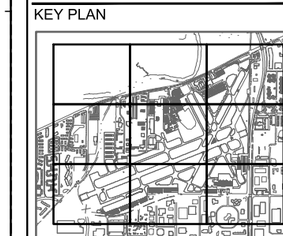
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-100

UNDERGROUND DETENTION INSTALLATION LOCATION PRIORITIES

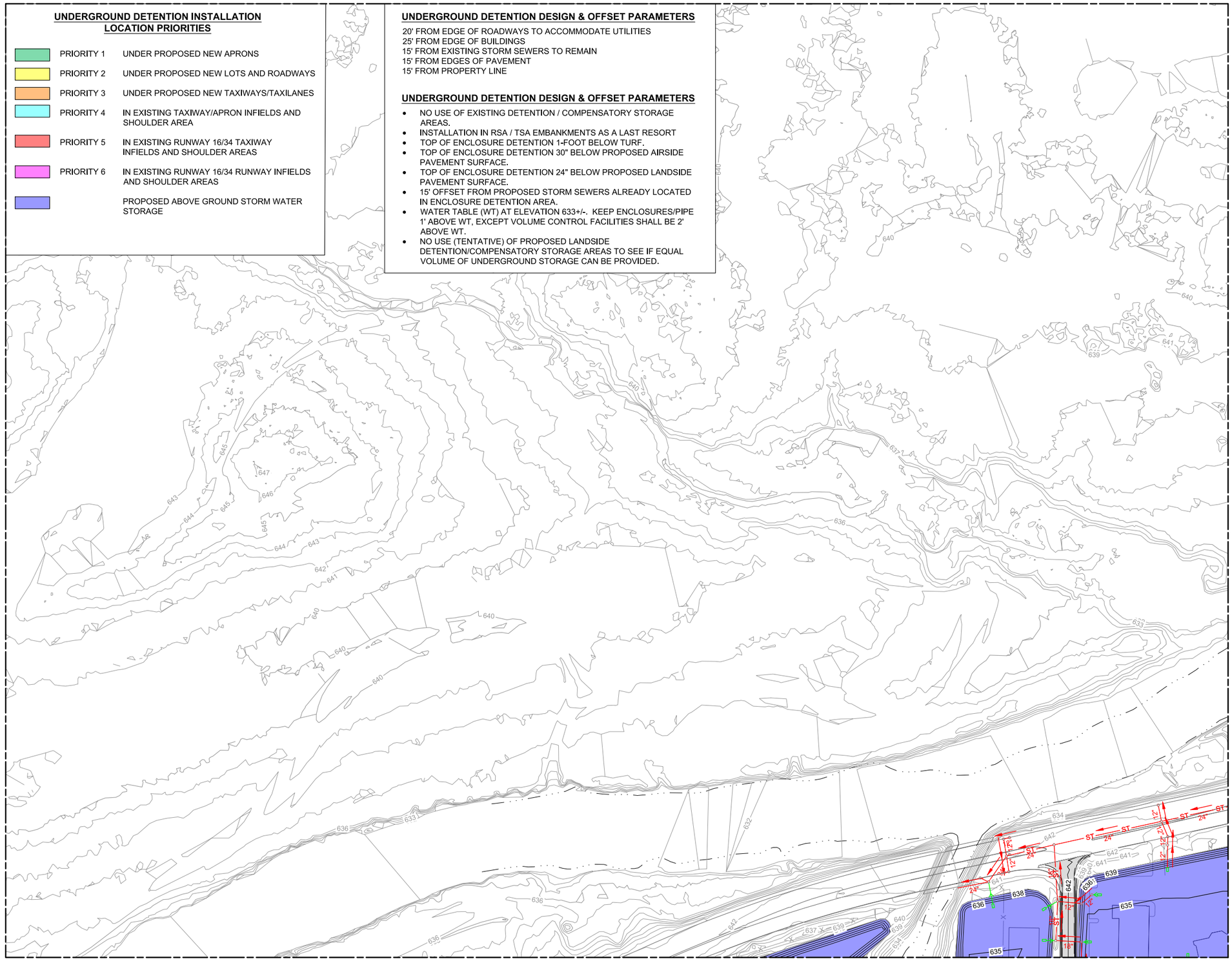
	PRIORITY 1	UNDER PROPOSED NEW APRONS
	PRIORITY 2	UNDER PROPOSED NEW LOTS AND ROADWAYS
	PRIORITY 3	UNDER PROPOSED NEW TAXIWAYS/TAXILANES
	PRIORITY 4	IN EXISTING TAXIWAY/APRON INFIELDS AND SHOULDER AREA
	PRIORITY 5	IN EXISTING RUNWAY 16/34 TAXIWAY INFIELDS AND SHOULDER AREAS
	PRIORITY 6	IN EXISTING RUNWAY 16/34 RUNWAY INFIELDS AND SHOULDER AREAS
		PROPOSED ABOVE GROUND STORM WATER STORAGE

UNDERGROUND DETENTION DESIGN & OFFSET PARAMETERS

20' FROM EDGE OF ROADWAYS TO ACCOMMODATE UTILITIES
25' FROM EDGE OF BUILDINGS
15' FROM EXISTING STORM SEWERS TO REMAIN
15' FROM EDGES OF PAVEMENT
15' FROM PROPERTY LINE

UNDERGROUND DETENTION DESIGN & OFFSET PARAMETERS

- NO USE OF EXISTING DETENTION / COMPENSATORY STORAGE AREAS.
- INSTALLATION IN RSA / TSA EMBANKMENTS AS A LAST RESORT
- TOP OF ENCLOSURE DETENTION 1-FOOT BELOW TURF.
- TOP OF ENCLOSURE DETENTION 30" BELOW PROPOSED AIRSIDE PAVEMENT SURFACE.
- TOP OF ENCLOSURE DETENTION 24" BELOW PROPOSED LANDSIDE PAVEMENT SURFACE.
- 15' OFFSET FROM PROPOSED STORM SEWERS ALREADY LOCATED IN ENCLOSURE DETENTION AREA.
- WATER TABLE (WT) AT ELEVATION 633+/-. KEEP ENCLOSURES/PIPE 1' ABOVE WT, EXCEPT VOLUME CONTROL FACILITIES SHALL BE 2' ABOVE WT.
- NO USE (TENTATIVE) OF PROPOSED LANDSIDE DETENTION/COMPENSATORY STORAGE AREAS TO SEE IF EQUAL VOLUME OF UNDERGROUND STORAGE CAN BE PROVIDED.



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100 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-606-0910 F:312-606-0495

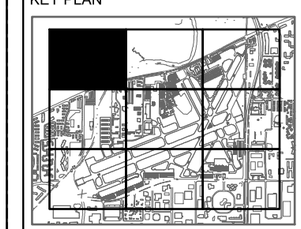
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-101

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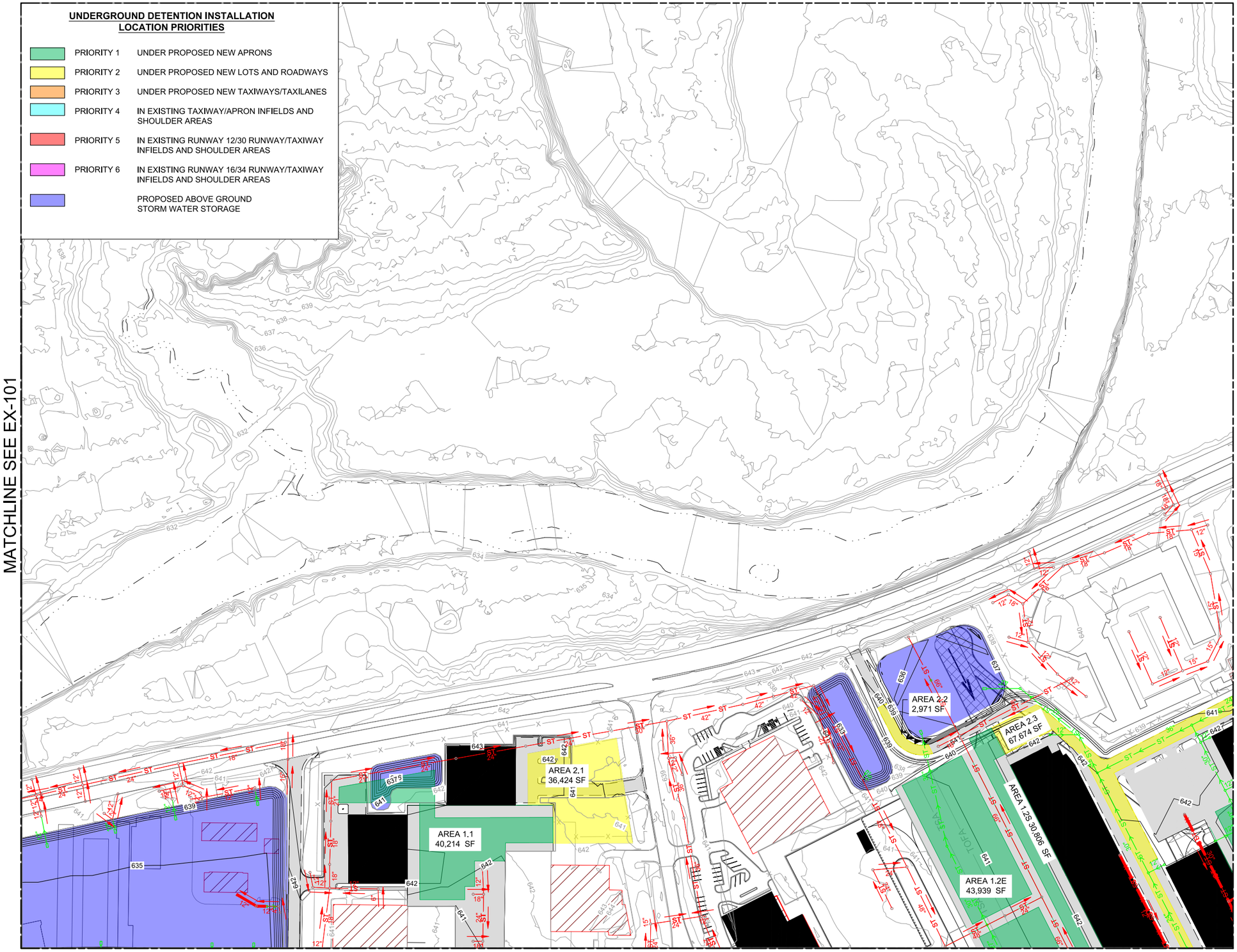

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CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

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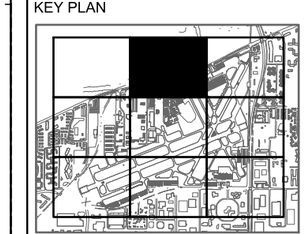


DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO. PRIMERA

APPROVED PRIMERA

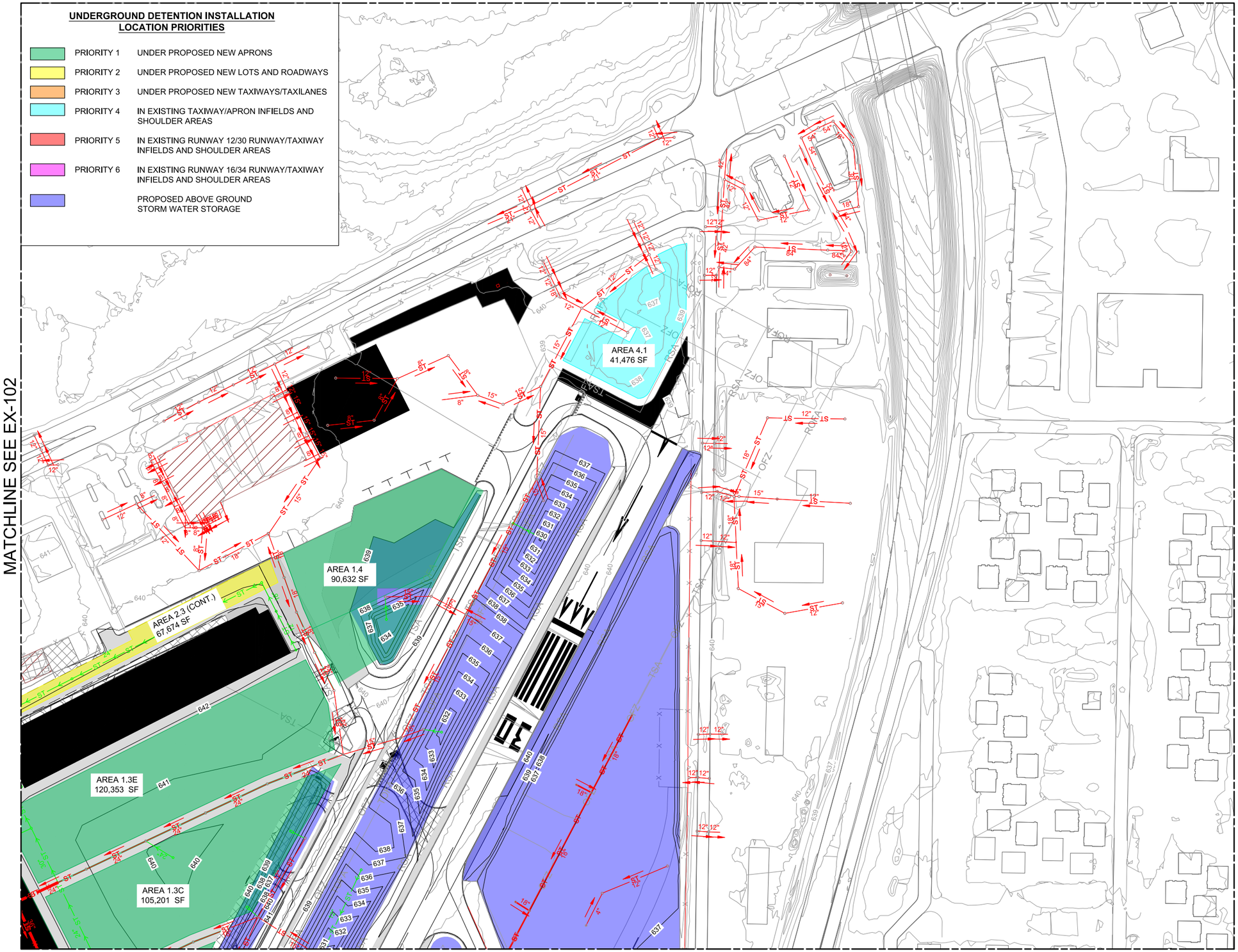
CHECKED PRIMERA

DRAWN BY

DRAWING NO. **EX-102**

UNDERGROUND DETENTION INSTALLATION LOCATION PRIORITIES

	PRIORITY 1	UNDER PROPOSED NEW APRONS
	PRIORITY 2	UNDER PROPOSED NEW LOTS AND ROADWAYS
	PRIORITY 3	UNDER PROPOSED NEW TAXIWAYS/TAXILANES
	PRIORITY 4	IN EXISTING TAXIWAY/APRON INFIELDS AND SHOULDER AREAS
	PRIORITY 5	IN EXISTING RUNWAY 12/30 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
	PRIORITY 6	IN EXISTING RUNWAY 16/34 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
		PROPOSED ABOVE GROUND STORM WATER STORAGE



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105 S. WACKER DRIVE SUITE 700 . CHICAGO IL 60606 . P:312-466-3900 F:312-466-3915

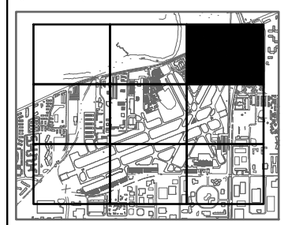
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-103

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PLOT DEVICE DRIVER
PLOT STYLE TABLE ___.ctb

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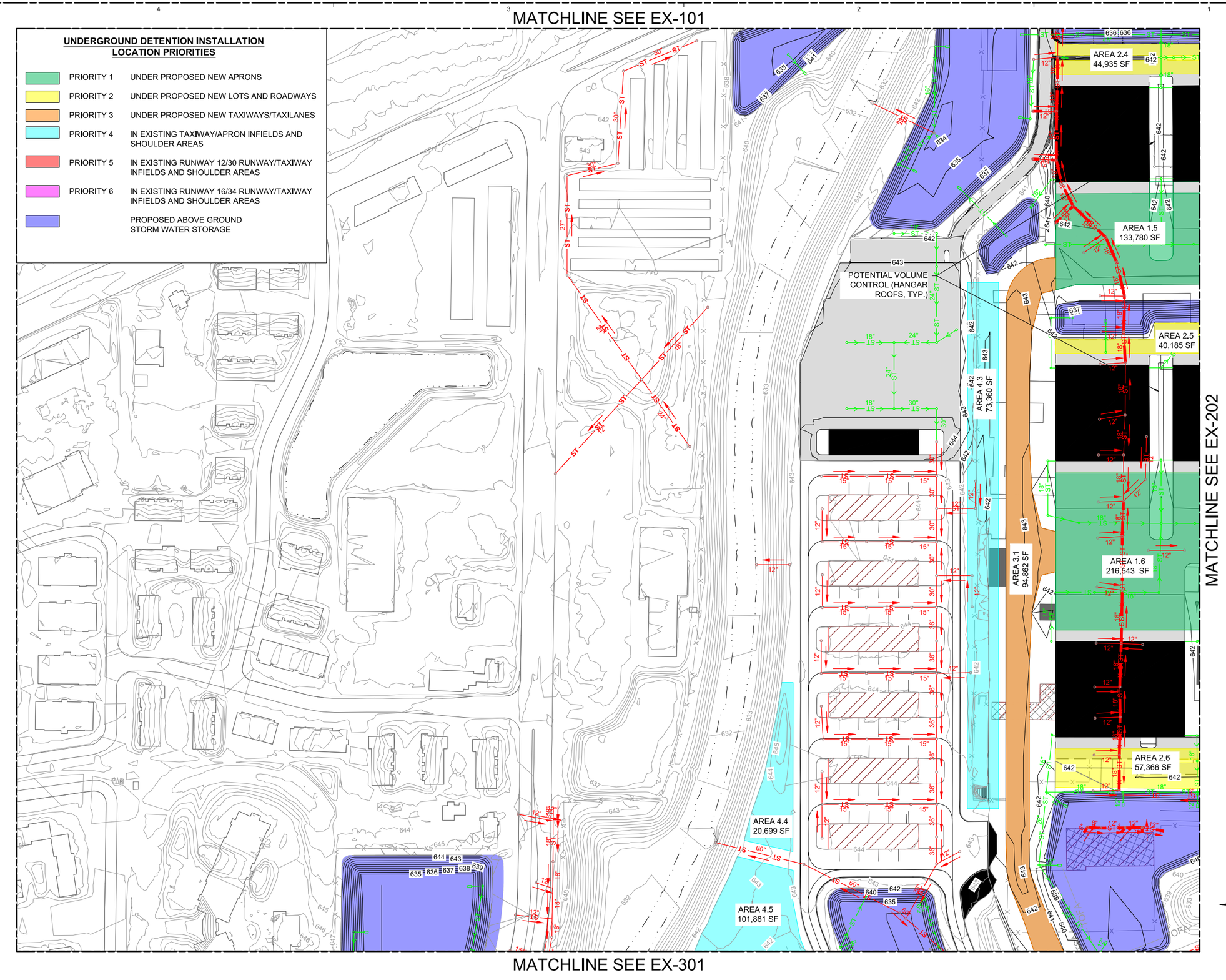

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CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

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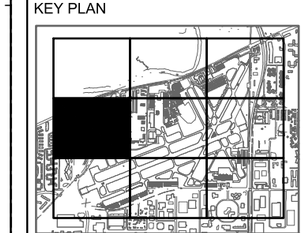

DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO. PRIMERA

APPROVED PRIMERA

CHECKED PRIMERA

DRAWN BY

DRAWING NO. **EX-201**

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MATCHLINE SEE EX-102

UNDERGROUND DETENTION INSTALLATION LOCATION PRIORITIES

	PRIORITY 1	UNDER PROPOSED NEW APRONS
	PRIORITY 2	UNDER PROPOSED NEW LOTS AND ROADWAYS
	PRIORITY 3	UNDER PROPOSED NEW TAXIWAYS/TAXILANES
	PRIORITY 4	IN EXISTING TAXIWAY/APRON INFIELDS AND SHOULDER AREAS
	PRIORITY 5	IN EXISTING RUNWAY 12/30 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
	PRIORITY 6	IN EXISTING RUNWAY 16/34 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
		PROPOSED ABOVE GROUND STORM WATER STORAGE

AREA 2.4 (CONT.) 44,935 SF
AREA 1.5 (CONT.) 133,780 SF
AREA 2.5 (CONT.) 40,185 SF
AREA 1.6 (CONT.) 216,543 SF
AREA 2.6 (CONT.) 57,366 SF
AREA 2.8 4,845 SF
AREA 1.2W 102,712 SF
AREA 1.2S (CONT.) 30,806 SF
AREA 2.3 (CONT.) 63,678 SF
AREA 1.7 189,569 SF
AREA 2.7 24,889 SF
AREA 2.9 10,964 SF
AREA 1.8 33,644 SF
AREA 5.22 20,348 SF
AREA 4.6 20,808 SF
AREA 5.18 2,280 SF
AREA 3.2 20,652 SF
AREA 5.21 14,342 SF
AREA 5.17 4,163 SF
AREA 5.16 1,209 SF
AREA 5.15 2,439 SF
AREA 5.14 2,254 SF
AREA 5.20 13,416 SF
AREA 6.2 76,051 SF
AREA 5.13 4,101 SF
AREA 5.12 3,563 SF
AREA 5.11 3,511 SF
AREA 6.1 67,266 SF
AREA 6.3 82,160 SF
AREA 5.10 3,691 SF

POTENTIAL VOLUME CONTROL (HANGAR ROOFS)
POTENTIAL VOLUME CONTROL (TYP.)

MATCHLINE SEE EX CS-201
MATCHLINE SEE EX-203
MATCHLINE SEE EX-302

0 50 100

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100 S. WACKER DRIVE SUITE 700, CHICAGO IL 60606 P:312-466-3900 F:312-466-3915

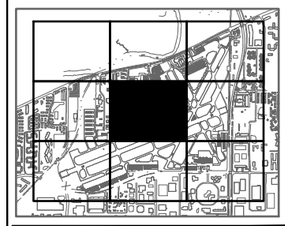
CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date
Issues					

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



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POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO. PRIMERA
APPROVED PRIMERA
CHECKED PRIMERA
DRAWN BY
DRAWING NO. **EX-202**

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PLOT DEVICE DRIVER
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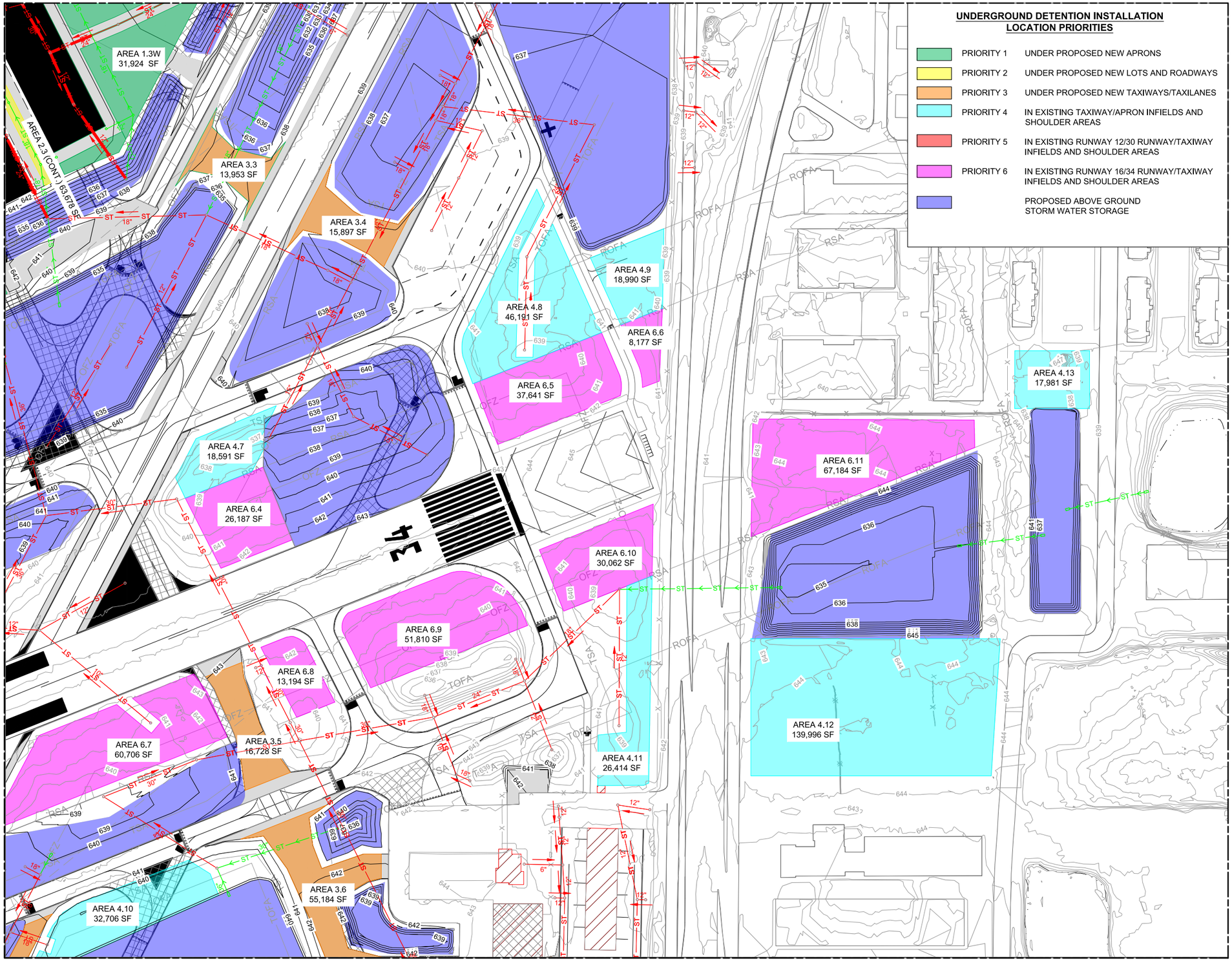
MATCHLINE SEE EX-103



UNDERGROUND DETENTION INSTALLATION LOCATION PRIORITIES

	PRIORITY 1	UNDER PROPOSED NEW APRONS
	PRIORITY 2	UNDER PROPOSED NEW LOTS AND ROADWAYS
	PRIORITY 3	UNDER PROPOSED NEW TAXIWAYS/TAXILANES
	PRIORITY 4	IN EXISTING TAXIWAY/APRON INFIELDS AND SHOULDER AREAS
	PRIORITY 5	IN EXISTING RUNWAY 12/30 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
	PRIORITY 6	IN EXISTING RUNWAY 16/34 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
		PROPOSED ABOVE GROUND STORM WATER STORAGE

MATCHLINE SEE EX CS-202

MATCHLINE SEE EX-303

0 50 100

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CHICAGO EXECUTIVE AIRPORT

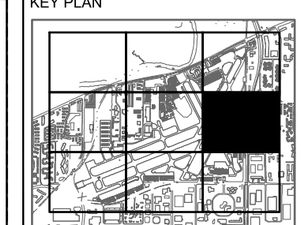
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

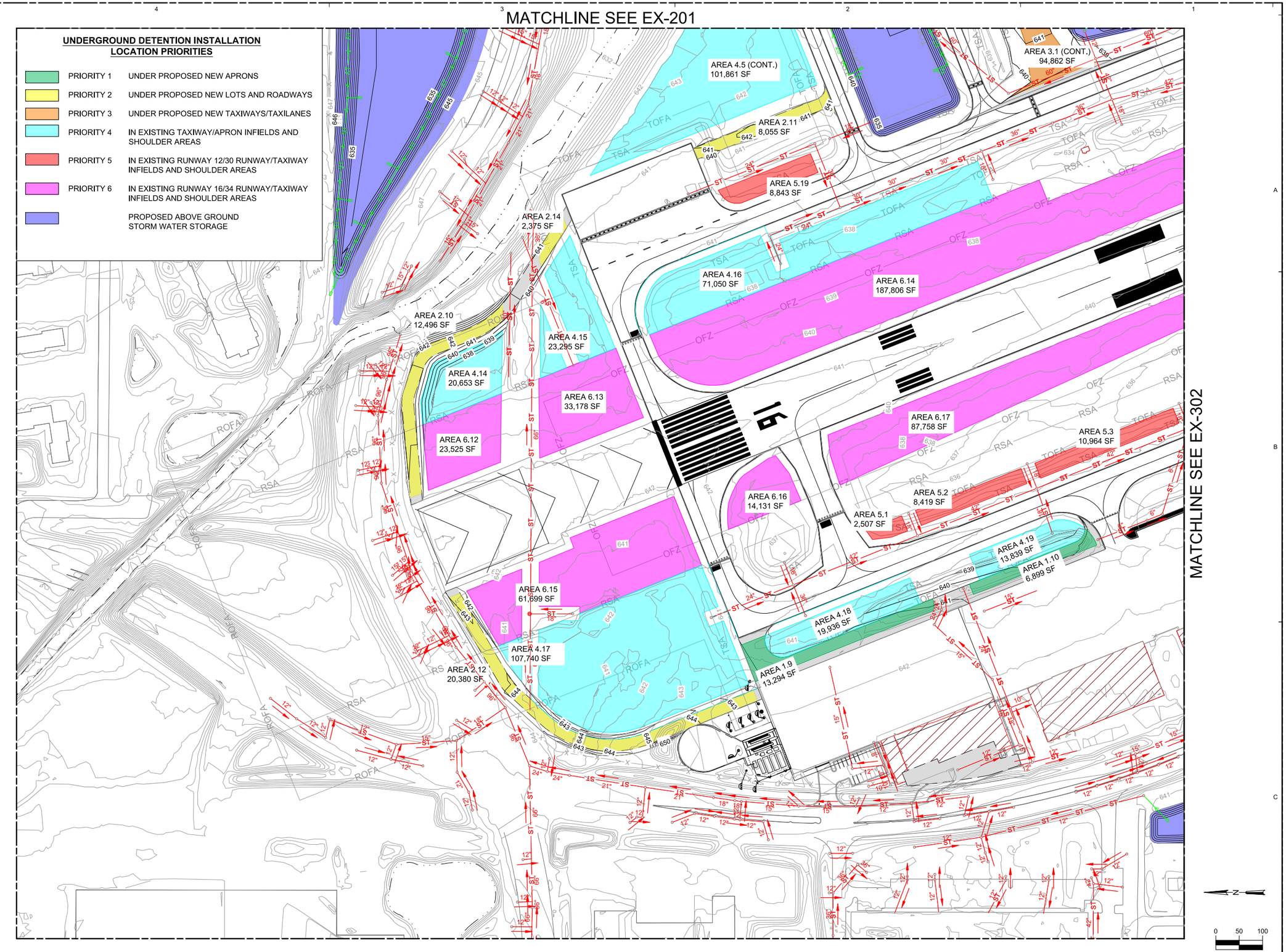
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-203



Primera

CHICAGO EXECUTIVE AIRPORT

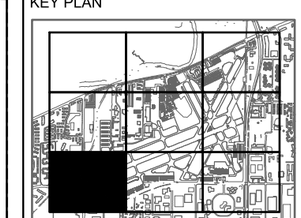
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO. PRIMERA

APPROVED PRIMERA

CHECKED PRIMERA

DRAWN BY

DRAWING NO. **EX-301**

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MATCHLINE SEE EX-202

MATCHLINE SEE EX-301

MATCHLINE SEE EX-303

AREA 6.1 (CONT.)
67,266 SF

AREA 6.3 (CONT.)
82,160 SF

AREA 5.9
7,072 SF

AREA 5.8
2,266 SF

AREA 6.14 (CONT.)
187,806 SF

AREA 6.18
112,516 SF

AREA 5.7
2,414 SF

AREA 5.6
6,401 SF

AREA 5.5
2,929 SF

AREA 3.8
6,839 SF

AREA 4.20
22,997 SF

AREA 3.7
16,873 SF

AREA 1.11
31,022 SF

AREA 6.17 (CONT.)
87,758 SF

AREA 3.9
50,002 SF

AREA 5.4
10,909 SF

POTENTIAL VOLUME CONTROL
(APRON RUNOFF)

AREA 4.21
76,412 SF

POTENTIAL VOLUME CONTROL
(APRON RUNOFF)

UNDERGROUND DETENTION INSTALLATION LOCATION PRIORITIES

	PRIORITY 1	UNDER PROPOSED NEW APRONS
	PRIORITY 2	UNDER PROPOSED NEW LOTS AND ROADWAYS
	PRIORITY 3	UNDER PROPOSED NEW TAXIWAYS/TAXILANES
	PRIORITY 4	IN EXISTING TAXIWAY/APRON INFIELDS AND SHOULDER AREAS
	PRIORITY 5	IN EXISTING RUNWAY 12/30 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
	PRIORITY 6	IN EXISTING RUNWAY 16/34 RUNWAY/TAXIWAY INFIELDS AND SHOULDER AREAS
		PROPOSED ABOVE GROUND STORM WATER STORAGE

0 50 100

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CHICAGO EXECUTIVE AIRPORT

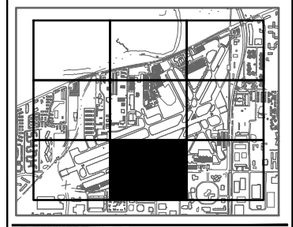
No. Description By Chk. App. Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

DRAWN BY

DRAWING NO.
EX-302

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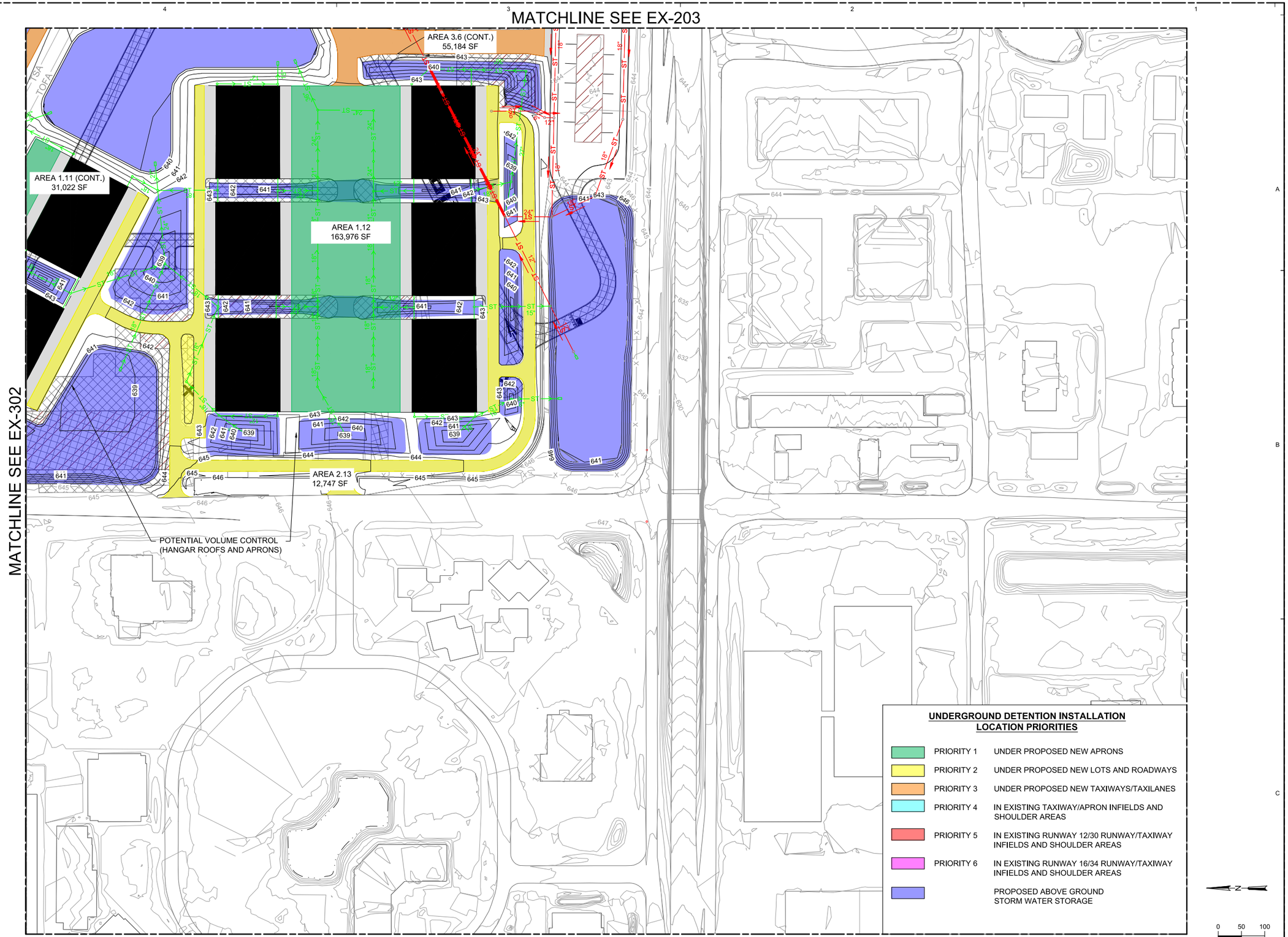
PLOT DEVICE DRIVER
PLOT STYLE TABLE ___.ctb



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CHICAGO EXECUTIVE AIRPORT

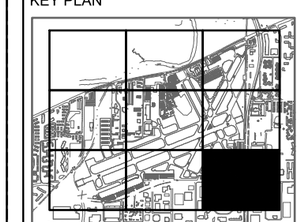
No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN



DRAWING TITLE

POTENTIAL UNDERGROUND STORAGE PRIORITIES MAP

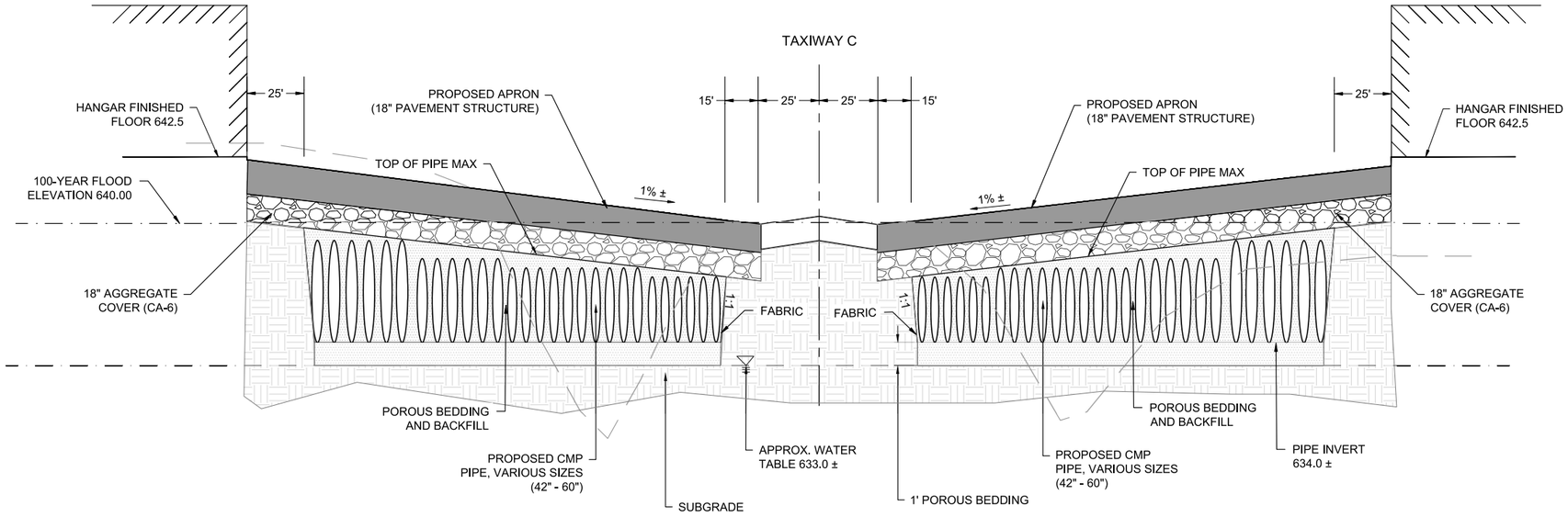
SHEET NO.
PRIMERA

APPROVED
PRIMERA

CHECKED
PRIMERA

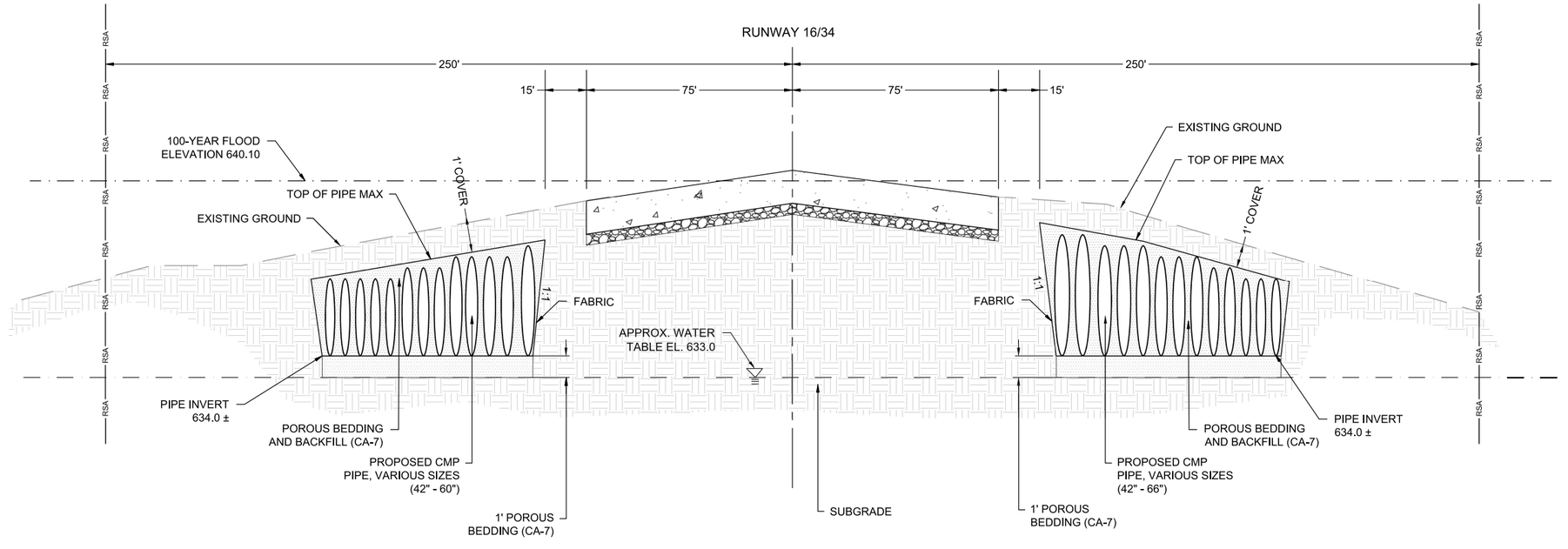
DRAWN BY

DRAWING NO.
EX-303



UNDERGROUND STORAGE UNDER PROPOSED APRONS

N.T.S.



UNDERGROUND STORAGE ADJACENT TO EXISTING RUNWAY/TAXIWAY

N.T.S.

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CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN

DRAWING TITLE

UNDERGROUND STORAGE TYPICAL SECTIONS

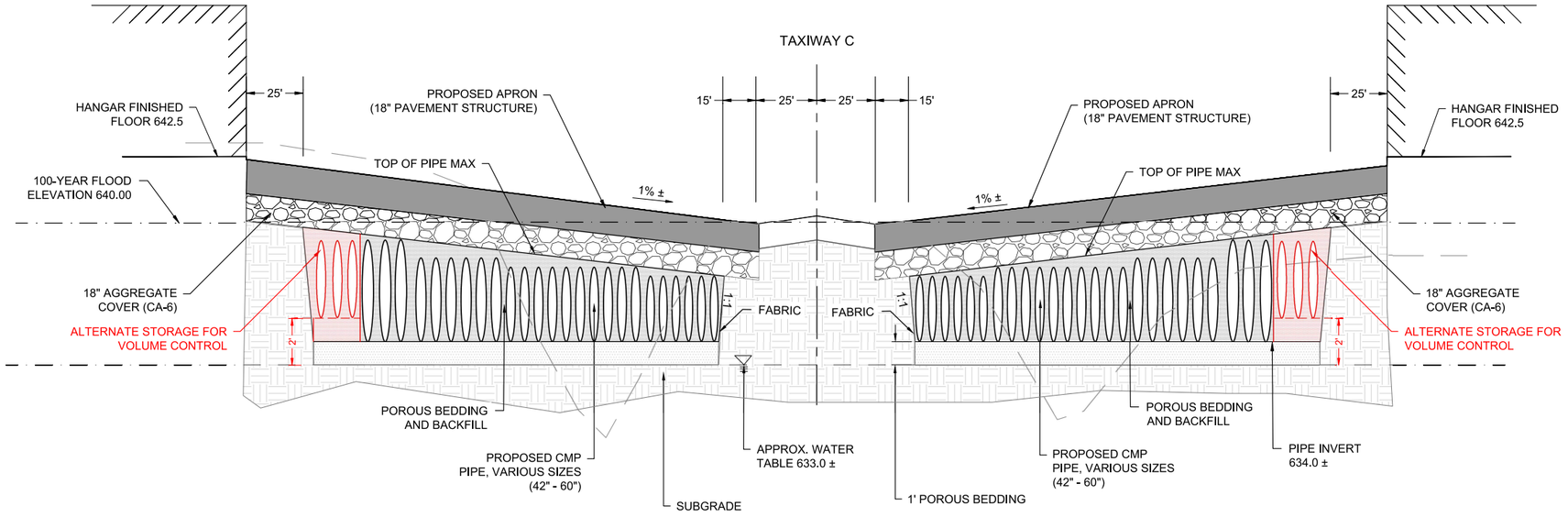
SHEET NO. **PRIMERA**

APPROVED **PRIMERA**

CHECKED **PRIMERA**

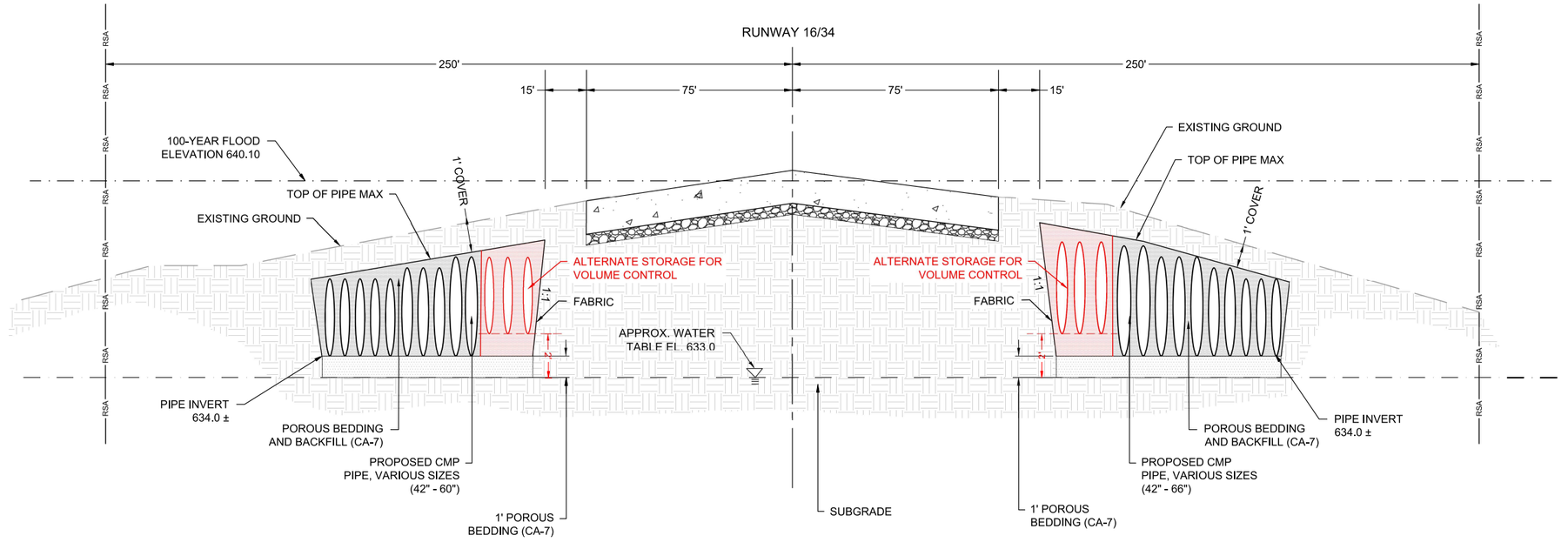
DRAWN BY

DRAWING NO. **EXHIBIT 1**



UNDERGROUND STORAGE UNDER PROPOSED APRONS

N.T.S.



UNDERGROUND STORAGE ADJACENT TO EXISTING RUNWAY/TAXIWAY

N.T.S.

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CHICAGO EXECUTIVE AIRPORT

No.	Description	By	Chk.	App.	Date

Issues

MASTER DRAINAGE STUDY SL

IDA No: PWK-5060

KEY PLAN

DRAWING TITLE

UNDERGROUND STORAGE TYPICAL SECTIONS W/ VOLUME CONTROL

SHEET NO. **PRIMERA**

APPROVED **PRIMERA**

CHECKED **PRIMERA**

DRAWN BY

DRAWING NO. **EXHIBIT 2**

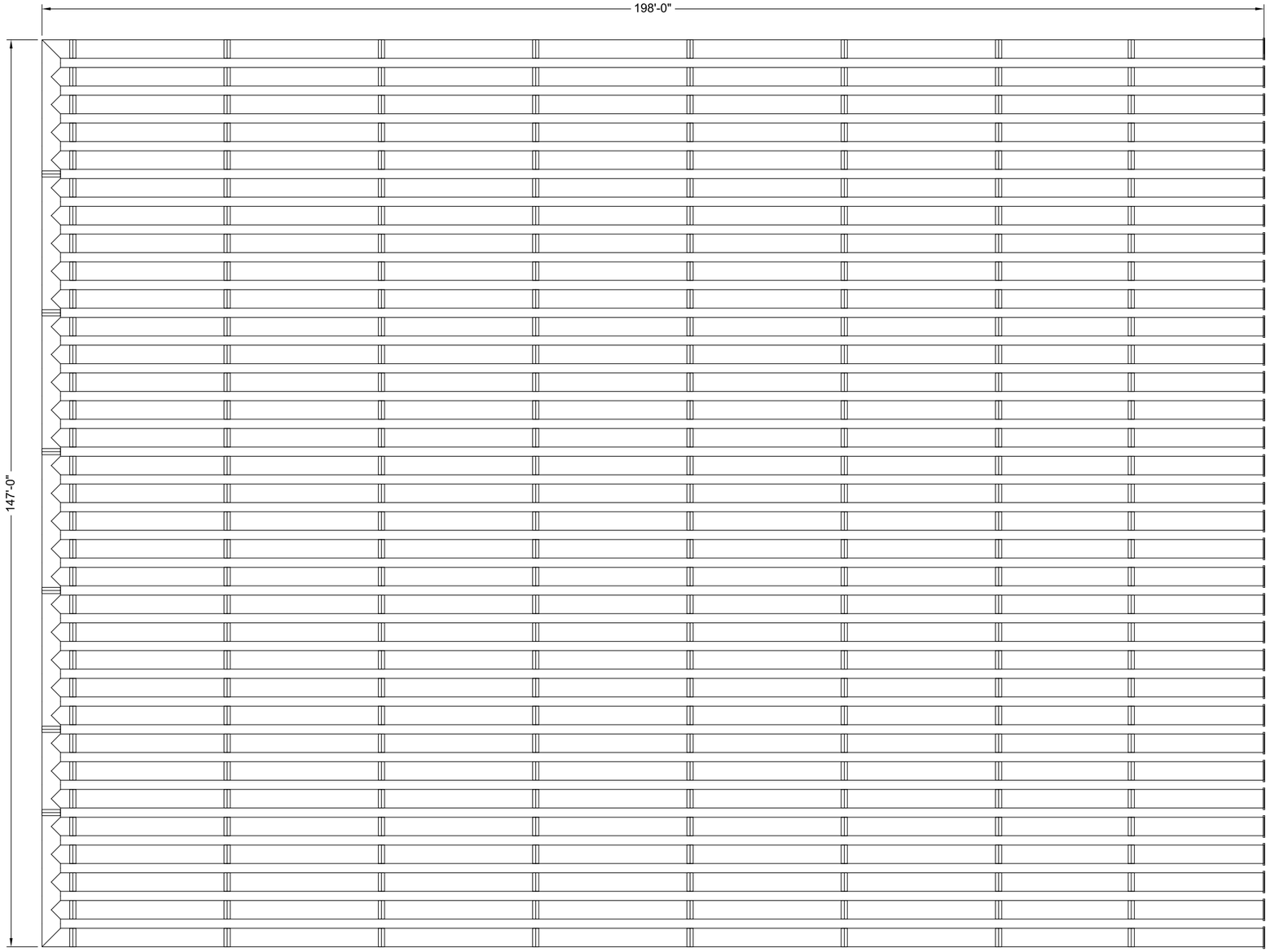
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 6,582 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 87,118 CF
- PIPE STORAGE VOLUME = 46,525 CF
- BACKFILL STORAGE VOLUME = 0 CF
- TOTAL STORAGE PROVIDED = 46,525 CF

PIPE DETAILS
- DIAMETER = 36"
- CORRUGATION = 2 2/3x1/2
- GAGE = 16
- COATING = ALT2
- WALL TYPE = SOLID
- BARREL SPACING = 18"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 0"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY

SCALE: 1" = 20'

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CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

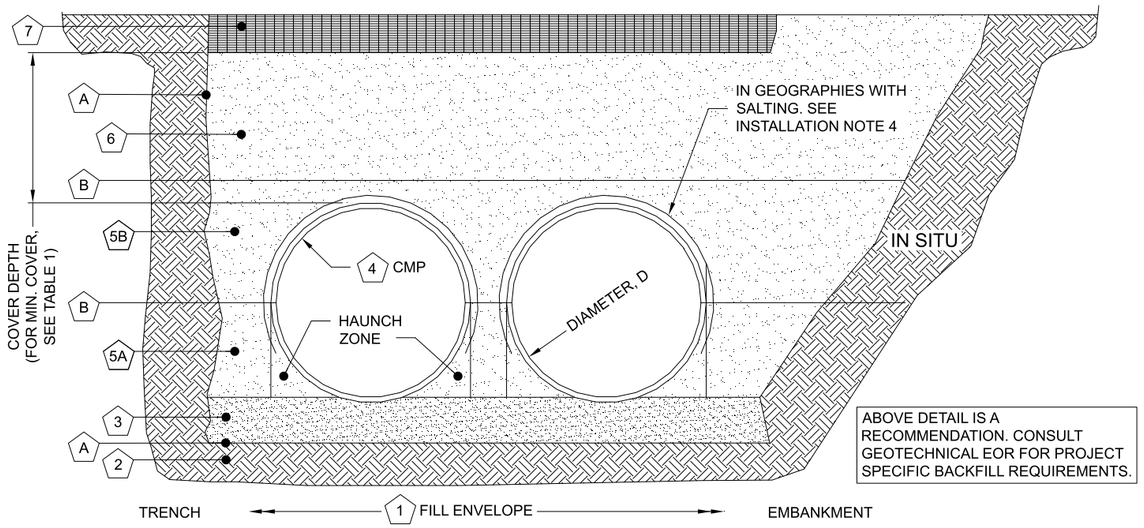
DYO79663 CEA
Underground Storage Exhibit
Wheeling, IL
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
57764	79663	6/30/2025
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

TABLE 1:

DIAMETER, D	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
>48"-96"	12"	3" x 1", 5" x 1"
>96"	D/8	3" x 1", 5" x 1"

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT
- ULTRAFLO ALSO AVAILABLE FOR SIZES 18" - 120" WITH 3/4"x 3/4"x 7 1/2" CORRUGATION



MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

INSTALLATION NOTES

1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") MAY BE USED WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL. CONTACT CONTECH FOR FURTHER EVALUATION.
4. IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED OVER THE UPPER HALF OF THE PIPE. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

TABLE 2: SOLID STANDARD

CMP DETENTION AND CMP DRAINAGE STANDARD BACKFILL SPECIFICATIONS

	MATERIAL LOCATION	MATERIAL SPECIFICATION	DESCRIPTION	
1	FILL ENVELOPE WIDTH	PER ENGINEER OF RECORD	MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.5D + 12"	MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.0D PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0"
2	FOUNDATION	**AASHTO 26.5.2** OR PER ENGINEER OF RECORD	PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.	
3	BEDDING	**AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** (APPROVED REGIONAL EQUIVALENTS INCLUDE CA-7)	ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE FOUNDATION SOILS CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.3.8.1	
4	CORRUGATED METAL PIPE			
5A	CRITICAL BACKFILL	**AASHTO M 145: A-1, A-2, A-3** *	HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A THREE LIFT (24") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY AND MAXIMUM PARTICLE SIZE OF 3" (PER AASHTO 26.3.8.1 AND 12.4-1.3).	
5B	BACKFILL	**AASHTO M 145: A-1, A-2, A-3**		
6	COVER MATERIAL	UP TO MIN. COVER - SEE 5A AND 5B ABOVE ABOVE MIN. COVER - PER ENGINEER OF RECORD	COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROAD BASE MATERIAL WITHIN MIN COVER LIMITS	
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)	PER ENGINEER OF RECORD	FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.	
A	OPTIONAL SIDE GEOTEXTILE	NONE	GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION.	
B	OPTIONAL GEOTEXTILE BETWEEN LAYERS	NONE	IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.	

NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.

* APPROVED REGIONAL EQUIVALENTS FOR SECTION 5A INCLUDE CA-7, CODOT #67, MIDOT 2G, 34G, OR 21AA STONE OR GRAVEL; #8; #57; MIDOT 6A, 2G, 3G, 34G.

MANUFACTURER RECOMMENDED BACKFILL

NOT TO SCALE

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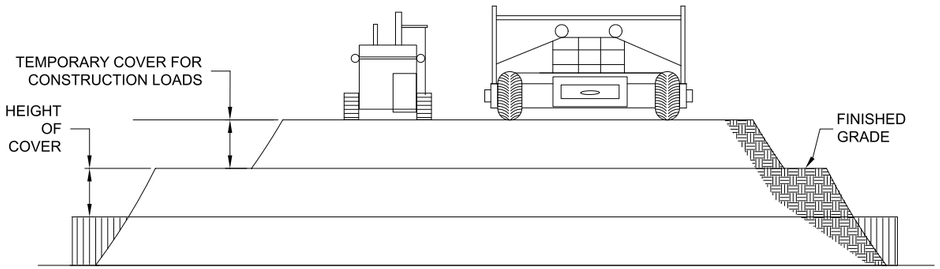

CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE
HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.
REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

NOTE:
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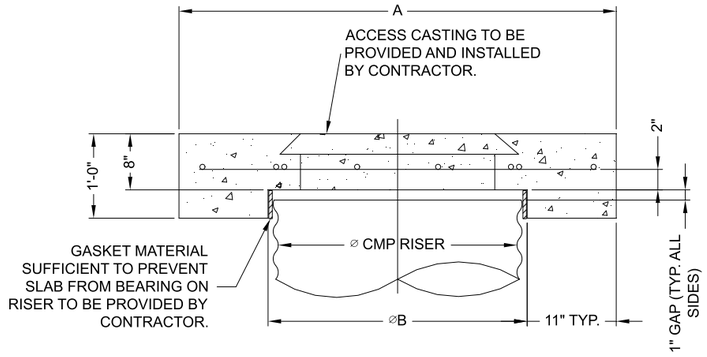
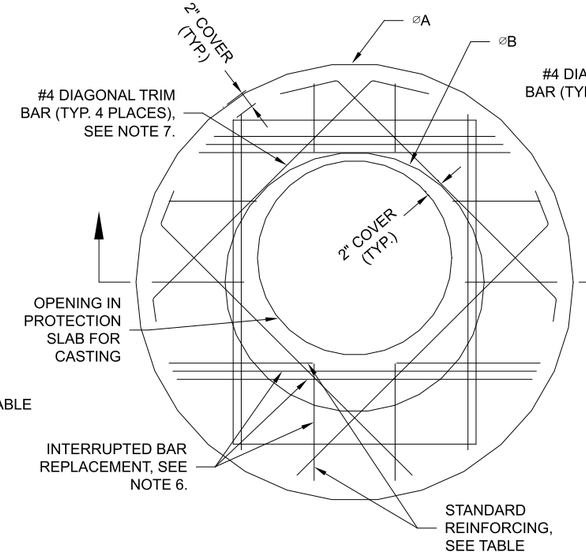


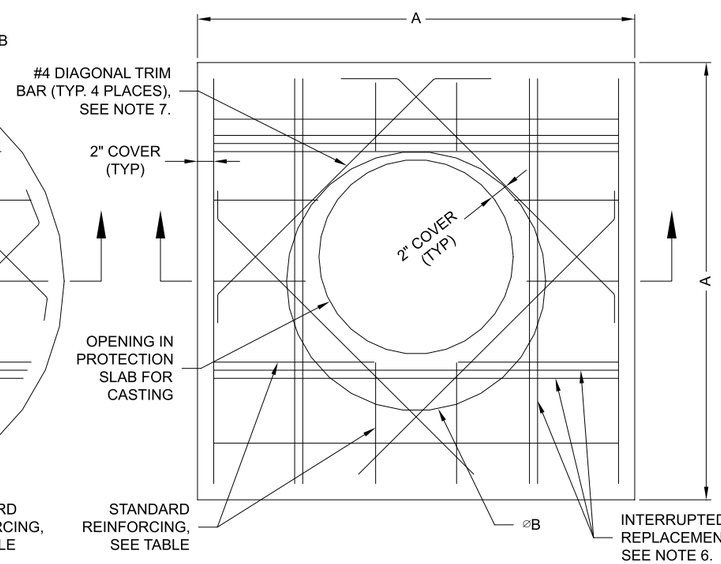
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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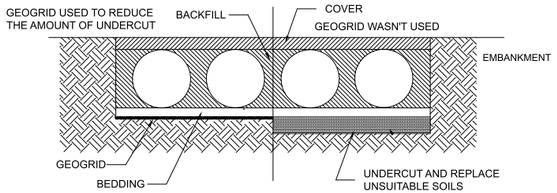
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

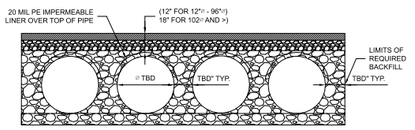
IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

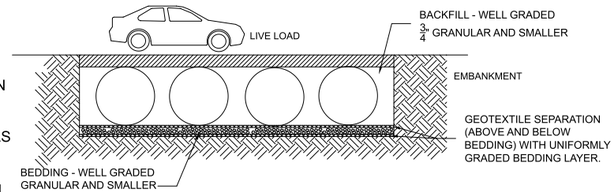
THE RESISTIVITY OF A PROJECT SITE MAY CHANGE OVER TIME DUE TO THE USE OF VARIOUS SALTING, DE-ICING, AND AGRICULTURAL AGENTS APPLIED ON OR NEAR THE AREA. TO MITIGATE THE POTENTIAL IMPACT OF THESE AGENTS, AN HDPE MEMBRANE LINER WILL BE INSTALLED ON THE CROWN OF EACH PIPE, CREATING AN IMPERMEABLE BARRIER. THIS MEASURE IS DESIGNED TO PROTECT THE SYSTEM FROM ENVIRONMENTAL CHANGES THAT COULD LEAD TO PREMATURE CORROSION AND REDUCE THE OVERALL SERVICE LIFE.



IN-SITU TRENCH WALL

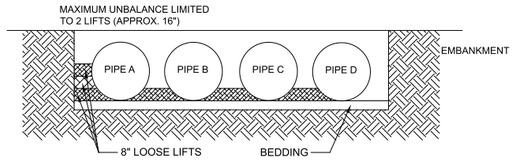
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



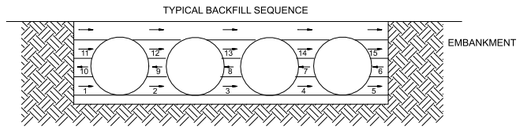
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

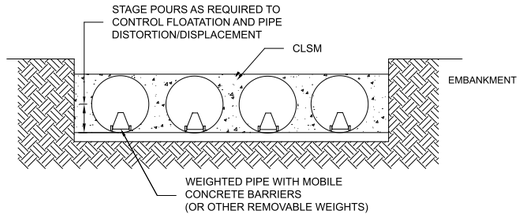


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

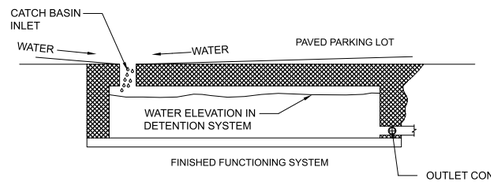


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
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9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
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CONTECH CMP DETENTION SYSTEMS

CONTECH **DYODS** DRAWING

DYO79663 CEA
Underground Storage Exhibit
Wheeling, IL
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
57764	79663	6/30/2025
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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APPENDIX G

MEETING MINUTES

Primera

Meeting Minutes

Date:	4/18/2023	PE Project No.:	20220845.00
Time:	1:00 PM – 2:30 PM	Client Project No.:	PWK-5060
Subject:	CEA Master Drainage Study Kick-off	Meeting No.:	1
Location:	Chicago Executive Airport & Teams		

Attendees	Company
Jeff Miller	Chicago Executive Airport (CEA)
George Sakas	CEA
Steve Moulton	Primera Engineers (Prime)
Diane Bouckaert	Manhard Consulting (Sub)
Gary Joe	IDOT/Bureau of Airport Engineering
Nafiz Rahman	IDOT/BAE
Anthony Bryant	Primera
Kris Salvatera	Primera
Graig Neville	CERA Solutions (Sub)

Notes

Utilized IDOT/BAE Agenda (attached).
Utilize Ill. Project PWK-5060 on all documents/correspondence. Project Title "Master Drainage Study (SL)"

Gary Joe will be main IDOT/BAE contact. Nafiz Rahman will assist and may eventually take over as prime contact person.

Project budget is $450,000 Not-to Exceed. IDOT/BAE to undertake an Independent Fee Estimate (IFE). Any changes must be pre-approved by IDOT/BAE. CERA's Overhead and Burden rate is actually 0.01 below fee estimate. Billings will reflect lower rate.

Steve Moulton (Primera's Project Manager) presented an overview of the Scope of Work. This is a Planning Study, not design or construction. Most items on the Standard Kick-off Meeting Agenda are not applicabe.

Project Schedule: Goal for completion is 10-1/2 months from today (February, 2024).

Agreement date: March 29,2023. No allowable charges prior to that date.

There will be five (5) intermediate submittals (estimated) and one FINAL submittal. Periodic Board of Commissioners presentations are planned. IDOT/CEA will receive copies of the submittals to demonstrate Consultant progress.

The ALP being utilized is the 2019 ALP – approved in 2022.

Primera to submit Manhard and CERA Solutions sub-contracts to IDOT/BAE.

The drainage study will follow FAA guidance contained in FAA AC 150/5320-5 *Airport Drainage*.

No environmental work or permitting is currently anticipated, however, Consultant Team should incorporate foreseeable environmental regulations in ther planning efforts. No NEPA efforts are anticipated as long as the approved ALP is not revised.

Typical design, design regressive schedule, specifications, construction requirements, do not apply to this project.

Section 163 requirements are not applicable to this project. No CSPP, phasing, or airspace determinations are anticipated.

The Consultant shall incorporate NAVAID safety and grading criteria in their overall site planning and grading.

The Consultant shall utilize AER-1961 form for monthly invoicing.

A new PCI is anticipated to be undertaken this year.

If possible, have new drainage/grading, clearing projects formulated by the Fall of 2023 to help with TIPS development and project budgeting.

Primera discussed data needs from the airport and the need to schedule a meeting with the current CEA on-call consultant (CM&T) to discuss previous drainage efforts and projects.

Primera Team also needs to meet with the Village of Wheeing and City of Prospect Heights to discuss municipal drainage requirenments. CEA to attend meetings.

The CEA requested guidance be provided for future private developer (Hangar) projects. That is currently in the scope of work.

Badging will be through CEA Operations. Send list of personnel and drivers licenses to George Sakas.

This project was not currently slated for federal reimbursement; however, the CEA is free to request that through IDOT/BAE.

Notes Prepared by: Steve Moulton, Primera Engineers

These notes represent the author's understanding of the meeting. If you have any corrections and/or clarifications, please submit same to author within five working days of receipt.

Distribution:

Jeff Miller	Gary Joe	Diane Bouckaert	Anthony Bryant	Steve Moulton
George Sakas	Nafiz Rahman	Graig Neville	Kris Salvatera	

PRE-DESIGN MEETING AGENDA
FOR
MASTER DRAINAGE STUDY (SL)
CHICAGO EXECUTIVE AIRPORT
WHEELING, ILLINOIS
APRIL 18, 2023

I. Attendance
   A. Attendance sheet (see attached).

II. Programming
   A. Program Letter: **July 15, 2022** (see attached)
   B. Project Title: **Master Drainage Study (SL)**
   C. **SBG** Project Number: **N/A**
   D. Illinois Project Number: **PWK-5060**
   E. Funding Status
      1. **0% Federal, 50% State, 50% Local**
      2. State Share = **$225,000.00**
      3. Local Share = **$225,000.00**
      4. Budget Total = **$450,000.00**
   F. Administrative Fee
      1. The IDA administrative fee is N/A.

III. General Project Scope
   A. **FY2023** TIP Submittal (see attached)
   B. Project Limits
   C. Additive Alternates
      1. The sum of the estimated costs for any proposed additive alternates shall not exceed 25% of the estimated cost for the base bid.
      2. The Section Chief of Airport Design, Joseph Staats, may grant exceptions to this policy on a case-by-case basis.
   D. Do ***not*** exceed the programmed budget nor expand the scope from the TIP submittal without prior approval from your IDA Design Engineer and David Salgado (IDA).
      1. Without prior approval, additional engineering and work beyond the programmed scope of the project may not be eligible for payment.

IV. Engineering Agreement
   A. General
      1. Notice to Proceed
         a) Aeronautics' policy regarding eligibility dates for professional services rendered or equipment purchased.
            i. For all new projects processed **February 2, 2018 forward**, the **execution date** of the consulting retainer agreement; or the **execution date** of the consulting agreement signed for a **single** project will be to determine if costs may be approved for payment.
            ii. **For equipment purchases**, the **execution date** of the consulting retainer agreement; or the **date on the purchase order** for the equipment will be used to determine if costs may be approved for payment.
         b) FAA Order 5100.38D, Change 1 or latest revision, Paragraph 3-56
            i. The sponsor must define the proposed projects, services, and estimated schedule as part of the procurement process.
            ii. The sponsor must limit the procurement to those projects and services that can reasonably be started within five years of the final procurement selection.
            iii. Per FAA policy, a sponsor may not extend a task order contract for consultant services beyond a total overall contract duration (without re-advertising the contract) of more than five years. This time limitation has been established so that competition is not unduly restricted.

iv. Unless otherwise approved in writing by the ADO, the sponsor must not add additional projects or services to the contract.

c) The consulting retainer agreement or single project consultant agreement must be **notarized**.

d) For this project, the **executed retainer agreement** is dated **March 29, 2023.**

2. All contracts will be cost plus fixed fee (CPFF); lump sum compensation for Preliminary Assessment and Schematic Design (PASD) is no longer allowed.
3. Design phase services and construction phase services to be submitted separately.
4. The Standard Agreement for Consultant Services at Illinois Airports for Architectural/Engineering (A/E), Planning and Special Services **shall be submitted in its entirety**, including all required attachments, prior to fee approval and include the following:
   a) A breakdown identifying tasks, names, hours, rates, and expenses anticipated for the requested engineering fee.
   b) All subconsultant agreements, proposals, or Attachments J and K.
   c) The Illinois Department of Transportation – Aeronautics Letting Schedule as Attachment Q. **There are no allowable substitutions.**
5. The amount of engineering fee eligible for participation must be approved by the Department, who will perform an independent fee estimate and "reasonable of cost" determination.
6. Executing agreements prior to engineering fee review and approval is at the Sponsor's own risk.

B. Design Services Phase
   1. Pending
   2. To be submitted at the pre-design meeting or no later than the 35% engineering design report milestone submittal per the IDOT Letting Schedule.

C. Construction Services Phase
   1. Draft construction agreement to be submitted at the 80% milestone submittal per the IDOT Letting Schedule.

D. Planning and Special Services Phase
   1. Include any additional items required for project completion.
      a) Environmental
         i. Environmental effort shall be a separate special services phase engineering fee.
      b) Redline ALP Update
      c) Marking and Signage Plan Update
   2. To be submitted at the pre-design meeting or no later than the 35% engineering design report milestone submittal per the IDOT Letting Schedule.

V. Project Schedule

A. General
   1. Selected letting date determines the project schedule, not the pre-design meeting date.
   2. Adherence to the agreed upon letting schedule is critical. Requests for time extensions beyond the submittal deadline dates must be made to the Department in writing not less than 5 days prior to the due date of the submittal to the Section Chief of Airport Design, Joseph Staats. The request for extension must be signed by a principal or officer of the Consultant's firm. Incomplete submittals will not be accepted.
   3. If necessary, the letting day shall be adjusted based on the actual 35% milestone submittal date unless otherwise approved by the Department.
   4. **Executed Attachment N, which requires the project to be clearly delineated on the approved Airport Layout Plan (ALP) in addition to having environmental approval, is required to be submitted prior to the recommendation memorandum to be considered for the selected letting date. If necessary, the letting day shall be adjusted.**

B. Anticipated Regressive Schedule per the IDOT Letting Schedule (see attached):
   1. IDOT letting is **TBD**.
      a) Pre-design Meeting: **April 18, 2023**
      b) 35% Engineering Report: **TBD**
      c) 80% ***Sealable*** Plans & Specifications: **TBD**
      d) 100% Final Plans & Specifications: **TBD**
      e) IDOT Letting: **TBD**

f) Award: **TBD**
g) Start to Work: **TBD**

C. Submittal Requirements
1. The requirements of the 35% milestone submittal shall include a complete engineering report in accordance with standard practices. The report will include an analysis of preliminary surveys, geotechnical testing, applicable alternative designs, and final project design recommendations. **Incomplete submittals will be rejected.**
a) Pavement design and method shall be discussed in the 35% engineering report.
b) All subsurface investigations shall be completed prior to the 35% engineering report, discussed in detail, and incorporated into the pavement design analysis.
c) Any modification to standards shall be approved by the 35% engineering report milestone submittal.
d) Pre-design meeting minutes shall be included in the appendix of the 35% engineering report.
2. Requirements of the 80% milestone submittal shall include a complete set of Contract Documents, designed and reviewed for adherence to the Federal Aviation Administration (FAA) and Department concepts and standards by a licensed Illinois Professional Engineer. Submittals shall include but not limited to the following documents:
a) Construction Plans,
b) Specifications/Special Provisions,
c) Construction Safety Phasing Plan,
d) Detailed estimate of costs complete with professional services fees and Sponsor reimbursement estimates,
e) Calendar day estimate of construction and detailed break out of critical work items and associated production rates,
f) DBE participation goal and breakout of DBE work
i. Illinois UCP Directory - http://www.idot.illinois.gov/doing-business/certifications/disadvantaged-business-enterprise-certification/il-ucp-directory/index
g) Executed Project Certification – Attachment N
h) Modifications of Standards and Certification requirements as required by the FAA Review Matrix Guide per memorandum dated **August 2, 2016** <https://www.faa.gov/airports/engineering/media/construction-plans-specifications-aip-funded-projects.pdf>.
3. **Projects will be reviewed with the FAA Review Matrix Guide per memorandum dated August 2, 2016.**
4. Sealable plans and specifications shall include all other agencies', Sponsor's, and QA review comments. All final comments shall be incorporated into the 80% milestone submittal to avoid simultaneous reviews with the Department and revisions taking place after the letting.

VI. Environmental Considerations
A. IDA Requirements for State-Local Projects
1. For projects disturbing previously undisturbed areas on airport property, IDA requires the Sponsor/Consultant to submit an Environmental Survey Request (ESR) to IDOT to determine if any environmental actions are required.
2. For projects not disturbing previously undisturbed areas on airport property, there are no environmental requirements, unless otherwise determined by the FAA through the Section 163 determination process.
B. FAA Requirements for State-Local Projects
1. Based on guidance received from the FAA, the Sponsor/Consultant submits a Section 163 request for determination for any project on airport property, regardless of funding. The FAA then determines:
a) Does the FAA/IDA retain ALP authority over the project (does it affect safety, etc.)?
i. If YES, does the project trigger a need for an ALP change, or is it already shown on the ALP?
a. If YES—ALP approval is a federal action requiring NEPA review.
b. If NO—There is no federal action required.

b) Is there a need for FAA to approve a land release or concurrent use? (It is unlikely such a project would be funded by the IDA):
   i. If YES—FAA land use approval is a federal action requiring NEPA review.
   ii. If NO—No federal action is required.
c) The FAA does not consider State-Local funding of projects to be a federal action requiring NEPA review.
d) If the only federal action is ALP approval (i.e. not on the ALP yet), IDA would determine that the project is categorically excluded (CatEx),
e) If NEPA review determines that an EA or EIS is required, the EA or EIS would require FAA approval.
f) If there is a federal action to approve a land release or concurrent use, FAA would have to review/approve the NEPA document.

C. Status
1. Section 163 submittal to FAA by the Sponsor/Consultant is Pending.
2. **Environmental decisions are valid for three (3) years before re-evaluation is required.**
3. **Environmental approval is required prior to the recommendation memorandum to be considered for the selected letting date.**

D. Mitigation Required
1. Permits
a) National Pollutant Discharge Elimination System (NPDES) Permit
   i. A general NPDES Permit for Storm Water Discharges from Construction Site Activities is required for any construction site that will result in the disturbance of soil of one or more acres total land area.
   ii. Prior to conducting any professional services at the site covered by this contract, the Contractor and every subcontractor must complete and return to the Resident Engineer the Contractor Certification Statement as provided on form BDE 2342 / BDE 2342A, Storm Water Pollution Prevention Plan (SWPPP) / Contractor Certification Statement <http://www.idot.illinois.gov/home/resources/Forms-Folder/d>.
   iii. **The SWPPP shall contain a Contractor Certification Statement.**
   iv. In addition, it is good engineering practice to include information regarding a NPDES permit into the bidding documents.
b) Fee Schedule for Construction Sites
   i. $250 for less than 5 acres.
   ii. $750 for 5 acres or more.
2. Off-site
3. Drainage
4. Control of Air, Water, Noise, Other

VII. Design Criteria

A. Specifications
1. State/Local Projects
a) The Illinois Standard Specifications for Construction of Airports (Adopted April 1, 2012) applies to all state/local projects.
b) The Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (January 1, 2022) may be referenced for landside projects.

B. Applicable Standards
1. Airside
a) Advisory Circulars (latest revision)
   i. AC 150/5300-13, Airport Design
   ii. AC 150/5370-2, Operational Safety on Airports During Construction
   iii. AC 150/5320-6, Airport Pavement Design and Evaluation
   iv. AC 150/5320-5, Airport Drainage Design
2. Landside
a) Local Requirements
   i. County/City/Village/etc.

C. Airport Construction Safety & Phasing Plan (CSPP)
1. CSPP shall include:

a) Plan sheets showing construction phasing, contractor construction routes, contractor parking, contractor storage, construction set-back lines, issuance of Notices to Airmen (NOTAM) and procedure NOTAMs, temporary marking and lighting, safety areas, object free areas, object free zones, temporary threshold displacements, and runway and taxiway shutdowns, etc.
b) Critical points identified by latitude, longitude, and elevation.
   i. Consultant is responsible for entering critical points into Obstruction Evaluation / Airport Airspace Analysis (OE/AAA).
   ii. Horizontal datum shall be NAD83.
   iii. Vertical datum shall be NAVD88.
c) Routing of aircraft.
d) Estimated dates that navigational aids will be shut down during construction.
e) Each applicable item identified in AC 150/5370-2 (latest revision).

2. Final CSPP to be submitted at the 80% milestone submittal per the IDOT Letting Schedule to avoid revisions taking place after the letting, which could affect Contractor bids.
3. The CSPP and Special Provisions shall include a reference that the Contractor shall submit a Safety Plan Compliance Document (SPCD) confirming compliance with the CSPP prior to the issuance of the Notice to Proceed as specified in FAA AC 150/5370-2 (latest revision).
4. Airport/FAA/Other Comments
   a) Contractor staging, storage and access
   b) Contract Time
   c) Closures & Restrictions
   d) Events conflicting with construction

D. Existing Conditions
1. Existing Pavement Structure(s)
   a) Pavement Condition Index (PCI) Map **December 2020** (see attached)
   b) Pavement History Map (upon request)
2. Utilities
   a) Edge Lighting
   b) Storm Sewer
   c) Electric
   d) Water
   e) List any additional utilities within the project limits.

E. Pavement Design
1. Use FAA AC 150/5320-6 (latest revision) and current pavement design programs to develop pavement sections, layout, and standard details.
   a) **FAARFIELD v2.0 or latest version**
      i. **https://www.faa.gov/airports/engineering/design_software/**
2. Pavement design and method is required to be discussed in the 35% engineering report.
   a) Justify current pavement structure and proposed rehabilitation method.
      i. **Matching existing pavement structure is not proper justification**.
      ii. **Any subgrade modifications or drainage layers must be justified with corresponding backup documentation from a geotechnical investigation.**
   b) Pavement Analysis must include:
      i. Design assumptions.
      ii. Fleet mix (aircraft, load, and frequency of operations).
      iii. Number of departures for each aircraft.
      iv. Incorporation of geotechnical investigation.
      v. Pavement Design Alternatives.
         a. Initial Cost
      vi. Computer program pavement design output.

F. Drainage Design
1. Surface
   a) Any grading or drainage issues?
2. Storm Sewer System
3. Subsurface Drainage
   a) Edge

b) Under Pavement

G. Electrical Design
   1. Existing System
      a) Age
   2. Replacement
      a) Justification to be discussed in the 35% engineering report.
         i. Evidence of partial and complete circuit outages
         ii. Maintenance records and associated maintenance costs
         iii. Documentation of service repair calls
         iv. Evidence of voltage losses from meggar readings
         v. Evidence of increased operational costs due to losses
   3. Lighting
      a) Stake mounted taxiway lights.
      b) Base mounted lights at intersections and at approximately every fifth light.
   4. Guidance Signage
      a) Location Signs
      b) Hold Signs
   5. LED/Incandescent
      a) LED High Intensity Runway Lights (HIRL) are now AIP eligible per PGL 19-02 dated June 18, 2019.
      b) No life cycle cost analysis (LCCA) required for LED justification.
   6. Spare Parts
      a) The spare parts are for eligible airport visual aids listed in the current version of Advisory Circular 150/5340-26, Maintenance of Airport Visual Aid Facilities.
      b) The spare parts are included in the same grant that installs the airport visual aid.
      c) The cost of the spare parts does not exceed 10% of the total cost of the airport visual aid.
      d) The total cost for the spare parts does not exceed $10,000.
      e) The spare parts are minor components of the airport visual aid.
      f) The Sponsor can replace the spare parts using their own staff.
      g) The ADO believes the Sponsor will be able to store or accurately account for the spare parts inventory.
      h) Discuss spare parts and cost in the 35% engineering report.
      i) Vault Improvements
      j) Regulators
         i. Age
         ii. Capacity

H. NAVAIDS
   1. Impacts
   2. Ownership
      a) FAA
         i. May require a reimbursable agreement.
         ii. Reimbursable agreements can take up to 24 months to develop and require advance payment to the FAA prior to starting work.
   3. Flight Check Requirements
      a) Required for installation of new Runway End Identifier Lights (REILs) or new or relocated Visual Glide Slope Indicators (VGSIs) such as VASIs, PAPIs, PLASIs, etc.
      b) Flight check cost is included in the grant request.

I. Pavement Marking
   1. Waterborne
   2. Epoxy
      a) A period of 14 days minimum shall elapse between placement of a HMA surface course or seal coat and application of the paint unless waterborne paint is used.
   3. Preformed Thermoplastic
      a) When supported by a life cycle cost analysis, as outlined in FAA Order 5100-38, Airport Improvement Program Handbook, projects funded with Airport Improvement Program (AIP) or Passenger Facility Charges (PFC) funds may include the use of PTM at the following locations:

i. Surface Painted Hold Sign Markings;
ii. Taxiway Direction and Location Markings;
iii. Geographic Position Markings;
iv. Vehicular Roadway Markings on Airfield;
v. Zipper Lines, and
vi. Taxiway Edge Lines.

VIII. Modifications to AIP Construction Standards
A. Use the current edition of applicable FAA Advisory Circulars.
B. FAA Order 5300.1, Modifications to Agency Airport Design, Construction, and Equipment Standards, requires all design modifications to standards be submitted to FAA Headquarters (HQ) office for approval.
C. Processing time can take 60-90 days.

IX. Miscellaneous Work Items
A. Address other related work items.
B. Seeding/Sodding/Mulching/etc.
C. Fencing
D. Millings

X. Other Discussions, Recommendations or Requests
A. Meetings for which effort will be billed shall be thoroughly documented by meeting minutes by the Consultant with copies distributed to the Sponsor and the Department within 10 days of the meeting. Failure to properly document meeting discussions could result in the loss of part or all of the professional services compensation eligibility associated with this activity.
B. Grant Accountability and Transparency Act (GATA)
1. As of the **November 9, 2018 letting**, all projects are subject to GATA requirements.
C. Invoicing for Professional Services
1. Invoices to be submitted on the latest revision of form AER-1961 (see attached).
2. Invoices cannot be processed until the project has been updated from “Pending” to “Active” after the conformed contract is fully executed by all parties.
3. Design services phase invoices and applicable special services phase invoices must be submitted within 60 days of the construction issued notice to proceed. Late submittals may be deemed ineligible for payment.
4. Submit completed invoices to **DOT.AeroContracts@illinois.gov**.
a) **The AER-1961 must accurately reflect the Airport Project Management System (APMS) and backup documentation.**
b) Dates are very important to auditors.
i. Service Dates
ii. Notice to Proceed (NTP) Date
1. The **executed retainer agreement** shall be the NTP date.
2. The NTP date for this project shall be ***March 29, 2023***.
iii. Agency Agreement Date
1) Date of the agreement between the Airport and IDOT fully executed by ***ALL*** parties, not just the Sponsor.
2) If there is question regarding this date, ask the Design Engineer.
b) File Naming Format: 4-digit State Project No, Payment Type, Services, Amount
i. **Example**: 4422- Reimbursement-Engineering-Design-$82,217.00
c) **Take extra care to QA all submittals to ensure they are accurate and complete. Incomplete or inaccurate submittals will be rejected.**
5. Include engineering costs breakdown for description of services performed.
6. Executed subconsultant agreement(s) must be submitted and on file prior to any payments made for outside services for the project.
7. Do not exceed maximum approved rates set by the Governor’s Travel Control Board for reimbursement. There are no exceptions to these rates.
a) Mileage
i. Effective **January 1, 2023**

1) **$0.655** per mile.

b) Per Diem/Meals within the State of Illinois
   i. Effective June 1, 2012, an employee must be on travel status, work at least 10 consecutive hours and work at least two hours prior to or past their regular work day to be eligible for a meal allowance.
   ii. *Breakfast is payable when an employee is on travel status and leaves headquarters or residence (if reporting directly to the destination) two hours before the start of the employee's regular work day.*
      1) $5.50
   iii. *Dinner is payable when an employee is on travel status and arrives back at headquarters or residence (if reporting directly from destination) at least two hours after the end of the employee's regular work day. For employees commencing travel after the close of business, dinner is allowable* if travel commences within 1.5 hours after the end of the employee's regular work day *but only in the event that the traveler would not be eligible for per diem.*
      1) *$17.00*
   iv. Per diem shall be paid for travel, which includes overnight lodging or is 18 or more continuous hours.
      1) $28.00

c) Lodging within the State of Illinois
   i. County dependent.

8. Include backup documentation for direct expenses.
   a) Mileage Logs
      i. Form BC 930, "Consultant Engineer's Weekly Personnel and Vehicle Time Distribution Record" for all company vehicles used on the project.
      ii. Form BC 931, "Consultant Engineer's Private Weekly Mileage Record" for all personal vehicle mileage.
      iii. The format for the above is for general information. The Consultant's format containing essential data may be acceptable but must include beginning and ending odometer readings.
   b) Paid Receipts
      i. Lodging, Tolls, Parking, Printing, Postage, etc.

XI. Attachments
   A. Attendance Sheet
   B. Program Letter
   C. APMS Budget Status Report
   D. TIP Submittal Excerpt
   E. Request for Qualifications, Consultant Selection
   F. Retainer Agreement Excerpt
   G. Approved Existing ALP
   H. Approved Future ALP
   I. IDOT Letting Schedule
   J. PCI Map & Summary Information
   K. AER 1961, Vendor Invoice

XII. Adjourn

Prepared By: Nafiz Rahman
Date:

Illinois Department of Transportation

State of Illinois
Department of Transportation
Bureau of Airport Engineering
Design Section

PRE-DESIGN MEETING
ATTENDANCE SHEET
FOR
MASTER DRAINAGE STUDY (SL)
CHICAGO EXECUTIVE AIRPORT
WHEELING, ILLINOIS
APRIL 18, 2023

INITIALS	NAME	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS
	Gary Joe	**IDOT - Aeronautics**	**217.524.5194**	**Gary.joe@illinois.gov**
	Nafiz Rahman	**IDOT-Aeronautics**	**217.785.0066**	**Nafiz.rahman@illinois.gov**

Illinois Department of Transportation
Office of Planning and Programming
2300 South Dirksen Parkway / Springfield, Illinois / 62764

July 15, 2022

Mr. Jeff Miller
Chicago Executive Airport
1020 South Plant Road
Wheeling, IL 60090

Mr. Miller,

The Illinois Department of Transportation's Airport Improvement Program provides funding for projects at airports throughout the state to ensure the continuation of safe and efficient operations at these facilities and maximize opportunities for economic development in Illinois.

The project detailed herein was selected for your airport based on project requests submitted to the Department during the Transportation Improvement Program (TIP) meetings. This program is based on Federal Aviation Administration (FAA) funding levels established in federal legislation which provide for a minimum of $1 million in entitlement funds for primary airports and a maximum of $150,000 entitlement funds for non-primary airports. Federal legislation calls for a maximum 90% federal participation. As such, the state and local match will be 5% each for all projects which are eligible for state funding. All other federal projects which are not eligible for state funds will require a minimum 10% local match.

Funding for the Illinois Airport Improvement Program is dependent upon receipt of Federal funds and legislative authorization of state appropriations. In addition, proposed development and land acquisition must be shown on an approved ALP, have cleared environmental processing, and the land already acquired or have a signed purchase agreement. For projects seeking Federal Discretionary Funds these requirements must be completed, and evidence of completion provided to Aeronautics by **October 1, 2022** before a project can be considered for funding.

The Department and the Airport Sponsor hereby specifically agree that they shall pay the above defined percentages of all project costs. Airport sponsors shall be responsible to pay for all planning and design services at time of project letting and seek reimbursement within the project at the time of award. In addition, the GRANTEE shall pay such additional project costs which exceed the sum of the GRANTOR's funds and the Federal funds, as are herein committed for this Project. **In the event your project exceeds these budget totals, the Sponsor may elect to pay any additional project costs which exceed the total sum of state and federal funds as planned and programmed to complete the project. If additional funds are deemed necessary post award, an amendment to the Agency Agreement with the Department must be developed and approved by the Department and the FAA before any additional funding may be allocated.**

In the event the Illinois General Assembly fails to appropriate funds, or sufficient funds are otherwise not made available for these projects, the Airport Sponsor will be required to pay the state and local costs as itemized below. This will include any amount which exceeds the totals listed.

Projects were selected based on the FAA's National Priority System as well as other state and local priorities. The Department has programmed the following project to be included in IDOT's FY 2023 Proposed Airport Improvement Program for your airport:

The project **"Master Drainage Study (S/L) Comprehensive Study of Airport DRAINAGE Patterns and Improvements (50/50 State/Local)"** will be funded as follows:

State Match	$225,000
Local Match	$225,000
Total Project Cost	$450,000

***If this project is seeking AIP Federal Discretionary Funds from the Federal Aviation Administration (FAA) until such time the funds are received by the Department this project is not guaranteed.**

The Office of Intermodal Project Implementation (Aeronautics) letting schedule for construction projects must be strictly followed to ensure projects are advertised and brought to letting in an organized manner. The letting schedule allows for 30 weeks to develop a project from the date of the pre-design meeting to the letting.

To ensure eligibility of professional services for state and federal funding participation, you are required to satisfy the qualifications based selection process and enter into a retainer agreement, or professional services A/E agreement with the consultant of record selected for the project prior to any costs being incurred. This should take place prior to the project initiation/pre-design meeting. Aeronautics will facilitate this process, as well as the initial development and review of fees.

The project contained in this letter is officially programmed for development provided all state and federal requirements have been met. It is now the Airport Sponsor's responsibility to initiate the professional services phase of the project. Please contact Aeronautics, either directly or through your consultant, to schedule a project initiation meeting.

Please initiate this project within 12 months of the date of this letter or this project will no longer be considered programmed. Projects are initiated by scheduling a predesign meeting for design/construction projects or a project initiation meeting for planning and environmental projects.

Please contact Mr. Joe Staats, P.E. – Section Chief of Airport Design at 217.785. 5746 to initiate this project. Projects are initiated by scheduling a predesign meeting for design/construction projects or a project initiation meeting for planning and environmental projects.

Please contact Richard Borus in Aeronautics at 217.785.0056 or me in the Office of Planning and Programming at 217.782.4118 if you have questions regarding this program letter.

Sincerely,

BJ Murray

BJ Murray
Section Chief, Aviation Program & Planning
Office of Planning and Programming

APMS Budget Amounts As of 14 Apr 2023

Project: 5060 - Planning - Master Drainage Study (S/L)

Description: Program budget

Federal			State of Illinois			Local sponsor		
General	0.00		Bond	0.00		General	0.00	
			GRF	0.00		ass. Facility Charges	0.00	
				225,000.00	50.00%		225,000.00	50.00%
Total:	0.00	0.00%	Total:	225,000.00	50.00%	Total:	225,000.00	50.00%

Budget total: 450,000.00

Agency agreement execution date:

Primary airport grant execution date: Letter of Credit amount:

Illinois Department of Transportation

Transportation Improvement Program (TIP) Data Sheet

Airport:	Chicago Executive	LOCID:	PWK	Local Priority:	4
Project Description:	Master Drainage Study				FY 2023



Justification:	The Airport is required to comply with new regulations from Metropolitan Water Reclamation District of Greater Chicago. These new regulations and current development caused the available detention areas to reach their drainage capacity limits. A new Master Drainage Study is needed to assess and quantify other remaining airfield storage capacity.

Cost Estimate: (Attach detailed cost estimate)

Federal (0%) $0	State (50%) $225,000	Local (50%) $225,000	Total: $450,000

Sponsor Verification	Date:	(see instruction sheet)
For each and every project as applicable	12/13/2021	Date of approved ALP with project drawn
	N/A	Date of environmental determination (ROD, FONSI, CE) or cite CE paragraph # (307-312) in Order 1050.1E, determination to accompany submittal
	N/A	Date of land acquisition or signed purchase agreement
	N/A	Snow removal equipment inventory & sizing worksheet (for SRE acquisition)
	N/A	Apron sizing worksheet (for apron projects)
	09/29/2021	5010 Inspection Compliance (Attach copy of letter from Bureau of Aviation Safety)
	N/A	Revenue producing facilities (for fuel farms, hangars, etc.)

I certify to the best of my belief and knowledge that all runway approaches are clear of obstructions.

Sponsor's Signature: _____ Date: 12/16/21

Printed Name: Jeffrey J. Miller Title: Airport Executive Director

Phone Number (224) 279-2061

Division of Aeronautics use only

Preapp Number	Grant Number	NPIAS Code	Work Code	FAA Priority	Federal $

Illinois Department of Transportation

2023-2027 Transportation Improvement Program
Estimate of Work

e-TIPS'23

Airport Name:	Chicago Executive		
Associated City:	Wheeling/Prospect Heights		
Year Requested:	2023	**Sponsor Priority:**	4

PROJECT TITLE:
Master Drainage Study

Estimate of Work

ITEM	QUANTITY #	QUANTITY Unit(s)	UNIT PRICE $ / Unit	PRICE	Potential DBE $	Potential DBE %
EXCAVATION						
Clearing/Grubbing			/			
Earthwork			/			
DRAINAGE						
Underdrains			/			
Pipe			/			
Curb and Gutter			/			
Special Structures			/			
PAVING						
Agg. Base Course			/			
401			/			
501			/			
Seal Coat			/			
Crack Filling			/			
Panel Replacement			/			
Butt Joint.			/			
Grooving			/			
Special			/			
LIGHTING						
Fixtures, Signs (New/Relocated)			/			
Cable & Transformers			/			
Taxiway Lighting Fixtures			/			
Duct / Conduit			/			
Fixture Removals			/			
LANDSCAPING						
Seeding/Mulching/Blanket			/			
Sodding			/			
Watering			/			
Special (Wetlands)			/			
FENCING						
Class C			/			
Class E			/			
Gates (Manual/Electric)			/			
OTHER / MISC.						
Mobilization			/			
Marking			/			
Demolition			/			
Other Items - Equipment			/			
Engineering/Administration			/			
Studies	1	L SUM	$450,000.00 / L SUM	$450,000.00		
Land Acquisition			/			
Survey			/			
Other Specialty Items						
Geotechnical			/			
Utility/Force Account Work			/			
			/			
			/			

TOTAL COST:	Potential DBE $	Potential DBE %
$450,000.00		

Illinois Department of Transportation

Airport Sponsor Consultant Selection Procurement Solicitation

Procurement of professional architectural, engineering, and planning services for airport improvement program grant projects is covered by state and federal law (49 USC § 47107(a) (17) and 49 CFR § 18.36, as amended). Sponsors intending to utilize state and federal funds to pay for professional services are required to conduct a Qualifications-Based Selection (QBS) process when selecting an Architectural/Engineering (A/E) or planning consulting firm. FAA guidance (150/5100-14E and 5100.38D) allows for Sponsors to procure professional services to complete multiple, phased grant projects through a single consultant selection process. These firms may be retained for up to 5 years for their services.

The following Airport Owner/Sponsor is seeking interested firms to provide professional architectural, engineering and planning services for the development of the air navigation facility known as:

Airport Name: Chicago Executive Airport

Owner/Sponsor (Airport Authority/Municipality/County/Park or Port District): Vlg of Wheeling & City Prospect

Associated City: Wheeling

Official Mailing Address: 1020 Plant Road, Wheeling, IL 60090

Contact Name: George Sakas

Telephone: 847-5-2580 E-mail: gsakas@chiexec.com

Scope of Services (**Provide specific, detailed project descriptions with estimated costs*** from the airport's 3-5 year program): Rows will expand as needed.

*Example-Construct 500 ft.-long by 100 ft.-wide extension to Runway 19, including 25 ft.-wide shoulders, earthwork, drainage, edge lighting, vault modifications, NAVAID relocation and pavement marking. Estimated construction cost: $2.5M
1. Master Drainage Study - Comprehensive Study of Airport Drainage Patterns and Improvements $225,000 $225,000 $450,000 State/Local
2.
3.
4.
5.
6.
7.

Interested firms should have experience completing minor Airport Layout Plan update drawings and simple environmental clearances. A PREQUALIFICATION RATING FROM THE ILLINOIS DEPARTMENT OF TRANSPORTATION IS REQUIRED FOR CONSIDERATION.

It is anticipated that the professional services for the projects under consideration will be initiated within the 5-year retainer period.

Firms interested in being considered for the projects described in the above Scope of Services should contact the Owner/Sponsor by (11/21/22) **for further information. A Request for Qualifications package will be sent to interested, qualified firms at that time.**

STANDARD AGREEMENT FOR CONSULTANT SERVICES AT ILLINOIS AIRPORTS FOR ARCHITECTURAL/ENGINEERING (A/E), PLANNING AND SPECIAL SERVICES
Authorized for use by
The Illinois Department of Transportation
Division of Aeronautics
Effective: June 2012

☐ Preliminary Assessment and Schematic Design ☐ Construction Phase Services

☐ Design Phase Services ☒ Planning and Special Services

THIS AGREEMENT, made at Wheeling, Illinois, this 29th day of March in the year 2023 by and between the Chicago Executive Airport (hereinafter referred to as the "Sponsor"), and Primera Engineers, Ltd. (hereinafter referred to as the "Consultant"). This Agreement expires 5 years from the date of execution.

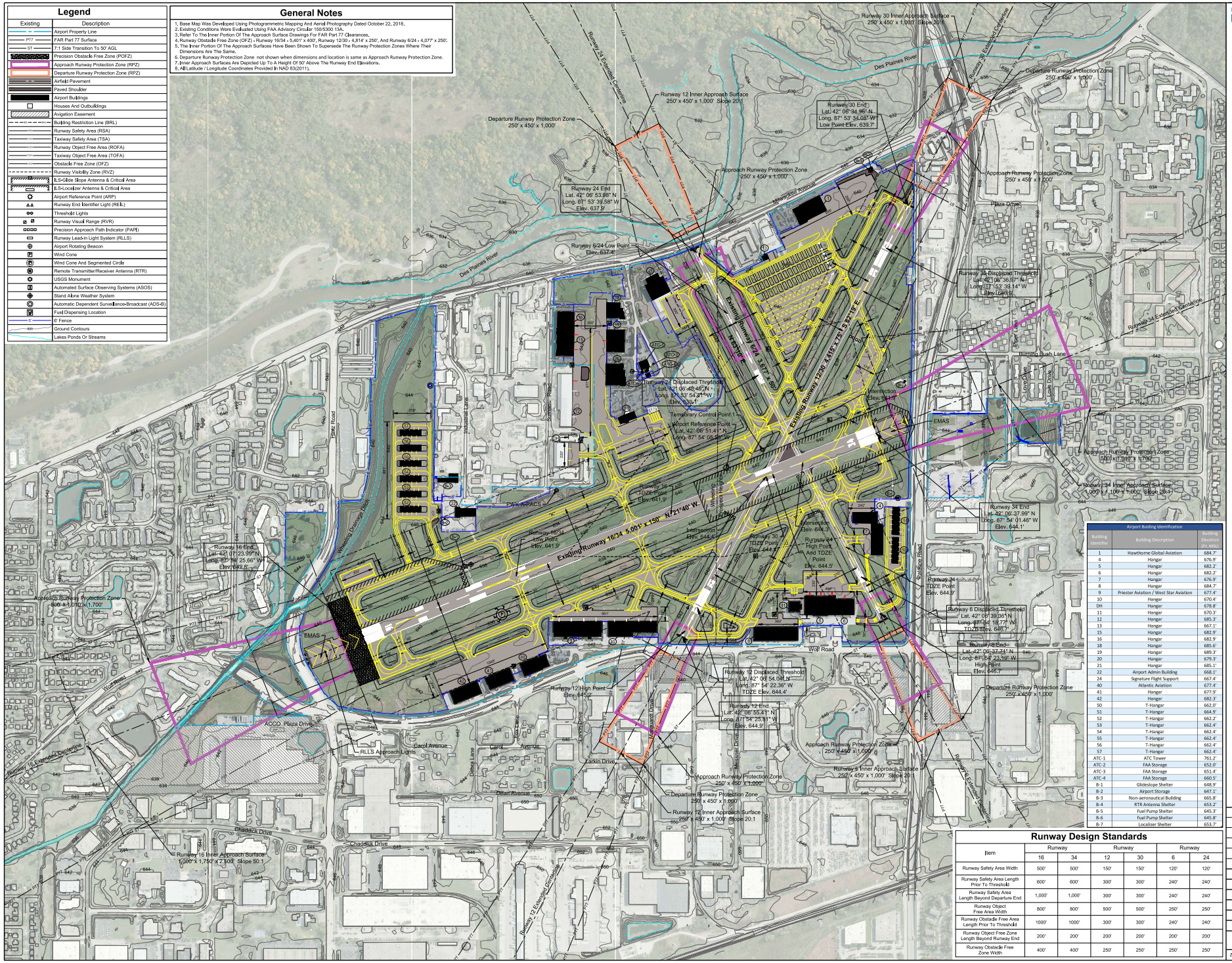
WITNESSETH

The Sponsor intends to undertake the accomplishment of a project pursuant to the development of a public air navigation facility known as the Chicago Executive Airport in Cook County, state of Illinois; and the project shall be identified as the Illinois Project No. PWK-5060; AIP Project No._____; The following is the detailed project title and description from the Illinois Department of Transportation's Office of Planning and Programming (OP&P) program letter which shall be carried through the development of the project (attach supplemental information as necessary in Section H. I., Detailed Scope of Services): Master Drainage Study (S/L) Comprehensive Study of Airport Drainage Patterns and Improvements (50/50 State / Local)

A detailed sketch of the proposed work, labeled ATTACHMENT P, shall be attached.

In consideration of the benefits which will accrue to the parties hereto by virtue of the Agreement and the respective covenants herein contained, IT IS MUTUALLY COVENANTED AND AGREED as follows:

The Consultant agrees to furnish executed "Certification of Engineer" and certain professional engineering services enumerated herein-after, in connection with the implementation and development of the aforesaid project.



Legend

Existing	Description
	Airport Property Line
P77	FAR Part 77 Surface
ST	7:1 Side Transition To 50' AGL
	Precision Obstacle Free Zone (POFZ)
	Approach Runway Protection Zone (RPZ)
	Departure Runway Protection Zone (RPZ)
	Airfield Pavement
	Paved Shoulder
	Airport Buildings
	Houses And Outbuildings
	Avigation Easement
BRL	Building Restriction Line (BRL)
RSA	Runway Safety Area (RSA)
TSA	Taxiway Safety Area (TSA)
ROFA	Runway Object Free Area (ROFA)
TOFA	Taxiway Object Free Area (TOFA)
OFZ	Obstacle Free Zone (OFZ)
RVZ	Runway Visibility Zone (RVZ)
	ILS-Glide Slope Antenna & Critical Area
	ILS-Localizer Antenna & Critical Area
	Airport Reference Point (ARP)
	Runway End Identifier Light (REIL)
	Threshold Lights
	Runway Visual Range (RVR)
	Precision Approach Path Indicator (PAPI)
	Runway Lead-in Light System (RLLS)
	Airport Rotating Beacon
	Wind Cone
	Wind Cone And Segmented Circle
	Remote Transmitter/Receiver Antenna (RTR)
	USGS Monument
	Automated Surface Observing Systems (ASOS)
	Stand Alone Weather System
	Automatic Dependent Surveillance-Broadcast (ADS-B)
	Fuel Dispensing Location
6'	6' Fence
620	Ground Contours
	Lakes Ponds Or Streams

General Notes

1. Base Map Was Developed Using Photogrammetric Mapping And Aerial Photography Dated October 22, 2018.
2. Existing Conditions Were Evaluated Using FAA Advisory Circular 150/5300 13A.
3. Refer To The Inner Portion Of The Approach Surface Drawings For FAR Part 77 Clearances.
4. Runway Obstacle Free Zone (OFZ) - Runway 16/34 - 5,401' x 400', Runway 12/30 - 4,814' x 250', And Runway 6/24 - 4,077' x 250'.
5. The Inner Portion Of The Approach Surfaces Have Been Shown To Supersede The Runway Protection Zones Where Their Dimensions Are The Same.
6. Departure Runway Protection Zone not shown when dimensions and location is same as Approach Runway Protection Zone.
7. Inner Approach Surfaces Are Depicted Up To A Height Of 50' Above The Runway End Elevations.
8. All Latitude / Longitude Coordinates Provided In NAD 83(2011).

Airport Building Identification

Building Identifier	Building Description	Building Elevation (ft. MSL)
1	Hawthorne Global Aviation	684.7'
4	Hangar	676.9'
5	Hangar	682.2'
6	Hangar	682.2'
7	Hangar	676.9'
8	Hangar	684.7'
9	Priester Aviation / West Star Aviation	677.4'
10	Hangar	670.4'
DH	Hangar	678.8'
11	Hangar	670.3'
12	Hangar	685.3'
13	Hangar	667.1'
15	Hangar	682.9'
16	Hangar	682.9'
18	Hangar	685.6'
19	Hangar	689.3'
20	Hangar	679.3'
21	Hangar	685.1'
22	Airport Admin Building	668.1'
24	Signature Flight Support	667.4'
40	Atlantic Aviation	677.4'
41	Hangar	677.9'
42	Hangar	682.3'
50	T-Hangar	662.0'
51	T-Hangar	664.9'
52	T-Hangar	662.2'
53	T-Hangar	662.4'
54	T-Hangar	662.4'
55	T-Hangar	662.4'
56	T-Hangar	662.4'
57	T-Hangar	662.4'
ATC-1	ATC Tower	761.2'
ATC-2	FAA Storage	652.0'
ATC-3	FAA Storage	651.4'
ATC-4	FAA Storage	660.5'
B-1	Glideslope Shelter	648.9'
B-2	Airport Storage	647.1'
B-3	Non-aeronautical Building	665.8'
B-4	RTR Antenna Shelter	653.2'
B-5	Fuel Pump Shelter	645.3'
B-6	Fuel Pump Shelter	645.8'
B-7	Localizer Shelter	653.7'

Runway Design Standards

Item	Runway 16	Runway 34	Runway 12	Runway 30	Runway 6	Runway 24
Runway Safety Area Width	500'	500'	150'	150'	120'	120'
Runway Safety Area Length Prior To Threshold	600'	600'	300'	300'	240'	240'
Runway Safety Area Length Beyond Departure End	1,000'	1,000'	300'	300'	240'	240'
Runway Object Free Area Width	800'	800'	500'	500'	250'	250'
Runway Obstacle Free Area Length Prior To Threshold	1000'	1000'	300'	300'	240'	240'
Runway Object Free Zone Length Beyond Runway End	200'	200'	200'	200'	200'	200'
Runway Obstacle Free Zone Width	400'	400'	250'	250'	250'	250'

CMT
CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS

CHICAGO EXECUTIVE AIRPORT

Existing Airport Layout Drawing

0 300 600
Scale in Feet

Magnetic Declination
Declination 3° 19' 00" W (1/1/3/2019)
Rate of Change: 0° 4' W, Per Year

0 1 2
THIS BAR IS EQUAL TO 2" AT FULL SCALE (30x42)

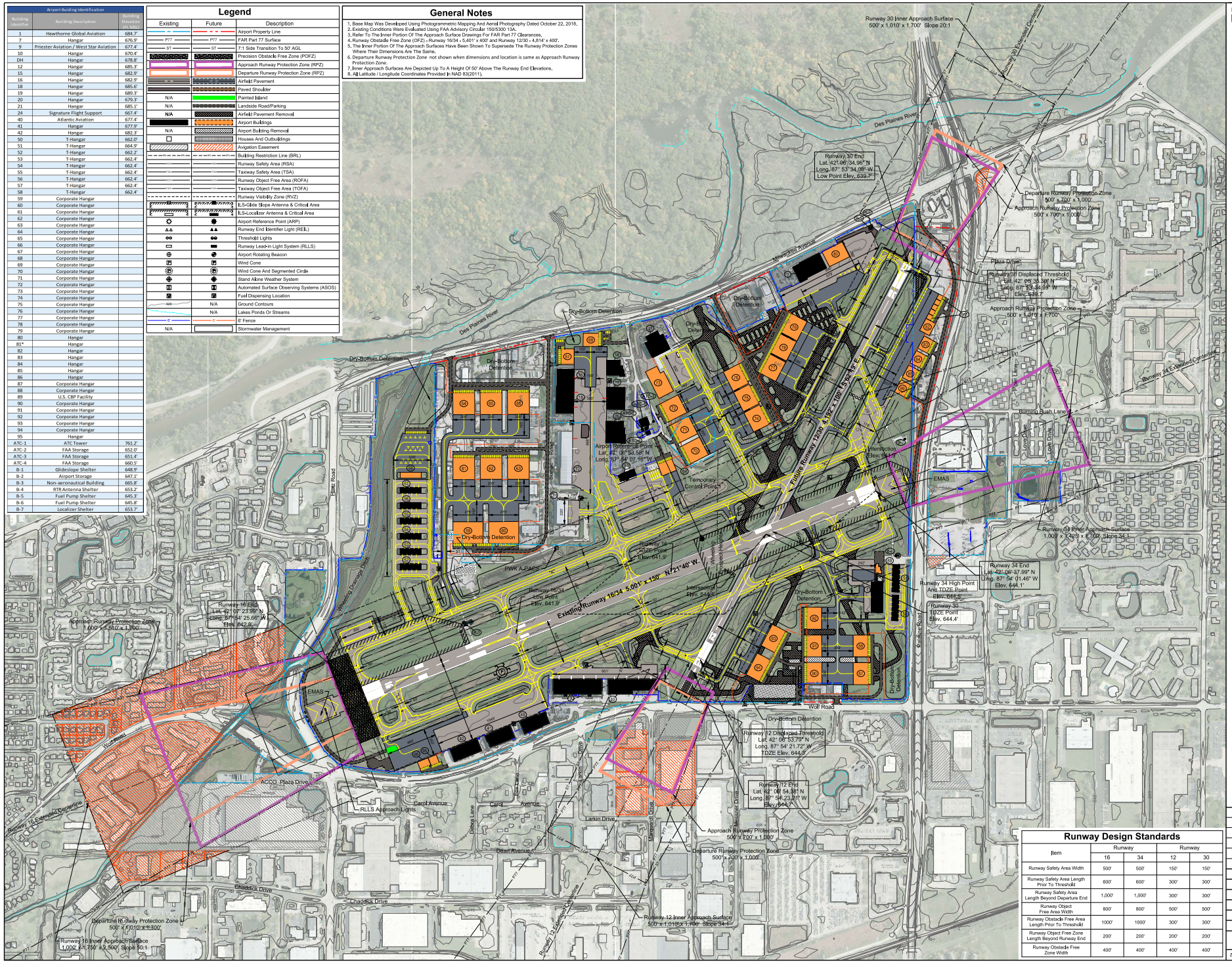
K:\AL\PO\Chicago Exec\Arpt\2017 ALP Update\Drawings\Sheets\FILE: PWK 2017 ALP_02 Existing Airport Layout Drawing.dwg

UPDATE BY: Mike Wilson
SURVEY BOOK #
DATE: 1/17/2017 9:13 AM
XREF DWG:

REVISIONS		
NO.	BY	DATE

DESIGN BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
DATE: 4/10/2019
JOB No: 17290-01-00

SHEET 02 OF 54 SHEETS



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55	T-Hangar	662.4'
56	T-Hangar	662.4'
57	T-Hangar	662.4'
58	T-Hangar	662.4'
59	Corporate Hangar	
60	Corporate Hangar	
61	Corporate Hangar	
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82	Hangar	
83	Hangar	
84	Hangar	
85	Hangar	
86	Hangar	
87	Corporate Hangar	
88	Corporate Hangar	
89	U.S. CBP Facility	
90	Corporate Hangar	
91	Corporate Hangar	
92	Corporate Hangar	
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		Paved Shoulder
N/A		Painted Island
N/A		Landside Road/Parking
N/A		Airfield Pavement Removal
		Airport Buildings
N/A		Airport Building Removal
		Houses And Outbuildings
		Avigation Easement
		Building Restriction Line (BRL)
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		Taxiway Safety Area (TSA)
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		Runway End Identifier Light (REIL)
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		Wind Cone
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		Stand Alone Weather System
		Automated Surface Observing Systems (ASOS)
		Fuel Dispensing Location
609	N/A	Ground Contours
	N/A	Lakes Ponds Or Streams
6'		6' Fence
N/A		Stormwater Management

General Notes

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CONSULTING ENGINEERS

CHICAGO EXECUTIVE AIRPORT

Future Airport Layout Drawing

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Scale in Feet

Magnetic Declination
Declination 3° 15' 00" W (1/1/3/2019)
Rate of Change: 0° 4' W, Per Year

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K:\AV-P\Chicago Exec\ALP\2017 ALP Update\Drawings\Sheets\
FILE: PWK 2017 ALP_03 Future Airport Layout Drawing.dwg
UPDATE BY: Mike Wilson
SURVEY BOOK #
DATE: 1/17/2021 10:52 AM
XREF DWG:

REVISIONS		
NO.	BY	DATE

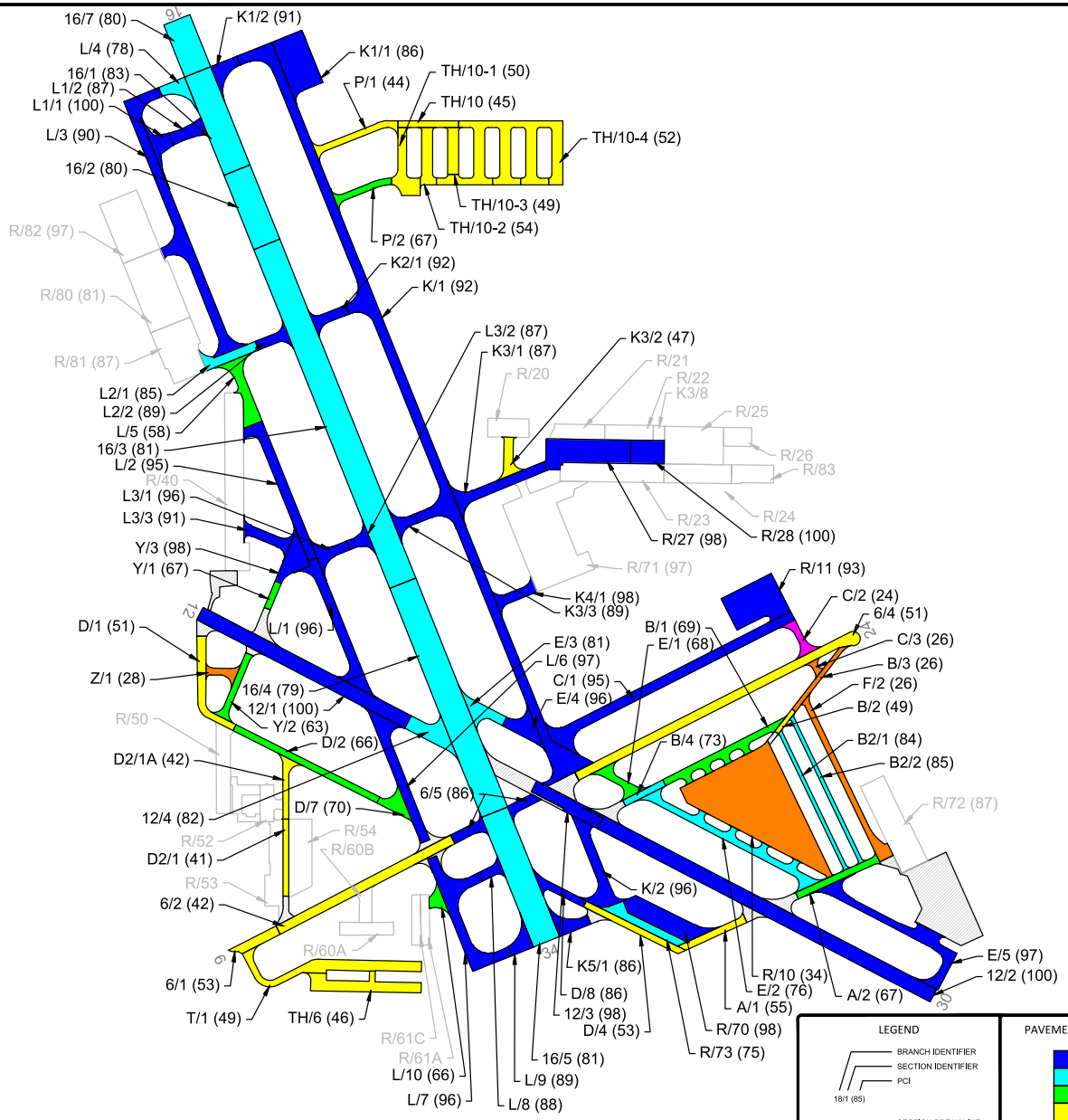
DESIGN BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
DATE:	4/10/2019
JOB No:	17230-04-00

SHEET 03 OF 54 SHEETS

ILLINOIS DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS
2024 LETTING SCHEDULE WITH ASSOCIATED REGRESSIVE DATES

22 Week Project Development Timeline (154 Calendar Days)				IDOT Letting Date	Anticipated Award Date	Anticipated Start to Work Date
START (0%)	35%	80%	100%			
Pre-design Meeting Target Date	Engineering Report to IDA for Comments	*Sealable Plans and Specifications to IDA for Comments	Approved and Sealed Final Plans and Specifications to IDA			
18-Nov-2022	13-Jan-2023	24-Mar-2023	21-Apr-2023	16-Jun-2023	15-Sep-2023	13-Oct-2023
06-Jan-2023	03-Mar-2023	12-May-2023	09-Jun-2023	04-Aug-2023	03-Nov-2023	01-May-2024
24-Feb-2023	21-Apr-2023	30-Jun-2023	28-Jul-2023	22-Sep-2023	22-Dec-2023	01-May-2024
21-Apr-2023	16-Jun-2023	25-Aug-2023	22-Sep-2023	17-Nov-2023	16-Feb-2024	01-May-2024
16-Jun-2023	11-Aug-2023	20-Oct-2023	17-Nov-2023	19-Jan-2024	19-Apr-2024	17-May-2024
11-Aug-2023	06-Oct-2023	15-Dec-2023	12-Jan-2024	08-Mar-2024	07-Jun-2024	05-Jul-2024
29-Sep-2023	24-Nov-2023	02-Feb-2024	01-Mar-2024	26-Apr-2024	26-Jul-2024	23-Aug-2024
17-Nov-2023	12-Jan-2024	22-Mar-2024	19-Apr-2024	14-Jun-2024	13-Sep-2024	11-Oct-2024
05-Jan-2024	01-Mar-2024	10-May-2024	07-Jun-2024	02-Aug-2024	01-Nov-2024	01-May-2025
23-Feb-2024	19-Apr-2024	28-Jun-2024	26-Jul-2024	20-Sep-2024	20-Dec-2024	01-May-2025

Requirements of the 80% milestone submittal shall include a complete set of Contract Documents, as outlined in the A/E agreement, designed and reviewed for adherence to Federal Aviation Administration (FAA) and Illinois Division of Aeronautics (IDA) concepts and standards by a licensed Illinois Professional Engineer. Submittals shall include but not limited to the following documents: Construction Plans, Special Provisions and Construction Safety Phasing Plan with a detailed Estimate of Costs, Contract Time, and DBE Participation Goal along with any applicable Modifications of Standards and Certification requirements required by the FAA Review Matrix Guide per memorandum dated 08/02/2016.



LEGEND

BRANCH IDENTIFIER
SECTION IDENTIFIER
PCI
18/1 (85)
SECTION BREAK LINE

PAVEMENT CONDITION INDEX

86-100
71-85
56-70
41-55
26-40
11-25
0-10

applied pavement TECHNOLOGY
115 W. Main Street, Suite 400
Urbana, IL 61801
Tel: (217) 398-3977
Fax: (217) 398-4027

Illinois Department of Transportation
Division of Aeronautics

LOCATION: Chicago Executive Airport
Wheeling, IL

PAGE TITLE: 2020 Pavement Condition Index Map

PROJECT DATE:	INSPECTION DATE:	PROJECT MANAGER:	JOB NUMBER:
MAY 2019	AUG. 2020	LR	2015-066-AM02
DRAWING SCALE:	LAST MODIFIED DATE:	REVISED BY:	DRAWN BY:
1"=600'	DEC. 2020	JLM	TM
FILENAME:		LAYOUT NAME/NUMBER:	PAGE NUMBER:
Chicago Executive.dwg		PCI	X

IDOT Office of Intermodal Project Implementation – Aeronautics
Airport Pavement Management System
Chicago Executive Airport, Wheeling
2020 PCI Summary Information

Airport Name	Branch ID	Section ID	Surface Type[1]	Inspection Date	2020 PCI	Percent of Distress Due to:			Type of Distresses[4]	Total No. of Samples	No. Samples Inspected	Percent Samples Inspected[5]
						Climate/ Durability[2]	Load[3]	Other				
Chicago Executive Airport	12	1	AAC	8/20/2020	100	0	0	0	No distress	16	5	31%
	12	2	AAC	8/19/2020	100	0	0	0	No distress	26	6	23%
	12	3	PCC	8/20/2020	98	0	0	100	Corner Spalling, Joint Spalling	5	4	80%
	12	4	AAC	8/20/2020	82	100	0	0	L&T Cracking, Raveling, Weathering	3	3	100%
	16	1	AAC	8/18/2020	83	100	0	0	L&T Cracking, Weathering	15	5	33%
	16	2	AAC	8/18/2020	80	100	0	0	L&T Cracking, Raveling, Weathering	12	5	42%
	16	3	AAC	8/18/2020	81	100	0	0	L&T Cracking, Patching, Raveling, Weathering	57	7	12%
	16	4	AAC	8/20/2020	79	100	0	0	L&T Cracking, Patching, Raveling, Weathering	39	7	18%
	16	5	AAC	8/20/2020	81	100	0	0	L&T Cracking, Weathering	21	6	29%
	16	7	AC	8/18/2020	80	100	0	0	L&T Cracking, Raveling, Weathering	9	4	44%
	6	1	AAC	8/20/2020	53	100	0	0	L&T Cracking, Raveling, Weathering	2	2	100%
	6	2	AAC	8/20/2020	42	84	16	0	Alligator Cracking, Block Cracking, L&T Cracking, Raveling, Weathering	10	5	50%
	6	4	AAC	8/19/2020	51	87	13	0	Alligator Cracking, L&T Cracking, Raveling, Weathering	16	5	31%
	6	5	AAC	8/20/2020	86	100	0	0	L&T Cracking, Weathering	3	3	100%
	A	1	AAC	8/19/2020	55	90	10	0	Alligator Cracking, L&T Cracking, Raveling, Weathering	2	2	100%
	A	2	AAC	8/19/2020	67	42	58	0	Alligator Cracking, L&T Cracking, Weathering	3	3	100%
	B2	1	AC	8/19/2020	84	100	0	0	L&T Cracking, Weathering	3	3	100%
	B2	2	AC	8/19/2020	85	100	0	0	L&T Cracking, Weathering	3	3	100%
	B	1	AAC	8/19/2020	69	100	0	0	L&T Cracking, Weathering	4	3	75%
	B	2	AAC	8/19/2020	49	37	63	0	Alligator Cracking, L&T Cracking, Weathering	1	1	100%
	B	3	AC	8/19/2020	26	47	53	0	Alligator Cracking, L&T Cracking, Weathering	1	1	100%
	B	4	AAC	8/19/2020	73	100	0	0	L&T Cracking, Raveling, Weathering	1	1	100%
	C	1	PCC	8/19/2020	95	68	0	32	Corner Spalling, Faulting, Joint Seal Damage	19	7	37%
	C	2	AC	8/19/2020	24	61	39	0	Alligator Cracking, Block Cracking, Raveling, Weathering	1	1	100%
	C	3	AC	8/19/2020	26	64	29	7	Alligator Cracking, Block Cracking, Depression, Raveling, Weathering	1	1	100%
	D2	1	AAC	8/21/2020	41	68	32	0	Alligator Cracking, Block Cracking, L&T Cracking, Weathering	2	2	100%
	D2	1A	AAC	8/21/2020	42	82	18	0	Alligator Cracking, L&T Cracking, Raveling, Weathering	2	2	100%

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						Climate/ Durability[2]	Load[3]	Other				
Chicago Executive Airport	D	1	AAC	8/21/2020	51	76	24	0	Alligator Cracking, L&T Cracking, Weathering	5	4	80%
	D	2	AAC	8/21/2020	66	100	0	0	L&T Cracking, Weathering	6	4	67%
	D	4	AAC	8/19/2020	53	100	0	0	Block Cracking, L&T Cracking, Raveling, Weathering	4	3	75%
	D	7	AC	8/21/2020	70	100	0	0	L&T Cracking, Weathering	1	1	100%
	D	8	AAC	8/20/2020	86	100	0	0	L&T Cracking, Weathering	2	2	100%
	E	1	AAC	8/19/2020	68	100	0	0	L&T Cracking, Raveling, Weathering[6]	1	1	100%
	E	2	AAC	8/19/2020	76	100	0	0	L&T Cracking, Weathering[6]	6	4	67%
	E	3	AAC	8/20/2020	81	58	42	0	L&T Cracking, Rutting, Weathering	2	2	100%
	E	4	PCC	8/20/2020	96	50	0	50	Joint Spalling, Joint Seal Damage	2	2	100%
	E	5	PCC	8/19/2020	97	53	21	26	Corner Break, Faulting, Joint Seal Damage	19	7	37%
	F	2	AAC	8/19/2020	26	70	30	0	Alligator Cracking, Block Cracking, L&T Cracking, Patching, Raveling, Weathering	6	4	67%
	K1	1	PCC	8/19/2020	86	69	0	31	Corner Spalling, Faulting, Joint Seal Damage, Pumping	12	6	50%
	K1	2	AAC	8/18/2020	91	100	0	0	L&T Cracking, Weathering	1	1	100%
	K2	1	AAC	8/20/2020	92	100	0	0	L&T Cracking, Weathering	2	2	100%
	K3	1	PCC	8/20/2020	87	45	0	55	Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage	7	4	57%
	K3	2	AAC	8/20/2020	47	40	46	14	Alligator Cracking, Depression, L&T Cracking, Raveling, Weathering[6]	2	2	100%
	K3	3	AAC	8/20/2020	89	100	0	0	L&T Cracking, Weathering	1	1	100%
	K4	1	PCC	8/20/2020	98	100	0	0	Joint Seal Damage	3	3	100%
	K5	1	AAC	8/20/2020	86	100	0	0	L&T Cracking, Weathering	1	1	100%
	K	1	PCC	8/19/2020	92	53	0	47	Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Large Patch, Scaling	56	8	14%
	K	2	PCC	8/19/2020	96	45	0	55	Faulting, Joint Seal Damage	6	4	67%
	L1	1	PCC	8/18/2020	100	0	0	0	No distress	2	2	100%
	L1	2	AC	8/18/2020	87	100	0	0	L&T Cracking, Raveling, Weathering	2	2	100%
	L2	1	PCC	8/18/2020	85	80	0	20	Corner Spalling, Joint Spalling, Joint Seal Damage	4	3	75%
	L2	2	AAC	8/20/2020	89	100	0	0	L&T Cracking, Weathering	1	1	100%
	L3	1	PCC	8/18/2020	96	51	0	49	Corner Spalling, Joint Spalling, Joint Seal Damage	2	2	100%
	L3	2	AAC	8/18/2020	87	100	0	0	L&T Cracking, Weathering	1	1	100%

IDOT Office of Intermodal Project Implementation – Aeronautics
Airport Pavement Management System
Chicago Executive Airport, Wheeling
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Airport Name	Branch ID	Section ID	Surface Type[1]	Inspection Date	2020 PCI	Percent of Distress Due to:			Type of Distresses[4]	Total No. of Samples	No. Samples Inspected	Percent Samples Inspected[5]
						Climate/ Durability[2]	Load[3]	Other				
Chicago Executive Airport	L3	3	PCC	8/20/2020	91	20	0	80	ASR, Faulting, Joint Seal Damage	3	3	100%
	L	1	PCC	8/18/2020	96	44	56	0	Joint Seal Damage, LTD Cracking	10	5	50%
	L	2	PCC	8/18/2020	95	36	0	64	Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage	10	5	50%
	L	3	PCC	8/18/2020	90	18	36	46	Corner Break, Corner Spalling, Joint Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Shrinkage Cracking, Small Patch	21	7	33%
	L	4	AAC	8/18/2020	78	100	0	0	L&T Cracking, Weathering	1	1	100%
	L	5	PCC	8/18/2020	58	13	0	87	ASR, Joint Spalling, Joint Seal Damage	4	3	75%
	L	6	PCC	8/20/2020	97	62	0	38	Corner Spalling, Joint Spalling, Joint Seal Damage	9	5	56%
	L	7	PCC	8/20/2020	96	50	0	50	Faulting, Joint Spalling, Joint Seal Damage	12	6	50%
	L	8	AAC	8/20/2020	88	100	0	0	L&T Cracking, Weathering	1	1	100%
	L	9	AAC	8/20/2020	89	100	0	0	L&T Cracking, Weathering	1	1	100%
	L	10	AC	8/20/2020	66	100	0	0	L&T Cracking, Raveling, Weathering	1	1	100%
	P	1	AC	8/21/2020	44	62	38	0	Alligator Cracking, L&T Cracking, Patching, Weathering	3	3	100%
	P	2	AC	8/21/2020	67	81	19	0	Alligator Cracking, L&T Cracking, Raveling, Weathering	2	2	100%
	R	10	AC	8/19/2020	34	79	21	0	Alligator Cracking, Block Cracking, L&T Cracking, Patching, Weathering	36	7	19%
	R	11	PCC	8/19/2020	93	76	0	24	Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Small Patch	16	6	38%
	R	27	PCC	8/20/2020	98	100	0	0	Joint Seal Damage	14	6	43%
	R	28	PCC	8/20/2020	100	0	0	0	No distress	6	4	67%
	R	70	PCC	8/19/2020	98	81	0	19	Joint Seal Damage, Small Patch	10	5	50%
	R	73	AAC	8/19/2020	75	100	0	0	L&T Cracking, Weathering	4	3	75%
	TH	6	AC	8/20/2020	46	71	29	0	Alligator Cracking, L&T Cracking, Patching, Weathering	6	4	67%
	TH	10	AC	8/21/2020	45	67	33	0	Alligator Cracking, L&T Cracking, Patching, Weathering	2	2	100%
	TH	10-1	AC	8/21/2020	50	72	28	0	Alligator Cracking, Depression, L&T Cracking, Patching, Weathering	4	3	75%
	TH	10-2	AC	8/21/2020	54	88	12	0	Alligator Cracking, L&T Cracking, Patching, Weathering	3	3	100%

IDOT Office of Intermodal Project Implementation – Aeronautics
Airport Pavement Management System
Chicago Executive Airport, Wheeling
2020 PCI Summary Information

Airport Name	Branch ID	Section ID	Surface Type[1]	Inspection Date	2020 PCI	Percent of Distress Due to:			Type of Distresses[4]	Total No. of Samples	No. Samples Inspected	Percent Samples Inspected[5]
						Climate/ Durability[2]	Load[3]	Other				
Chicago Executive Airport	TH	10-3	AC	8/21/2020	49	70	30	0	Alligator Cracking, L&T Cracking, Patching, Weathering	2	2	100%
	TH	10-4	AC	8/19/2020	52	70	30	0	Alligator Cracking, L&T Cracking, Patching, Raveling, Weathering	19	5	26%
	T	1	AC	8/20/2020	49	78	22	0	Alligator Cracking, L&T Cracking, Patching, Raveling, Weathering	9	4	44%
	Y	1	AC	8/20/2020	67	100	0	0	L&T Cracking, Patching, Raveling, Weathering	1	1	100%
	Y	2	AC	8/21/2020	63	100	0	0	L&T Cracking, Patching, Weathering	2	2	100%
	Y	3	PCC	8/20/2020	98	100	0	0	Joint Seal Damage	2	2	100%
	Z	1	AAC	8/21/2020	28	69	31	0	Alligator Cracking, L&T Cracking, Patching, Raveling, Weathering	1	1	100%

NOTES:

[1] Surface Type: AC = asphalt cement concrete; AAC = asphalt overlay on AC; PCC = portland cement concrete; APC = asphalt overlay on PCC.

[2] Distresses due to climate or durability include those distresses attributed to either the aging of the pavement and the effects of the environment (such as weathering, raveling, or block cracking on asphalt pavements) or to a materials-related problem (such as durability cracking on a PCC pavement).

[3] Distresses due to load include those distresses attributed to a structural deficiency in the pavement, such as alligator cracking, rutting, or shattered PCC slabs.

[4] L&T Cracking = Longitudinal and Transverse Cracking; LTD Cracking = Longitudinal, Transverse, and Diagonal Cracking; ASR = Alkali-Silica Reaction.

[5] Percent Samples Inspected is calculated by dividing the No. Samples Inspected by the Total No. of Samples.

[6] Bleeding was observed in this section, but was not recorded at IDOT's request.

Illinois Department of Transportation

Vendor Invoice

Please email completed form to:
Dot.AeroContracts@illinois.gov

1. Payment Type and Required Documentation

- ☐ Progress (Pay Vendor)
  - ☐ Invoice

OR

- ☐ Reimbursement (Reimburse Vendor)
  - ☐ Canceled Check
  - ☐ Invoice
  - ☐ FAA Checklist

OR

- ☐ Cost Incurred (Pay Sponsor for Consultant Invoice)
- ☐ Cost Incurred (Credit Sponsor)

2. Project Phase

- ☐ Preliminary A & SD
- ☐ Design ☐ Construction
- ☐ Planning/Special Services
- ☐ Land Acquisition
- ☐ Local Let
- ☐ Other

Other Details

3. Invoice Payment Status

- ☐ Partial
- ☐ Final
- ☐ Release Retainage (Aero Use Only)

3. Invoice Number | Date

4. Vendor Name

5. Address | City | State | Zip Code

6. Airport | 7. IL Project No. | 8. Project Description (from APMS)

9. NTP Date | 10. Agency Agreement Date | 11. Service Dates (from Invoice): From | To | 12. Total Invoice Amount (enter sum of Invoice amount

Vendor Signature & Date | Printed Vendor Name | Printed Vendor Title

By signing this report (or payment request), I certify to the best of my knowledge and belief that the report (or payment request) is true, complete, and accurate, and the expenditures, disbursements and cash receipts are for the purposes and objectives set forth in the terms and conditions of the Federal and State award. I am aware that any false, fictitious, or fraudulent information, or the omission of any material fact, may subject me to criminal, civil, or administrative penalties, for fraud, false statements, false claims or otherwise, (U.S. Code Title 18, Section 1001, and Title 31, Sections 3729-3730 and 3801-3812).

(For IDA Engineering Use Only)

APMS Line Item Number(s) | APMS Line Item Total | Total Approved Payment | ☐ APMS Project Status Report Must be Attached

Comments

Engineering Review Signature & Date | Engineering Approval Signature & Date | Engineering Approval Printed Name

(For IDA Contracts Use Only): AE=50, BRESP-5010, Subr=0000, E Object=4472

Approved Payment Amount _____ 10% Held _____ Amount Payable _____

Federal Share % | Federal Approved | State Share % | State Approved | Local Share % | Local Approved | Credit Approved

Comments

Total F/L Share of Payment | Total State Share of Payment | Federal Grant No. | Obligation No. | FL Appropriation | State Appropriation

☐ Grant Reconciliation Spreadsheet

Contract Section Review Signature & Date | Contract Section Approval Signature & Date | Contract Section Approval Printed Name

AER 1961 Form Instructions

(To be completed by Vendor)

1. This form is to be submitted to the Division of Aeronautics, Bureau of Engineering when seeking payment for (Identify one and provide required documentation.):
   a. Progress on a job (pay Consultant directly for projects with consultant identified as the vendor on the APMS Report from Agency Agreement).
   b. Reimbursement for payments previously made.
   c. Cost-incurred services for which payment is sought (pay Sponsor for invoice on services and costs incurred and supported by Consultant invoice). Sponsor in turn pays Consultant.
   d. Cost-incurred (credit to Sponsor).

2. Vendor must explain reason for request (Identify one.):
   a. Professional services (Preliminary A & SD, Design, Construction, Planning/Special Services).
   b. Land reimbursement (Land Acquisition).
   c. Local procurement, including professional services and construction (Local-let).
   d. Other...please specify.

3. Vendor must identify Invoice Payment Status and Number (if applicable).
   a. Invoice is for a Partial Payment
   b. Invoice is for a Final Payment
   c. Invoice request to Release Retainage - FOR AERO USE ONLY

4. Vendor must identify payee as denoted in Project Status Report (attached to Agency Agreement).

5. Vendor must include address where funds are to be sent or transferred/deposited.

6. Vendor must identify Airport from APMS Project Status Report.

7. Vendor must identify IL Project Number from APMS Project Status Report.

8. Vendor must provide Project Description from APMS Project Status Report.

9. Vendor must identify the Notice to Proceed Date from the IDOT Program Letter or Sponsor NTP Letter (w/copy to Aeronautics).

10. Vendor must identify Agency Agreement Dates.

11. Vendor must identify applicable Service Dates from corresponding invoice.

12. Vendor must identify Total Invoice Amount as amount request for payment.

13. Vendor must sign and date form as certification that the invoice is accurate and correct and that services/work/equipment has been completed/procured and is acceptable. Scan all files individually, single sided only.

14. Email to: Dot.AeroContracts@illinois.gov.

    (File Naming Forma)t: 4-digit State Project No., Payment Type, Services, Amount
    Example: 4422-Reimbursement-Engineering-Design-$82,2170.00

Primera

Meeting Minutes

Date:	10/5/2023	PE Project No.:	20220845
Time:	10:00 a.m.	Client Project No.:	PWK-5060
Subject:	Status Update on Master Drainage Study	Meeting No.:	2
Location:	Chicago Executive Airport (CEA) Conference Room		
Attendees		**Company**	
Jeffrey J. Miller		Executive Director, CEA	
George Sakas		Director of Economic Development & Strategic Planning, CEA	
Andrew Wolanik		Director of Operations & Maintenance, CEA	
Jason Griffith		Director of Finance	
Diane Bouckaert		Manhard	
Kevin Shea (via Teams)		Manhard	
Graig Neville		CERA Solutions	
Kris Salvatera Steve Moulton		Primera Primera	
Notes			

The intent of the meeting was to present an update on the Master Drainage Study and discuss preliminary findings regarding stormwater compensatory storage and detention solutions. See attached agenda.

The Primera Team presented a summary of work accomplished to date, which included:

- Data gathering
- Record drawing research
- Field surveys
- Acquisition and updates to 2017 Cook County 1-foot interval contour mapping that will serve as the base layout for the Master Drainage Study exhibits and analysis
- Development of detailed storm sewer system mapping of the airport
- Delineation of major and sub-drainage basins on the airport
- Modeling results of 2, 5 and 100-years storm events

A discussion of the existing storm sewer modeling indicates that the existing storm sewer systems and detention areas are performing within standards and expectations and no major issues were identified. Some silt has built up at the lowers ends of some of the sewers and requires periodic cleaning. No blockages were identified. The detailed storm sewer layout included proposed detention/compensatory storage areas throughout and adjacent to the airport.

Historic airport flooding was discussed. Diane Bouckaert presented the existing FEMA floodplain maps which shows the bulk of the eastern and northern portions of the airport within the 100-year floodplain. The relocated Wheeling Drainage Ditch which runs through the northern portions of the airport is a designated floodway. She also presented an updated version of the flood areas based on the newly developed 1-contours. More areas of the airport are within the 100-year flood elevations than what is shown on the FEMA mapping. The FEMA mapping is the official flood determination document for the basis of the Master Drainage Study and subsequent permitting (by others). Recent flooding on the airport was discussed together with some aerial photos of the events. During 2018, large portions of the airport were flooded for about a month due to two large back-to-back storm and flooding events. Water has come

within 1-foot of Runway 16/34, but has not recently topped the runway. The east end of Runway 6/24 regularly floods. That runway is programmed to be decommissioned and the area redeveloped for new hangars.

Kris Salvatera presented the preliminary master grading plan for the ALP improvements. The finished floor of new hangars are 2.5 feet above the 100-year floodplain, per local regulations. Site grading conforms to FAA standards. Detention areas have 4:1 side-slopes. Based on the recently approved ALP, Primera cut cross-sections for the entire airport and calculated compensatory storage volumes based on existing versus future grading plans. This analysis indicated that, based on the proposed ALP improvements, the excavated areas could provide 78.84 acre-feet of compensatory storage which exceeds the 75.09 acre-feet of required compensatory storage.

Kevin Shea and Diane Bouckaert presented preliminary stormwater detention calculations based on the current ALP improvements. Potential detention areas were identified and storage volumes calculated. Based on this analysis, the excavated areas can provide 157.67 acre-feet of detention versus the 124.36 acre-feet required. Manhard cautioned the attendees that this detention surplus will be reduced once we study MWRD Volume Control requirements.

The CEA informed the Primera Team that some of the areas depicted on the current ALP for stormwater detention/compensatory storage should not be considered in the short-term for purposes of a benchmark stormwater management plan effective immediately. These areas include:

- The infield in the vicinity of the previous 94th Aero Squadron Restaurant (Area 3A). A portion of that area may be developed for a new airport administration and maintenance facility.
- The detention area created by the acquisition and removal of the restaurant and hotel along the west side of Milwaukee Avenue – south of Runway 6/24 (Area 3C). The cost of the acquisition is not currently feasible.
- The detention area south of the new Hawthorne Hangar at the east end of Runway 6/24 (Area 3B). A new proposed hangar development will utilize a portion of that area. Te entrance road for that development may be off a current curb cut to Milwaukee Avenue per IDOT Highways. That new entrance road cuts through the middle of the proposed detention areas reducing available size and volume.
- Remove the proposed Southeast Quadrant Hangar and apron development (southwest of Runway 12/30 at the east end). Although included in the ALP, the airport has no plans to acquire the businesses south of the Palatine Frontage Road in the foreseeable future due to cost and regional traffic implications regulated by the Illinois Department of Transportation. This should help reduce detention/compensatory storage requirements and provide an area for volumetric excavation (expand areas 4E and 4D).
- Reduce Area 2C in the north basin as the airport does not currently own all that property.
- The airport does not plan on acquiring the northeast quadrant Industrial Park any time in the foreseeable future. As such, areas 2B, 2D and 2A and the remainder of Area 2C will not be available for detention/compensatory storage until those properties area acquired.

The Primera Team was directed to look at other alternatives to provide the required compensatory and detention storage including underground storage piping/vaults and alternative excavation areas. Primera indicated that they would be required to re-do some of the completed work and would look at how this impacts the completion of the Master Drainage Study in terms of costs and schedule.

In terms of MWRD Volume Control, it was recommended that a meeting be set up with MWRD to discuss reducing or eliminating some of those requirements due to the realistic nature of airport runoff (de-icing fluids and minor petroleum products). The Primera Team also suggested that the CEA consider airport re-development as a Planned Unit Development (P.U.D.) as this could potentially help reduce some regulatory requirements and help speed up future permitting (by others).

See attached preliminary exhibits. Meeting adjourned at 12:30 p.m.

Notes Prepared by: Steve Moulton, PE

These notes represent the author's understanding of the meeting. If you have any corrections and/or clarifications, please submit same to author within five working days of receipt.

Distribution:

Jeff Miller	George Sakas	Andrew Wolanik	Jason Griffith	Steve Moulton
Diane Bouckaert	Graig Neville	Kris Salvatera	Kevin Shea	Nafiz Rahman
Gary Joe	Joe Avram			

Primera

Meeting Minutes

Date:	11/20/2023	PE Project No.:	20220845
Time:	3:00 pm – 4:00 pm	Client Project No.:	PWK-5060
Subject:	Chicago Executive Airport - Master Drainage Study Update	Meeting No.:	3
Location:	Teams Call		

Attendees	Company
George Sakas	Chicago Executive Airport
Dayana Reyes	Metropolitan Water Reclamation District (MWRD)
Daniel Feltes	Metropolitan Water Reclamation District (MWRD)
Dan Peterson	City of Prospect Heights – Dir. Building & Development
Mark Roscoe	City of Prospect Heights – Dir. Public Works
Dan Strahan	Gewalt Hamilton
Kyle Goetzelmann	Village of Wheeling
Diane Bouckeart	Manhard Consulting
Kevin Shea	Manhard Consulting
Kris Salvatera	Primera Engineers
Steve Moulton	Primera Engineers
Graig Neville	CERA Solutions

Notes

This meeting was held to discuss the status of the Chicago Executive Airport Master Drainage Study Update. This update is being prepared by Primera Engineers, Ltd., Manhard Consulting, and CERA Solutions.

George Sakas presented an overview of the airport, the proposed devlopment plans per the recently approved Airport Layout Plan (ALP), and the importance of the Chicago Executive Airport (PWK) as a Reliever Airport to O'Hare and Midway. The airport handles approximately 275 flights per day, has an annual economic impact of approximately $500M, and employes approximately 700 people. The airport is situated on approximately 470 acres of property and is bounded by Milwaukee Avenue, Palatine/Willow Road, Wolf Road and Hintz Road. The airport recenty completed a new Airport Master Plan that will guide the airport development for the next 20-30 years. The airport is self-sustaining in that they are not local taxpayer funded.

Dan Feltes provided a brief overview of the airport from a drainage standpoint in that they have a current MWRD legacy permit and that they currently provide for compensatory and detention storage on-site – mainly in the runway / taxiway turf infields.

Graig Neville provided an overview of the new ALP and acknowledged that backwater from the adjacent Des Plaines River greatly influences the existing site and proposed airport development. The goal of the master drainage study is to find a way to move forward with the proposed airport development while meeting regulatory and ordinance requirements.

The traditional approach of providing on-site excavated ponds for compensatory and detention storage utilizes valuable / limited properties that would otherwise be used for business/corporate aircraft storage hangars. Each hangar development utilizes approximately 2 acres of property. Due to the airport's location (immediately adjacent to the Des Plaines River),the question of whetherany consideration can be given to reducing detention storage

requirements as that runoff readily dissipates downsteam immediately after a storm without any negative downstream impacts was posed to MWRD. This reduction in detention storage requirements would allow the limited airport properties to be utilized for compensatory storage.

MWRD indicated that all developers face similar challenges with the new Watershed Management Ordinance (WMO). There are provisions in the Ordinance for a variance, but to date, none have been successful. It is a time-consuming and costly effort.

MWRD's requirements are to provide compensatory storage at a 1.1:1 ratio. The local communities have increased this requirement to 1.5:1 volumetric storage. The Primera Team asked about reducing that requirement to match MWRD standards. Again, this would help reduce the utilization of valuable airport property for storage and make more area available for much needed airport (hangar) development. Both communities indicated that the Airport/Village/City Intergovernmental Agreement (IGA) requirements need to be met (1.5:1). MWRD did indicate that there could be a co-mingling of compensatory storage and detention in a cell, but that no in-stream detention is allowed.

Primera asked about the use and prevalance of underground compensatory storage and/or stormwater detention in both communities. It has been allowed on some projects, but it is not a common occurrence. The communities also did not know of any local fee-in-lieu of detention programs. There may be some opportunities in some regional basins. MWRD stated that the WMO does not allow any "fee-in-lieu-of" capabilities.

MWRD did indicate that a Regional Flood Control Project (like Wheeling's 2014 Heritage Park) could be looked into and proposed. A local and regional benefit needs to be shown, but there could possibly be an exemption for certain compensatory storage requirements. Wheeling directed the Team to engage with the Village's Stormwater Management Group (Joe Kruetzer) and to review Appendix G-2 of the IGA.

The MWRD indicated that the various ordinances and new standards only apply to new areas of development. Existing airport facilities that remain undisturbed do not need to meet the new standards.

MWRD indicated that compensatory storage areas are considered non qualiied development in that even though we are disturbing the area, we don't have to count those areas as development for detention.

Dan Feltes indicated that meeting the WMO requirements is very challenging:

- The groundwater is very shallow. 2.0' of separation is required from groundwater elevation to the bottom of the volume control facility.
- The airport may be eligible for some WMO relief due to the presence of re-fueling, potential jet fuel spills, deicing fluid usage and maintenance yards. The MWRD doesn't want the potential for spills getting into the groundwater. WMO volume control requirements may not be required immediately adjacent to and downstream of these activities.
- Variable release rates are not allowed.
- The WMO regulates the current FEMA Floodplain.

As part of the 2021 Conditional Letter of Map Revision (CLOMR) for Buffalo Creek, no significant changes to the Des Plaines River Base Flood Elevation were noted.

MWRD and the communities indicated that the potential use of Bulletin 75 data will result in a significant change to the Des Plaines River and Wheeling Drainage Ditch Base Flood Elevations, but as of now, there is no plan to update these studies.

The MWRD welcomed additional questions if any. They don't do pre-development reviews, only pre-application meetings upon request.

Notes Prepared by: Steve Moulton, PE

These notes represent the author's understanding of the meeting. If you have any corrections and/or clarifications, please submit same to author within five working days of receipt.

Distribution:

George Sakas	Dayana Reyes	Dan Peterson	Dan Strahan	Diane Bouckeart
Kevin Shea	Dan Feltes	Graig Neville	Kris Salvatera	Kyle Goetzelmann
Mark Roscoe	Steve Moulton	Joe Avram		

Chicago Executive Airport

Master Drainage Study Meeting & Presentation

Friday March 1, 2024

Introductions

Progress meeting with Airport to discuss current exhibits.

Summary of Previous Work Efforts / Previous Findings

- FEMA Floodplain Exhibit
- Modified 100-Year Floodplain / Inundation Map
- Proposed ALP Improvements

New Work Efforts

- Updated Master Grading Plans
- Updated Excavation Areas / Volumes (2 exhibits)
- Summary of Regulatory Volume Requirements – New Volume Compliance
- Updated 100-Year Floodplain / Inundation Map
- Proposed New Storm Sewer Layout & Existing Storm Sewer Modifications
- Emergency Overflow Routing & System Modifications

Next Steps / Project Completion

- Proposed Sewer Sizing
- Unit Pricing Development, Review & Approval
- Drainage Improvement Cost Estimate
- Complete Project Report
- Final Board Presentation
- Submit Drainage Master Plan Study / Findings to IDA, FAA, MWRD, and Communities
- Project Closeout

Primera

Agenda

Date:	11/1/2024	PE Project No.:	20220845
Time:	2:30 pm – 4:00 pm	Client Project No.:	PWK-5060
Subject:	Chicago Executive Airport - Master Drainage Study Update		
Location:	Chicago Executive Airport		

Attendees	Company
George Sakas	Chicago Executive Airport
Jeffrey Miller	Chicago Executive Airport
Kris Salvatera	Primera Engineers
Ronald Hudson	Primera Engineers
Diane Bouckeart	Manhard Consulting
Graig Neville	CERA Solutions

I. Introductions

II. Master Drainage Report – Overview – Primera provided an overall walkthrough of the entire draft Master Drainage Study. The Airport asked what agencies would need to review the master drainage study to make this final. The Primera team commented that the Master Drainage Study is all based off local regulations, so FAA nor the State would need to approve the MDS. The MDS would be reviewed by MWRD in the next development as they do not provide comments without a permit application. The Sky Harbour development was likely the next project MWRD would review and provide feedback for the MDS.

III. Existing Conditions Analysis
   a. Data Collection / Modeling
   b. Existing Conditions Analysis
      i. Storm sewer network
      ii. Detention
      iii. Compensatory Storage
      iv. Volume Control

IV. Proposed Infrastructure Recommendations
   a. Storm Sewer Networks
   b. Above-Ground Stormwater Storage
   c. Below-Ground Stormwater Storage – Airport commented they would like to see some costs for underground storage and approximately how much storage could be provided. Primera noted us to add a cost comparison analysis.

V. Cost Estimates – Airport commented on the high cost of the future proposed drainage improvements. The team noted the future drainage costs is reflective of a full build-out scenario of the ALP and proposed airport site plan. Realistically, actual costs of proposed drainage would be based on a development project as future development is driving the need for drainage improvements.

VI. Master Drainage Report Comments – Airport noted they direction of proposed drainage improvements was acceptable.

VII. Next Steps – Airport will provide additional comments based of their Engineer. Next steps would be to finalize the report and send to IDA for final closeout.