GEOTECHNICAL REPORT
JANE BYRNE INTERCHANGE RECONSTRUCTION
CONTRACT 60X79 DRAINAGE WORK
IDOT D-91-227-13/ PTB 163-001
COOK COUNTY, ILLINOIS

For

AECOM

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11. Abstract

Construction Contract 60X79 includes various drainage works. This report provides geotechnical recommendations for the proposed drainage work.

Beneath the pavement or topsoil, the general subsurface soils consists of up to 13 feet of fill materials, up to 5 feet medium stiff to very stiff clay crust, up to 42 feet of very soft to medium stiff silty clay, 30 feet of stiff to hard clay loam, and up to 23 feet of very dense silt to silty loam and sand extending to the boring termination depths or weathered bedrock. Sound bedrock was encountered at elevations of about 479 to 490 feet. Groundwater was encountered within the fill layer at elevations of 570 to 589 feet. Under pressure water-bearing layers are expected at deeper levels.

The installation of most of the drainage pipes, junction chambers and manholes, and jacking/receiving pits will be expected to encounter soft clay at the bearing elevations. We recommend that a provision be made for the removal of some base clay and replacing with the stabilization material. Before placing stabilization material, a geotextile fabric for ground stabilization should be provided.

The open cuts for drainage pipes greater than 5 feet bgs, junction chambers, manhole, and jacking/receiving pits will require a Temporary Soil Retention System (TSRS) for excavations and installations. Geotechnical parameters for design of TSRS are presented in this report. We strongly recommend that the TSRS designers review the included boring logs and apply their judgement on assessing soil parameters for the type of analyses required for the design of their specific TSRS.

We estimate factor of safety (FOS) of 1.7 to 2.3 against basal heave instability at the jacking/receiving pits and junction chambers for excavation depths. The minimum required FOS is 1.5. Our estimated FOS satisfies the minimum required. However, the contractor should check the base stability based on the construction sequence and actual excavation depth required.

Recommendations for the backfill material and its placement for trenches, junction chamber, and jacking/receiving pits established in existing/ future open spaces and pavements are provided.

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1.0 INTRODUCTION

This report presents the results of Wang Engineering, Inc. (Wang) subsurface investigation, laboratory testing, geotechnical engineering evaluations and recommendations for Contract 60X79 drainage work in connection with the Jane Byrne Interchange Reconstruction project in the City of Chicago, Cook County, Illinois. A *Site Location Map* is presented as Exhibit 1.

The purpose of Wang's investigation was to characterize the site soil and groundwater conditions, perform geotechnical engineering analyses, and provide recommendations for the drainage work within Contract 60X79.

1.1 Project Description

The Circle Interchange is over 50 years old and has significant congestion and safety problems. The project is aiming to improve safety and mobility as well as upgrade the mainline and interchange facilities. The project will also improve other modes of transportation such as transit, pedestrians and bicyclists within the same corridor.

The Circle Interchange Reconstruction project is along Interstate 90/94 (I-90/94) from south of Roosevelt Road to north of Lake Street, along Interstate 290 (I-290) from Loomis Street to the Circle Interchange; and along Congress Parkway from the Circle Interchange to Canal Street/Old Post Office. The routes typically have three lanes of traffic in each direction with mostly one lane ramp at interchanges. Locally, the north leg is known as the Kennedy Expressway, the south leg as the Dan Ryan Expressway and the west leg as the Eisenhower Expressway. Within the project area, there are several cross street bridges over I-90/94 and I-290 considered for reconstruction. Along I-90/94, from south to north, the cross street overpasses include Taylor Street, Van Buren Street, Jackson

Boulevard, and Adams Street. Along I-290, from west to east, the cross street overpasses include Morgan Street, Peoria Street, and Halsted Street.

The proposed improvements include additional through lanes in each direction on I-90/94. The horizontal alignment and vertical profiles throughout the interchange will be improved. A new two-lane flyover, Ramp NW (Flyover) will be constructed for I-90/94 northbound to I-290 westbound traffic. Cross street bridges, Morgan Street, Harrison Street, Halsted Street, Peoria Street, Taylor Street, Adams Street, Jackson Boulevard, and Van Buren Street will be reconstructed. Various existing ramps will be reconstructed and up to fifty one new retaining walls will be constructed.

1.2 Proposed Drainage Work

Based on the proposed drainage and utilities plans and profiles (Appendix C) provided by TranSystems Corporation (TranSystems), Wang understands several drainage/sewer pipes, junction chambers, a 10-foot diameter manhole will be installed in Contract 60X79. The sewer pipes will be installed using open cut and pipe jacking methods. In addition, there are five jacking/receiving pit locations identified along pipe jacking alignments.

2.0 SITE CONDITIONS AND GEOLOGICAL SETTING

The site is located within the City of Chicago at the I-90/94 and I-290 Circle Interchange. On the USGS *Chicago Loop 7.5 Minute Series* map, the drainage work is located in the NW¼ of Section 16, Tier 39 N, Range 14 E of the Third Principal Meridian.

The following review of published geologic data, with emphasis on factors that might influence the design and construction of the proposed engineering works, is meant to place the project area within a geological framework and confirm the dependability and consistency of the present subsurface investigation results. For the study of the regional geologic framework, Wang considered northeastern Illinois in general and Cook County in particular. Exhibit 2 illustrates the *Site and Regional Geology*.

2.1 Physiography

The site is situated within the Chicago Lake Plain Physiographic Subsection. The area is characterized by a flat surface that slopes gently toward the lake, largely made of groundmoraine till covered by thin and discontinuous lacustrine silt and clay.

2.2 Surficial Cover

The project area was shaped during the Wisconsinan-age glaciation, and more than 75-foot thick drift covers the bedrock (Leetaru et al. 2004). The glacial cover is made up of clay and silt of the Equality Formation of the Mason Group and diamictons of the Wadsworth and Lemont Formations of the Wedron Group (Hansel and Johnson 1996). The Equality Formation is made up of bedded silt and clay, locally laminated, with lenses and/or thin beds of sand and gravel. The Wadsworth Formation consists of relatively homogenous, massive, gray till with clay to silty clay matrix, with dolostone and shale clasts and occasional lenses of sorted and stratified silt. The Wadsworth Formation is underlain by the pebbly silty clay loam to silty loam diamicton of the Yorkville Member of the Lemont Formation, known informally as the Chicago "hardpan."

From a geotechnical viewpoint, the Equality Formation is characterized by low strength, medium to high plasticity, and medium to high moisture content, whereas the Wadsworth Formation is characterized by low plasticity, medium to low moisture content, medium to very stiff consistency, poor permeability, and low compressibility. The Yorkville Member (hardpan) is characterized by low plasticity, high blow counts, and low moisture content (Bauer et al. 1991; Peck and Reed 1954).

2.3 Bedrock

In the project area, the glacigenic deposits unconformably rest over approximately 350-foot thick Silurian-age dolostone (Leetaru et al 2004). The top of bedrock may be encountered at 475 to 500 feet elevation or 75 to 100 feet below ground surface (bgs) or more. The Silurian dolostone dips gently eastward at a pace of 15 feet per mile. Only inactive faults are known in the area, and the seismic risk is minimal (Leetaru et al. 2004; Willman 1971). There are no records of mining activity in the area, but deep tunnel excavations are known to exist.

Our subsurface investigation results fit into the local geologic context. The borings drilled in the project area revealed the native sediments consist of clay to silty clay diamicton of the Wadsworth Formation resting on top of more competent silty clay loam diamicton (hardpan) of the Lemont Formation, which in turn is underlain by bedrock. Sound dolostone bedrock was encountered at depths of 88 to 106 feet bgs, corresponding to 479 to 490 feet elevations, within the range predicted based on published geological data.

3.0 METHODS OF INVESTIGATION

The following sections outline the subsurface and laboratory investigations. All elevations in this report are based on NAVD 1988.

3.1 Subsurface Investigation

No specific borings were performed along the proposed drainage alignments or at the proposed jacking/receiving pits; therefore, nearby borings completed for other structures were used on our analyses and recommendations. The borings considered for our analyses and recommendations are listed in Table 1. The as-drilled boring locations were surveyed by Dynasty Group, Inc. and station and offset information for each boring were provided by AECOM. Boring location data are presented in the *Boring Logs* (Appendix A). The as-drilled boring locations are shown in the *Boring Location Plan* (Exhibit 3).

Table 1: Summary of Drainage Work and Reference Borings

Area	Approximate Location	Reference Borings
Area 1 (Exhibit 3-1)	Ramp EN near Station 1604+50	18-RWB-03 and 1715-B-05
	Ramps EN and WS near Station 1606+50	1715-B-05, 18-RWB-02, 18-RWB-03, and 19-RWB-01
Area 2 (Exhibit 3-2)	Ramp EN near Stations 1608+00, 1610+00, and 1611+00	1712-B-01, 1712-B-02, and 20-RWB-01
	Ramp EN near Station 1611+00	20-RWB-01, 21-RWB-01 to 21-RWB-03
	Near Wall 22A (SN016-1813)	22-RWB-01
Area 3 (Exhibit 3-3)	Ramp EN near Station 1616+00	1703-B-04, 1703-PZ-01, 1706-B-02, 1712-B-03, 22-RWB-03, 22-RWB-04, and VST-06
Area 4 (Exhibit 3-4)	NB C-D Road	1712-B-03, 23-RWB-01 to 23-RWB-04, and 23-RWB-05HA
	NB C-D Road	23-RWB-01, 23-RWB-03, and 23-RWB-05
Area 5 (Exhibit 3-5)	I-90/I-94 and Ramps WS and WN	1706-B-02, 1715-B-03,1712-B-03, and COMM-HUT-CCTV
Area 6 (Exhibit 3-6)	Ramp WS	1715-B-03, 2055-B-03, and 2055-B-04

We also considered the Piezometer 1703-PZ-01 located in this Contract area. The piezometer was installed in accordance with ASTM D5092, "*Standard Practice for Design and Installation of Groundwater Monitoring Wells in Aquifers*."

A truck-mounted drilling rig equipped with hollow stem augers, was used to advance and maintain an open borehole to 10 feet depths after that mud rotary was used to boring termination depths. Soil sampling was performed according to AASHTO T 206, "*Penetration Test and Split Barrel Sampling of Soils.*" The soil was sampled at 2.5-foot intervals to 30 feet bgs and at 5-foot intervals to boring termination depths. Soil samples collected from each sampling interval were placed in sealed jars and transported to Wang Geotechnical Laboratory in Lombard, Illinois for further examination and laboratory testing.

Field boring logs, prepared and maintained by a Wang engineer or geologist, include lithological descriptions, visual-manual soil/rock classifications, results of Rimac and pocket penetrometer unconfined compressive strength tests, results of Standard Penetration Tests (SPT) recorded as blows per 6 inches of penetration. The SPT-N value, shown on the soil profile, is the sum of the second and third blows per 6 inches. The soils were described and classified according to Illinois Division of Highways (IDH) Textural Classification system. The field logs were finalized by an experienced engineering geologist after verifying the field visual classifications and laboratory test results.

Groundwater observations were made during drilling to depths of 10 feet before using mud rotary method. Due to safety considerations, boreholes were backfilled with grout immediately upon completion. Groundwater levels in the piezometer were recorded autonomously at defined intervals by digital pressure loggers suspended within the water column. Barometric affects were compensated by a second in-air pressure logger installed in the riser pipe. Data retrieved from loggers periodically were downloaded to a computer for analysis.

3.2 Vane Shear Tests

Wang previously performed vane shear tests in Boring VST-06 within the Area 3 as delineated in this report. Vane shear tests were performed using calibrated RocTest vane shear equipment in undisturbed and remolded conditions. The sensitivity shown on the boring logs is the ratio of shear strength in undisturbed and remolded conditions. In general, the vane shear strength values for soft clays were significantly higher than the corresponding values from unconfined compressive strength tests using the RIMAC apparatus. Vane shear test results were used in our analyses.

3.3 Laboratory Testing

The soil samples were tested in the laboratory for moisture content (AASHTO T265). Atterberg limits (AASHTO T 89/T 90) and particle size analyses (AASHTO T 88) tests were performed on selected soil samples representing the main soil layers encountered during the investigation. Field visual descriptions of the soil samples were verified in the laboratory. Laboratory test results are shown in the *Boring Logs* (Appendix A), in the *Soil Profile* (Exhibit 4), and in the *Laboratory Test Results* (Appendix B).

4.0 RESULTS OF FIELD AND LABORATORY INVESTIGATIONS

Detailed descriptions of the soil conditions encountered during our subsurface investigation are presented in the attached *Boring Logs* (Appendix A) and in the *Soil Profile* (Exhibit 4). Please note that strata contact lines represent approximate boundaries between soil types. The actual transition between soil types in the field may be gradual in horizontal and vertical directions.

4.1 Soil and Groundwater Conditions

In descending order, the general lithologic succession encountered beneath the pavement structure or topsoil includes: 1) man-made ground (fill); 2) medium stiff to very stiff silty clay to silty loam; 3) very soft to medium stiff clay to silty clay; 4) stiff to hard silty clay to silty clay loam; 5) medium dense to very dense silt to silty loam and sand to gravelly sand; and 6) weathered to sound dolostone. A specific soil profile along each area is presented in the following sections.

4.1.1 Area 1

Area 1 borings encountered 4 to 12 inches of topsoil or 3 to 4 inches of asphalt over 8 to 9 inches of concrete pavement at the surface. Beneath the pavement or topsoil, the borings revealed 2 to 5 feet of fill materials. The fill consists of medium dense to dense silty loam to sandy gravel with N values of 16 to 46 blows per foot and stiff to hard silty clay loam with unconfined compressive strength (Q_u) values of 1.0 to 4.5 tsf. Below the granular fill, some borings encountered 2 to 5 feet of soft to stiff silty clay loam. At elevations of 568 to 583 (5 to 8 feet bgs), the borings advanced through 26 to 41 feet of very soft to medium stiff clay to silty clay. Below the very soft to medium stiff clay to silty clay, at elevations 539 to 546 feet (32 to 47 feet bgs), the borings encountered up to 30 feet of stiff to hard clay to silty clay loam followed by medium dense to very dense silt to sand. The borings encountered weathered bedrock at elevations of 491 to 495 feet (87 to 94 feet bgs) and cored dolostone bedrock at elevation of 490 feet (88 feet bgs).

Perched groundwater was encountered in granular fill layer at an elevation of 570.4 feet or 3.5 feet bgs. Granular soils below clay are expected to be saturated and groundwater in granular soils above the bedrock is expected to be under hydrostatic pressure.

4.1.2 Area 2

Below the pavement or topsoil, Area 2 borings encountered 2 to 13 feet of fill materials. The fill consists of primarily medium stiff to hard silty clay to silty clay loam and clay loam with Q_u values of 1.0 to greater than 4.5 tsf and medium dense to dense gravelly sand to gravelly loam fill layers with N values of 15 to greater than 50 blows per foot. Below the fill, some borings encountered 2 to 5 feet of stiff silty clay. At elevations of 574 to 582 (3 to 15 feet bgs), the borings advanced through 33 to 42 feet of very soft to medium stiff clay to silty clay. Beneath the very soft to medium stiff clay to silty clay, at elevations of 539 to 542 feet (37 to 57 feet bgs), the borings encountered up to 25 feet of stiff to hard silty clay to silty clay loam followed by medium dense to very dense silt to gravelly sand. The borings revealed weathered bedrock at elevations of 490 to 492 feet (87 to 104 feet bgs) and sound bedrock at elevations of 484 to 490 feet (91 to 105 feet bgs).

The groundwater observed while drilling in granular soils at an elevation of 521 feet or 56 to 57 feet bgs and measured at drilling completion at an elevation of 496 feet or 82 feet bgs. Granular soils below clay are expected to be saturated and groundwater in granular soils above the bedrock is expected to be under hydrostatic pressure.

4.1.3 Area 3

Below the pavement or topsoil, the borings in Area 3 encountered 3 to 6 feet of fill materials. The fill consists of very stiff to hard silty clay loam and clay loam with Q_u values of 2.3 to 4.5 tsf. Below the fill, some borings encountered 2 to 5 feet of stiff to very stiff silty clay to silty clay loam with Q_u values of 1.6 to 2.9 tsf. At elevations of 578 to 580 (5 to 8 feet bgs), the borings advanced through 35 to 41 feet of very soft to medium stiff clay to silty clay. In-situ undisturbed vane shear strengths obtained in Boring VST-06 between elevations 575 and 542 feet in the very soft to medium stiff clay to silty clay layers ranged from 580 to 980 psf. Beneath the very soft to medium stiff clay to silty clay, the borings encountered up to 5 to 15 feet of stiff to hard silty clay to silty clay loam followed by medium dense to very dense silt to gravelly sand. The boring revealed the weathered bedrock at elevation of 488 feet (100 feet bgs) and cored dolostone bedrock at an elevation of 479 feet (106 feet).

The groundwater was observed while drilling in granular soils between elevations of 505 and 526 feet or 62 to 78 feet bgs and measured at completion of drilling at an elevation of 494 feet or 91 feet bgs. A Piezometer 1703-PZ-01 was installed on November 12, 2014. The screen was placed with the top and bottom elevations at 507.2 and 487.2 feet (75 to 95 feet bgs), respectively within soil on top of bedrock. A summary of the monitoring data between November 2014 and March 2017 is shown in Figure 1.

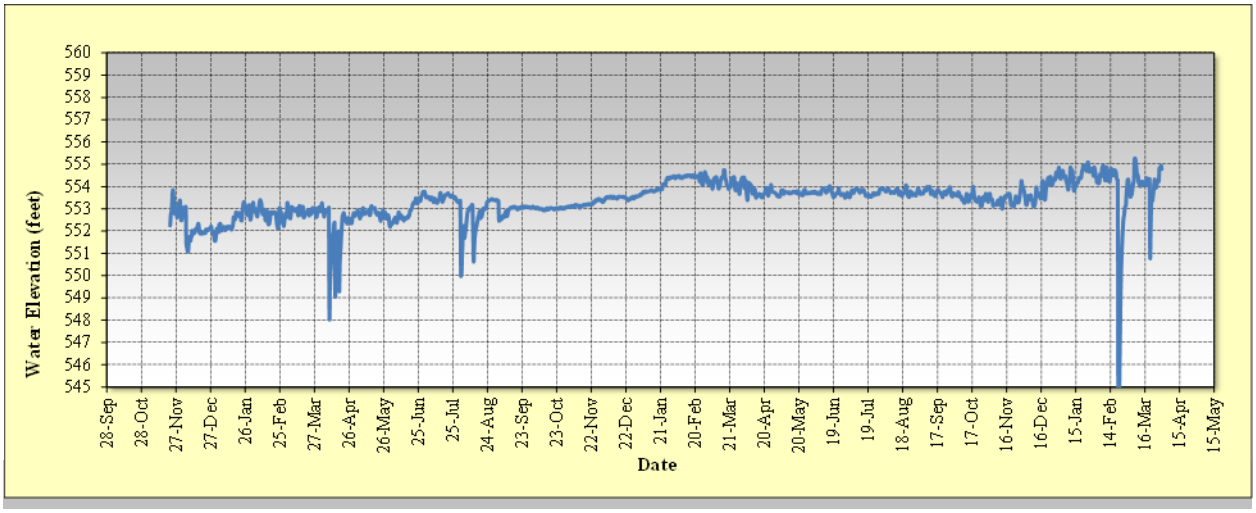

Figure 1: Summary of Groundwater Monitoring Data

The data shows groundwater that is under hydrostatic pressure head. The average hydrostatic elevation within the aquifer is about 553 feet.

4.1.4 Area 4

Beneath the pavement, the borings encountered primarily 3 to 6 feet of fill materials. The fill includes stiff to very stiff silty clay loam with Q_u values of 1.5 to 2.0 tsf and loose to medium dense gravelly sandy loam to sand with N values of 6 to 10 blows per foot. Below the fill, some borings encountered 2 to 5 feet of medium stiff to very stiff silty clay loam with Q_u values of 0.7 to 2.5 tsf. At elevations of 567 to 584 feet (3 to 8 feet bgs), the borings advanced through 24 to 39 feet of very soft to medium stiff clay to silty clay. Beneath the clay to silty clay, at elevations of 538 to 546 feet (32 to 48 feet bgs), the borings revealed 10 to 22 feet of stiff to hard silty clay to silty clay loam followed by medium dense to very dense silty loam to sand. Boring 1712-B-03 revealed the possible weathered bedrock at an elevation of 485 feet (100 feet bgs).

Perched groundwater was encountered while drilling in granular fill layer at an elevation of 586.8 feet or 3.5 feet bgs. Granular soils below clay are expected to be saturated and groundwater in granular soils above the bedrock is expected to be under hydrostatic pressure.

4.1.5 Area 5

Below the pavement, the borings encountered 5 to 13 feet of fill materials. The fill includes stiff silty clay loam with Q_u values of 1.5 to 1.6 tsf and very loose to medium dense gravelly sand N values of to 10 blows per foot. At elevations of 576 to 581 feet (3 to 13 feet bgs), the borings advanced through 24 to 39 feet of very soft to medium stiff clay to silty clay. Beneath the clay to silty clay, at elevations of 537 to 553 feet (32 to 57 feet) the borings revealed 10 to 15 feet of stiff to hard silty clay to silty clay loam followed by medium dense to very dense silt to sandy gravel. The borings revealed weathered bedrock at elevations of 485 to 488 feet (91 to 100 feet) and cored dolostone bedrock at an elevation of 482 feet (92 feet bgs).

Perched groundwater was encountered while drilling in granular fill layer at elevations of 575.0 to 588.9 feet or 3 to 5.5 feet bgs. In Boring 175-B-02, a 24-hour groundwater level was measured at an elevation of 507 feet or 72 feet bgs. Granular soils below clay are expected to be saturated and groundwater in granular soils above the bedrock is expected to be under hydrostatic pressure.

4.1.6 Area 6

Beneath the pavement, the borings encountered 8 feet of fill materials. The fill materials include very stiff to hard silty clay loam with Q_u values of 2.5 to 4.5 tsf. At elevations of 570 to 572 feet (3 to 8 feet bgs), the borings advanced through 22 to 34 feet of very soft to medium stiff clay to silty clay. Beneath the clay to silty clay, at elevations of 538 to 542 feet (35 to 37 feet), the borings revealed 10 to 20 feet of stiff to hard silty clay to silty clay loam followed by silt to sandy gravel. The borings encountered weathered bedrock at elevations of 483 to 485 feet (92 to 94 feet bgs) and cored dolostone bedrock at an elevation of 479 feet (97 feet bgs).

Perched groundwater was encountered while drilling in granular fill layer at an elevation of 572 feet or 2.5 feet bgs. The groundwater was measured at completion of drilling at an elevation of 512 feet or 62 feet bgs. Granular soils below clay are expected to be saturated and groundwater in granular soils above the bedrock is expected to be under hydrostatic pressure.

5.0 ANALYSIS AND RECOMMENDATIONS

Our analyses were based on the drainage work plans and profiles shown in Appendix C provided by TranSystems. We understand the sewer pipes will be installed by open cuts or jacking methods. Proposed locations, installation methods, approximate excavation depths, and Exhibit of the soil profile associated with each pipe alignment are summarized in Table 2. Since there were no specific borings performed for the Contract 60X79 drainage work, our analyses and recommendations are based on generalized soil conditions and groundwater conditions described in Section 4.1 and as shown in *Subsurface Data Profile* (Exhibit 4).

Table 2: Summary of Drainage Areas and Proposed Installation Methods

Area	Approximate Location	Subsurface Data Profile Exhibit	Proposed Installation Methods / Approximate Excavation Depth (feet)
Area 1 (Exhibit 3-1)	Ramp EN near Station 1604+50	Exhibit 4-1	Open Cut/ 5 to 7 feet
	Ramps EN and WS near Station 1606+50	Exhibits 4-2 and 4-3	Open Cut /5 to 17 feet
Area 2 (Exhibit 3-2)	Ramp EN near Station 1610+00	Exhibits 4-4 and 4-5	Open Cut / 3 to 5 feet
	Ramp EN near Station 1611+00	Exhibits 4-6 to 4-9	Open Cut /2 to 23 feet
	Near Wall 22A (SN016-1813)	Exhibit 4-9	Open Cut / 22 feet
Area 3 (Exhibit 3-3)	Ramp EN near Station 1616+00	Exhibits 4-10 to 4-22	Open Cut /10 to 25 feet
Area 4 (Exhibit 3-4)	NB C-D Road	Exhibit 4-23	Open Cut / 25 feet Jacking/ 25 feet
	NB C-D Road	Exhibit 4-24	Open Cut/15 to 20 feet
Area 5 (Exhibit 3-5)	I-90/I-94 and Ramps WS and WN	Exhibit 4-25	Jacking/25 feet Open Cut /15 to 25 feet
Area 6 (Exhibit 3-6)	Ramp WS	Exhibit 4-26	Jacking / 25 feet

5.1 Open Cut Installations

Based on the information provided by TranSystems, almost all the drainage pipes will be installed by utilizing open cut excavations. The pipes proposed to be installed by open cut method are shown on the Boring Location Plan (Exhibit 3) in green highlighter. The open cut excavations will be extended to depths ranging from 3 to 25 feet bgs. We recommend temporary open cut excavations up to a depth of 5 feet below ground surface should have a slope of 1:2 (V:H) for cohesive soils and 1:2.5 (V:H) for granular soils. Based on the encountered soil conditions, adjacent utilities, structures, and roadways, the temporary open cut excavations greater than 5 feet bgs will require a Temporary Soil Retention System (TSRS) consisting of sheeting, shoring or bracing systems as discussed in Section 5.5.

Depending on the depth of excavation, very soft to soft clay to silty clay may be encountered at the base of the excavations and the base may not remain stable during construction. The determination as to whether undercuts are needed in these areas should be made by a qualified soils inspector at the time of construction. We recommend that a provisional quantity be included for removal and replacement in the contract to account for soft clay subgrade treatment. The provisional quantity should be assuming 12 inches of thickness for the full width of the trench. The undercut should be limited to 2 feet. The actual removal and replacement thickness should be determined in the field based on the contractor's method and equipment to be used. The replacement material should be in accordance with the IDOT District One Special Provision *Aggregate Subgrade Improvement (D-1)*. Before placing stabilization material, a geotextile fabric for ground stabilization meeting the requirements of IDOT SSRBC Sections 210 and 1080.02 should be provided. The contractor should review the subsurface soil conditions and judge their efforts on means, methods, and progress of work.

5.2 Jacking Pipes

Jacking pipe locations are shown on the Boring Location Plan (Exhibit 3) in purple highlights. Pipe should be jacked in accordance with IDOT Standard Specifications Section 552, Storm sewer jacked in place. Frictional resistance to the jacking force can be estimated from the product of shear strength of soil and the surface area of pipe in contact with the soil. The subsurface soil conditions within the jacking depths, as revealed by borings, generally consist of very soft to soft clay to silty clay. The contractor should review the subsurface soil conditions and judge their effects on means, methods, and progress of work. The jacking operation, once started, should be continued until completed. If continuous jacking cannot be maintained, the contractor should take the necessary precautions for not

allowing the jacked pipes to freeze or set in the ground. There may be intermediate pits necessary to allow for pipe jacking through changing alignments. The contractor should be required to submit details of his means and methods for constructing pipelines by jacking.

5.3 Junction Chambers/Manhole

One junction chamber and a manhole will be installed at the following locations:

- Junction Chamber #1, Station 6332+00 (NB C-D Road);
- Junction Chamber #2, Station 1610+50 (Ramp EN);and
- Ten feet diameter manhole, Station 1106+50 (Ramp WN)

As proposed junction chambers and ten feet diameter manhole locations are shown on the Boring Location Plan (Exhibit 3). Junction Chamber #1 will be located adjacent to the Wall 22 B (SN 049-1839) and was addressed in the Structure Geotechnical Report (SGR) dated April 25, 2018. The construction of Junction Chamber #1 will require about 40 feet of temporary excavation to reach the chamber bearing elevation of about 553 feet. The proposed excavation will generally consists of an open cut with 1:2 (V:H) back-slope to about elevation 573 feet, then a braced TSRS to reach the chamber bearing elevation. The TSRS is discussed in Section 5.5.

Ten feet diameter manhole will be installed via open cut and will require excavation up to 20 feet bgs. A TSRS will be required and is discussed in Section 5.5.

Very soft to soft clay to silty clay will be encountered at the base of junction chambers and manhole. We recommend that a provision be made for the removal of some base clay and replacing with the stabilization material. Before placing stabilization material, a geotextile fabric for ground stabilization meeting the requirements of IDOT SSRBC Sections 210 and 1080.02 should be provided. For contract estimate purposes, we recommend considering a 2-foot thick layer of stabilization material. The removal and replacement thickness should be determined in the field based on the contractor's method and equipment to be used.

5.4 Jacking/Receiving Pits

Based on the information drawings provided by TranSystems, the proposed five jacking/receiving pits are located at:

- Pit #1, Station 20+25;
- Pit #2, Station 16+25;
- Pit #3, Station 102+50;
- Pit #4, Station 6333+00; and
- Pit #5, Station 6334+00.

Pit locations are shown on the Boring Location Plan (Exhibit 3). Excavations depths or the proposed depths of excavations for jacking/ receiving pits will be approximately 25 feet below ground surface.

The jacking/receiving pit size should be large enough to provide a safe and adequate working area. Pit size will depend on the contractor's equipment and space constraint. The jacking pit walls should be supported in accordance with OSHA construction requirements to insure a solid, stable base for boring machine and pit sides. Jacking load can be transferred to the soil behind the jacking pit through a thrust block constructed at the back of the pit. The resistance which the soil can provide to the jacking loads may be estimated from the allowable passive pressures. A factor of safety of 2 should be considered. If enough resistance is not available, additional ground improvement measure may be required to provide additional lateral resistance to withstand the jacking loads.

Very soft to soft clay to silty clay will be encountered at the base of the pits. We recommend that a provision be made for the removal of some base clay and replacing with the stabilization material. Before placing stabilization material, a geotextile fabric for ground stabilization meeting the requirements of IDOT SSRBC Sections 210 and 1080.02 should be provided. For contract estimate purposes, we recommend considering a 2-foot thick layer of stabilization material. The removal and replacement thickness should be determined in the field based on the contractor's method and equipment to be used.

Groundwater was observed in the granular fill near the proposed pits. It is recommended that that the design groundwater level be placed at elevations of 569 to 573 feet. Provisions should be made to collect and remove groundwater seepage that may accumulate in the pits. Groundwater was also encountered in the gravel and sand layers at elevations of 494 to 512 feet.

5.5 Temporary Soil Retention Systems

Temporary excavations up to 25 feet deep below the existing grade will be required for the drainage pipe installations and jacking/receiving pits. The TSRS consisting of sheeting, shoring or bracing systems can be used to create vertical excavation walls. A temporary vertical excavation support

system may also be required due to space limitations and where existing buildings, roadways, and other structures and utilities are to be protected. Therefore, it is our opinion that a temporary enclosed braced system will be necessary.

It is recommended that the design groundwater levels for a short-term condition be assumed to be at elevations 569 to 573 feet. In addition, lateral pressure from adjacent foundations and other surcharge loads such as construction equipment should also be considered in the design of the bracing system. The soil parameters shown in Tables 3 through 9 can be used for the design of TSRS system. We recommend that the TSRS designer review the included boring logs and apply their judgement on assessing soil parameters for the type of analyses required for the design of their specific temporary support system. The TSRS designer should consider nearest boring (s) for the excavation support design.

Table 3: TSRS Design Soil Parameters for Area 1
Reference Borings 19-RWB-01 and VST-06

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
Existing Grade to 585	Silty Loam Fill	120	0	33
585 to 577	Stiff Clay to Silty Clay	120	1000	0
577 to 565	Soft to Medium stiff Clay to Silty Clay	110	550	0
565 to 555	Soft to Medium stiff Clay to Silty Clay	110	650	0
555 to 542	Soft to Medium stiff Clay to Silty Clay	115	800	0
542 to 539	Stiff Clay to Silty Clay	120	1400	0
539 to 522	Very Stiff to Hard Silty Clay Loam to Silty Loam	120	4500	0
522 to 515	Dense Sand	63(1)	0	35

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
515 to 511	Hard Silty Clay Loam	63[(1)]	7000	0
511 to 495	Very Dense Silt to Silty Loam	63[(1)]	0	35

[(1)]Submerged unit weight

Table 4: TSRS Design Soil Parameters for Area 2
Reference Borings 1705-B-05, 21-RWB-02, 22-RWB-01, and VST-06

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
Existing Grade to 592	Clay Loam Fill	120	2000	0
592 to 582	Medium stiff to Stiff Silty Clay Fill	120	1000	0
582 to 560	Soft to Medium stiff Clay to Silty Clay	110	550	0
560 to 555	Soft to Medium stiff Clay to Silty Clay	110	650	0
555 to 545	Soft to Medium stiff Clay to Silty Clay	115	800	0
545 to 540	Stiff Clay to Silty Clay	120	1400	0
540 to 515	Very Stiff to Hard Silty Clay Loam to Silty Loam	125	4000	0
515 to 490	Very Dense Silt to Silty Loam	125	0	37

[(1)]Submerged unit weight

Table 5: TSRS Design Soil Parameters for Area 3
Reference Borings 1712-B-03, 22-RWB-05, and VST-06

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
573[(1)] to 571	M Stiff Clay to Silty Clay	115	700	0
571 to 569	Stiff Silty Clay	120	1000	0
569 to 566	Soft Clay to Silty Clay	110	550	0
566 to 556	Medium stiff Clay to Silty Clay	110	680	0
556 to 550	Medium stiff Clay to Silty Clay	115	750	0
550 to 538	Medium Stiff Clay to Silty Clay	115	950	0
538 to 533	Stiff Clay to Silty Clay	120	1500	0
533 to 524	Very Stiff to Hard Silty Clay	125	3000	0
524 to 518	Medium Dense Silty Loam to Sand	120	0	30
518 to 494	Very Dense Silty Loam	63[(2)]	0	36
494 to 485	Very Dense Sand	63[(2)]	0	35
485 to 474.8	Very Dense Weathered Bedrock	73[(2)]	0	37

[(1)] After initial open cut excavation with 1:2 (V:H) side slope for Wall 22B (SN 016-1839); [(2)] Submerged unit weight

Table 6: TSRS Design Soil Parameters for Area 4
Reference Borings 23-RWB-01 and VST-06

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
Existing Grade to 570	Granular Fill	120	0	30
570 to 567	Stiff Silty Clay Loam	120	1100	0
567 to 556	Soft to Medium stiff Clay to Silty Clay	110	600	0
556 to 542	Soft to Medium stiff Clay to Silty Clay	115	750	0
542 to 538	Soft to Medium stiff Clay to Silty Clay	115	900	0
538 to 533	Stiff Silty Clay	120	1600	0
533 to 524	Very Stiff Silty Clay	120	2400	0
524 to 519	Medium Stiff Clay	115	870	0
519 to 514	Dense Sandy Loam	125	0	35
514 to 510	Hard Silt Clay Loam	125	7400	0

Table 7: TSRS Design Soil Parameters for Area 5
Reference Borings 1715-B-03 and VST-06

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
Existing Grade to 571	Granular Fill	120	0	30
571 to 565	Soft to Medium Stiff Clay to Silty Clay	115	900	0
565 to 555	Soft to Medium Stiff Clay to Silty Clay	110	600	0
555 to 543	Soft to Medium Stiff Clay to Silty Clay	115	800	0
543 to 538	Medium Stiff Clay to Silty Clay	120	1200	0
538 to 523	Very Stiff to Hard Silty Clay	120	3000	0
523 to 518	Medium Stiff Clay	115	800	0
518 to 513	Hard Silty Clay Loam	120	9400	0
513[(1)] to 510	Dense Silt	58[(1)]	0	35
510 to 508	Hard Silty Clay Loam	63[(1)]	4500	0
508 to 498	Very Dense Silty Loam	63[(1)]	0	35
498 to 491	Hard Silty Clay Loam	63[(1)]	7300	0
491 to 483	Very Dense Silt to Silty Loam	63[(1)]	0	36

[(1)]Submerged unit weight

Table 8: TSRS Design Soil Parameters for Area 5
Reference Borings 1706-B-02 and VST-06

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
Existing Grade to 570	Granular Fill	120	0	30
570 to 568	Stiff to very Stiff Silty Clay Loam	120	1600	0
568 to 556	Soft to Medium Stiff Clay to Silty Clay	110	600	0
556 to 542	Soft to Medium Stiff Clay to Silty Clay	115	800	0
542 to 538	Stiff Silt Clay	120	1200	0
538 to 524	Very Stiff to Hard Silt Clay	120	2800	0
524 to 517	Medium Dense Silt	120	0	30
517 to 502	Hard Silty Clay Loam to Silty Loam	125	7000	0
502 to 492	Very Dense Gravelly Sandy Loam	130	0	37
492 to 484	Very Dense Silt	125	0	33
484 to 482	Very Dense Gravelly Sand	68[(1)]	0	37

[(1)]Submerged unit weight

Table 9: TSRS Design Soil Parameters for Area 6
Reference Borings 2055-B-03, 38-RWB-02, and VST-06

Approximate Elevation Range (feet)	Soil Type (Layer)	Unit Weight (pcf)	Cohesion C_u (psf)	Friction Angle Ø (degree)
Existing Grade to 573	Silty Clay to Silty Clay Loam Fill	120	2800	0
573 to 565	Soft to Medium stiff Clay to Silty Clay	115	800	0
565 to 555	Soft to Medium stiff Clay to Silty Clay	110	600	0
555 to 542	Soft to Medium stiff Clay to Silty Clay	115	800	0
542 to 539	Stiff Clay to Silty Clay	120	1200	0
539 to 522	Stiff to Very Stiff Silty Clay to Silty Clay Loam	120	2400	0
522 to 517	Medium Dense Silt	120	0	30
517 to 507	Hard Silty Clay Loam	125	7000	0
507 to 492	Very Dense Silt to Silty Loam	125	0	35
492 to 487	Hard Silty Clay Loam	125	8200	0
487 to 485	Very Dense Sandy Gravel	68[(1)]	0	35

[(1)]Submerged unit weight

5.6 Excavation Base Stability at Jacking/Receiving Pits and Junction Chambers

Wang performed preliminary analyses for bottom heave stability of the jacking/receiving pits and junction chambers. The in-situ vane shear testing results were used to better assess the shear strength of the soft clay at the pits. The shear strength values used on the evaluation of base stability are shown in Tables 4 through 9. Wang estimates factor of safety (FOS) of 1.7 to 2.3 against basal heave instability at the jacking/receiving pits and junction chambers for excavation depths ranging from 19

to 25 feet. In general, the minimum required FOS is 1.5. Our estimated FOS satisfies the minimum required. However, the contractor should check the base stability based on the construction sequence and actual excavation depth required.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Filling and Backfilling

All fill and backfill materials shall be as per IDOT *Standard Specification for Road and Bridge Construction* (IDOT 2016), Sections 550 and 551. We recommend using Method 1 of Article 550.07.

Existing /Future Open Space Areas

The backfill material should consist of suitable excavated material or trench backfill. Suitable excavated material or trench backfill should be placed in in uniform lifts not exceeding 12 inches in depth, loose measurement, and compacted to 85 percent of standard lab density. In lieu of suitable excavated material or trench backfill, the Contractor may, at no additional cost to the Department, backfill the entire excavation with controlled low-strength material according to IDOT Standard Specification Section 593 or Light Weight Cellular Concrete Fill (LCCF) Class II as per IDOT District One Special Provision.

Existing/Future Pavement Areas

For the trenches, junction chamber, and jacking/receiving pits established at least two feet above top of soft clay, the backfill material should consist of suitable excavated material or trench backfill. Suitable excavated material or trench backfill should be placed in uniform lifts not exceeding 8 inches in depth, loose measurement, and compacted to 95 percent of standard lab density. In lieu of suitable excavated material or trench backfill, the Contractor may, at no additional cost to the Department, backfill the entire excavation with controlled low-strength material according to IDOT Standard Specification Section 593 or Light Weight Cellular Concrete Fill (LCCF) Class II as per IDOT District One Special Provision. This requirement should also be applicable where the inner edge of the excavation is within 2 feet of the proposed edge of pavement, curb, gutter, curb and gutter and side walk.

For the trenches, junction chamber, manhole, and jacking/receiving pits established in soft clay, suitable excavated material should be used and capped with geotextile fabric for ground stabilization and 2 feet of CA-6 crushed stone below the proposed pavement subgrade. Suitable excavated material

should be placed in uniform lifts not exceeding 8 in in depth, loose measurement, and compacted to 95 percent of standard lab density. In lieu of suitable excavated material, the Contractor may, at no additional cost to the Department, backfill the entire excavation with controlled low-strength material according to IDOT Standard Specification Section 593 or Light Weight Cellular Concrete Fill Class II (LCCF) as per IDOT District One Special Provision. This requirement should also be applicable where the inner edge of the excavation is within 2 feet of the proposed edge of pavement, curb, gutter, curb and gutter and side walk.

6.2 Adjacent Facilities Protection

Given the proximity of building, structures, roads, and utilities, Wang recommends special precautions should be taken during the construction not undermine the existing foundations, pavements, and utilities. In addition, the TSRS discussed in Section 5.5 should have deflection control to prevent movement of adjacent structures, utilities, and roadways. Ground movements nearby existing roadways, utilities, and foundations should be evaluated by the Contractor. Ground movements as well as wall deflections should be monitored during construction. We recommend including Special Provisions for vibration and displacement monitoring in the contract documents.

6.3 Earthwork Operations

The required earthwork can be accomplished with conventional construction equipment. Moisture and traffic will cause deterioration of exposed subgrade soils. Precautions should be taken by the contractor to prevent water erosion of the exposed subgrade. We recommend backfilling trench excavations, both sloped and wall supported, as soon as possible after construction.

Earth moving operations should be scheduled to not coincide with excessive cold or wet weather (early spring, late fall or winter). Any soil allowed to freeze or soften due to the standing water should be removed and replaced with additional compacted aggregate. Wet weather can cause problems with subgrade compaction.

It is recommended that an experienced geotechnical engineer be retained to inspect the exposed subgrade, monitor earthwork operations, and provide material inspection services during the construction phase of this project.

7.0 QUALIFICATIONS

The analysis and recommendations submitted in this report are based upon the data obtained from the borings drilled at the locations shown on the boring logs and in Exhibit 3. This report does not reflect any variations that may occur between the borings or elsewhere on the site, variations whose nature and extent may not become evident until the course of construction. In the event that any changes in the design and/or location of the improvements are planned, we should be timely informed so that our recommendations can be adjusted accordingly.

It has been a pleasure to assist AECOM and the Illinois Department of Transportation on this project. Please call if there are any questions, or if we can be of further service.

Respectfully Submitted,

WANG ENGINEERING, INC.

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Senior Geotechnical Engineer

Corina T. Farez, P.E., P.G.
Vice President

Nesam S. Balakumaran
Project Geotechnical Engineer

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BAUER, R.A., CURRY, B.B., GRAESE, A.M., VAIDEN, R.C., SU, W.J., and HASEK, M.J., 1991, *Geotechnical Properties of Selected Pleistocene, Silurian, and Ordovician Deposits of Northeastern Illinois*: Environmental Geology 139, Illinois State Geological Survey, 69 p.

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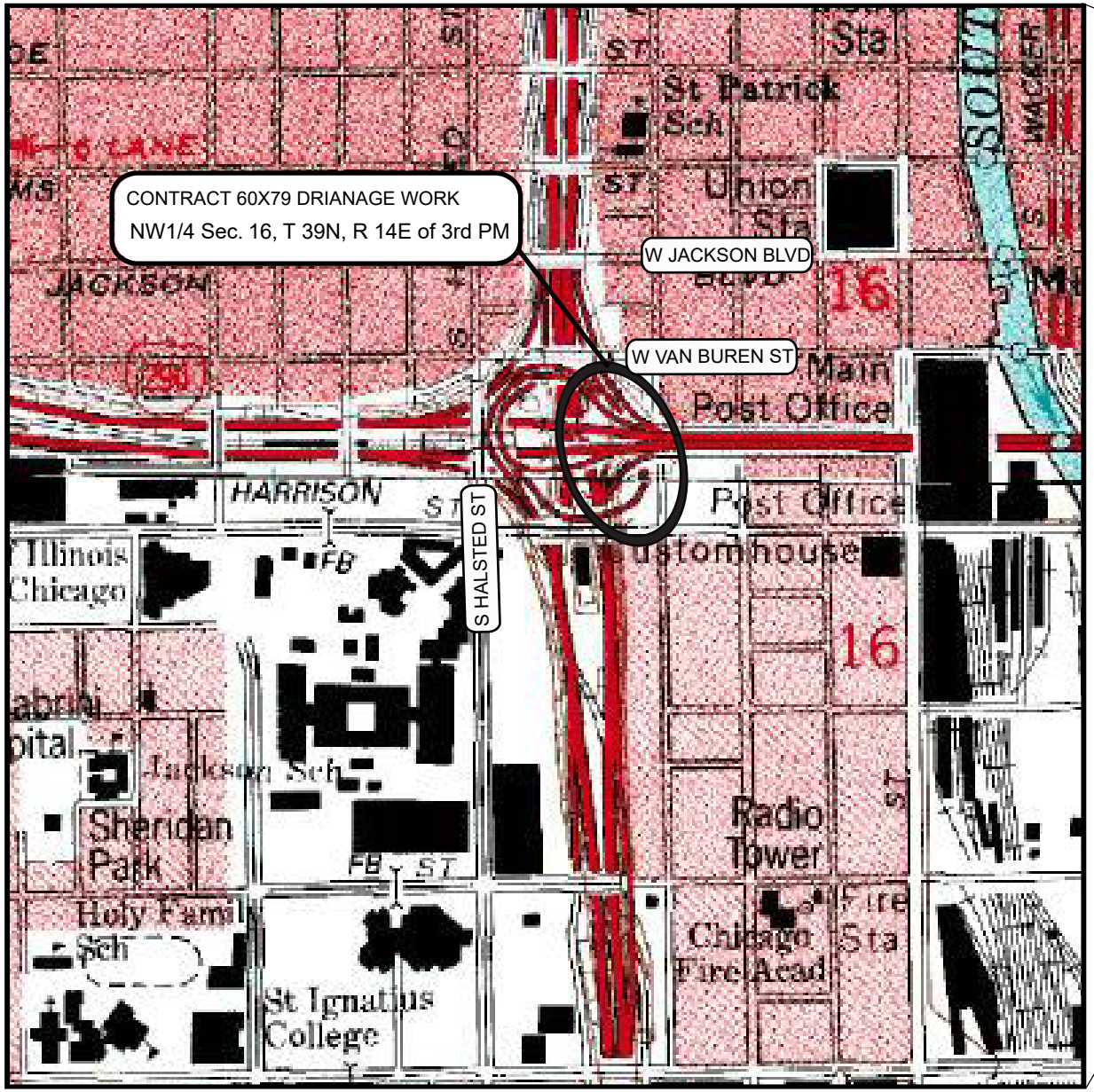
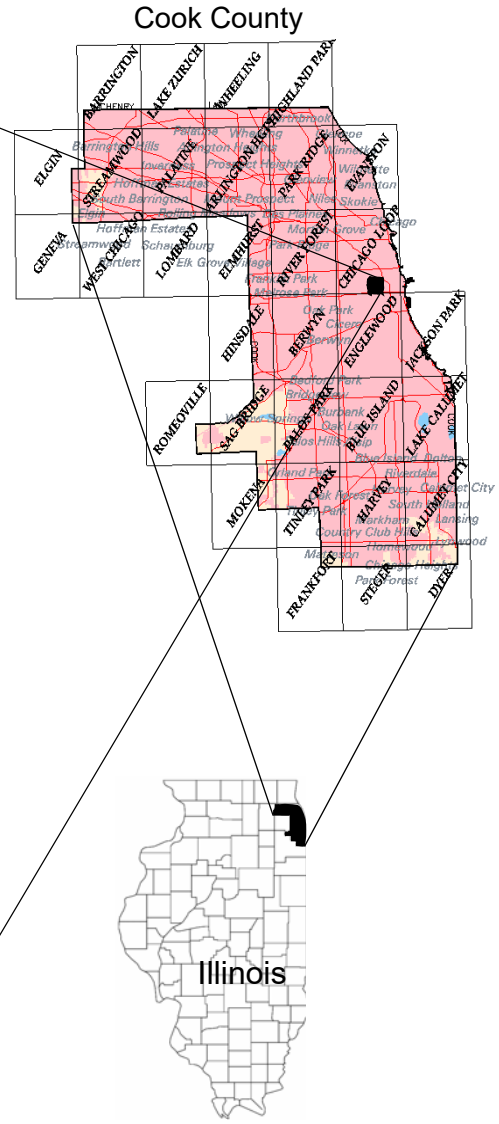
WILLMAN, H.B., 1971, *Summary of the Geology of the Chicago Area*, ISGS Circular C460: Urbana, Illinois State Geological Survey, p. 77.

PECK, R.B., and REED, W.C., 1954, *Engineering Properties of Chicago Subsoils*: University of Illinois Engineering Experiment Station Bulletin No. 423: Urbana, University of Illinois, 62 p.

EXHIBITS





SITE LOCATION MAP: CIRCLE INTERCHANGE RECONSTRUCTION, CONTRACT 60X79 DRAINAGE WORK, CHICAGO, IL

SCALE: GRAPHICAL	EXHIBIT 1	DRAWN BY: NSB CHECKED BY: MAK

Wang Engineering
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Lombard, IL 60148
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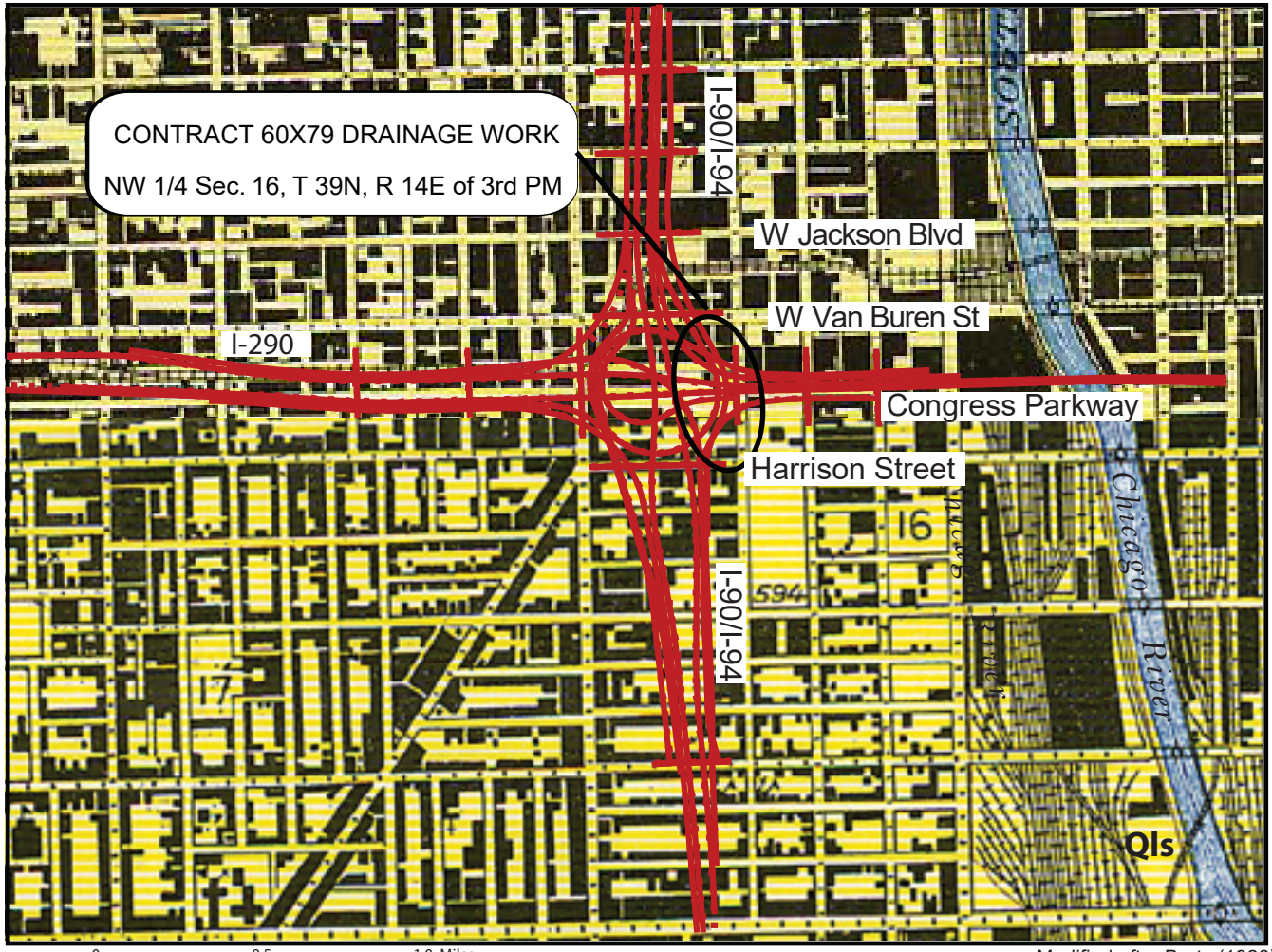
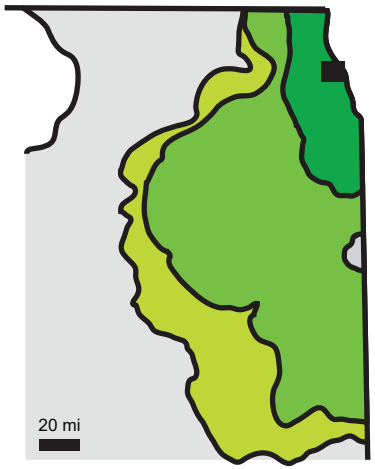


Modified after Bretz (1926)

REGIONAL GEOLOGY



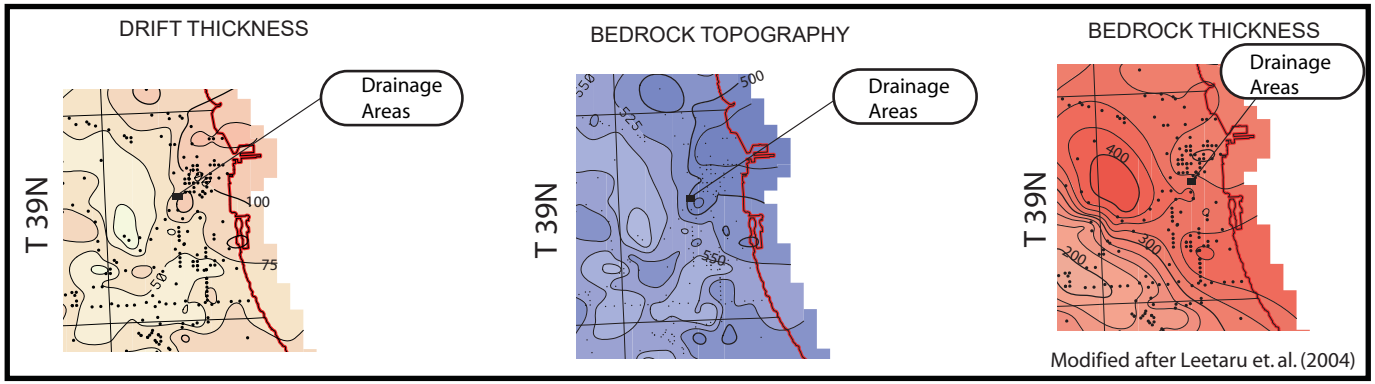
Wedron Group

- Wadsworth Formation
- Lemont Formation
- Tiskilwa Formation

Modified after Hansel and Johnson (1996)

Legend

Qls — Glacial lake bottom
(Covered by lacustrine deposits)



Modified after Leetaru et. al. (2004)

SITE AND REGIONAL GEOLOGY: CIRCLE INTERCHANGE RECONSTRUCTION, CONTRACT 60X79 DRAINAGE WORK, CHICAGO, IL

SCALE: GRAPHICAL	EXHIBIT 2	DRAWN BY: NSB CHECKED BY: MAK

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LEGEND

- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING INLET
- BRIDGE SCUPPER (SEE STRUCTURAL PLANS)
- MANHOLE TO BE INSTALLED BY OTHERS
- CATCH BASIN TO BE INSTALLED BY OTHERS
- INLET TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS (60X93)
- PROPOSED STORM SEWER
- BORING LOCATIONS
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED INLET

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

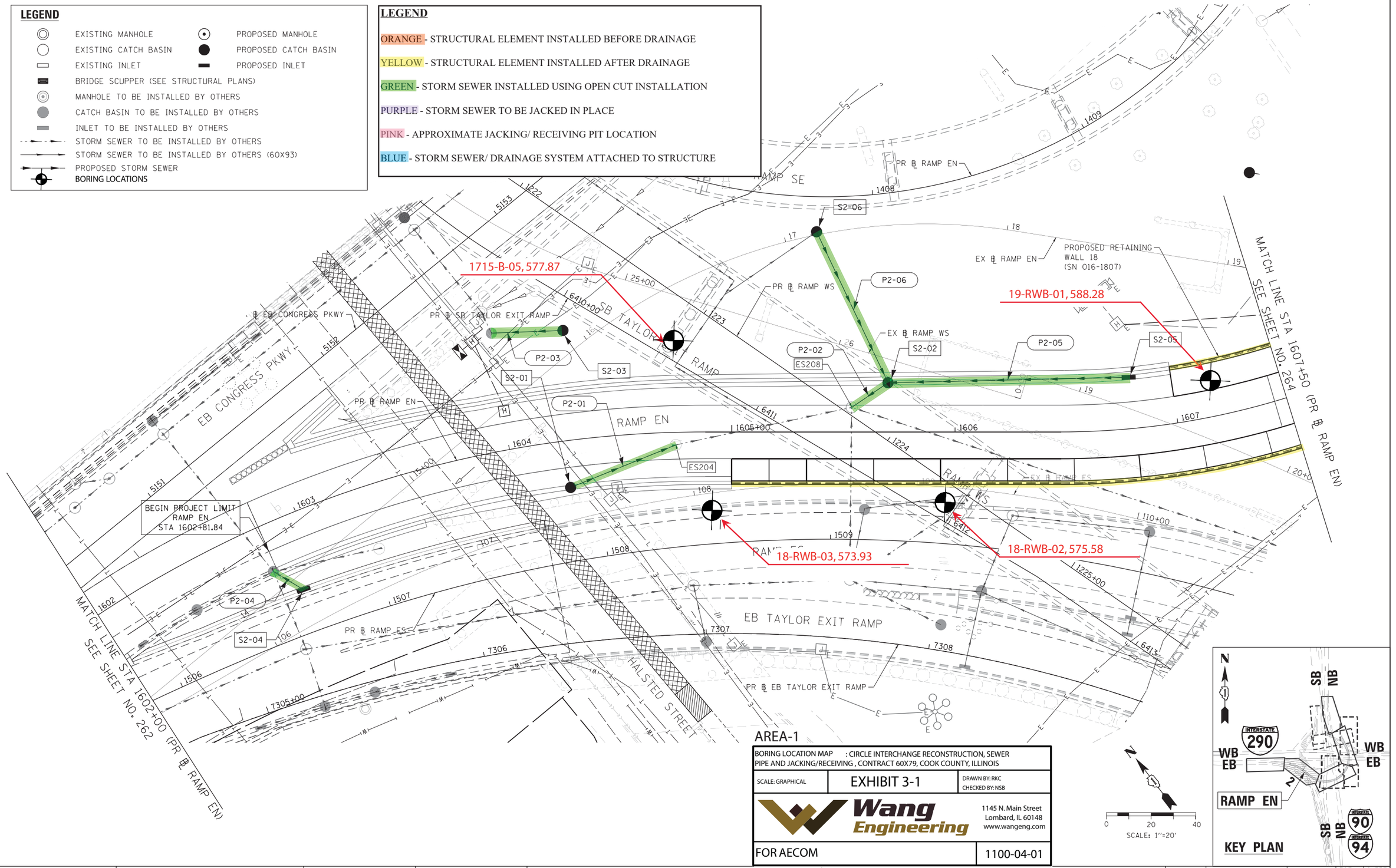
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE



AREA-1

BORING LOCATION MAP : CIRCLE INTERCHANGE RECONSTRUCTION, SEWER PIPE AND JACKING/RECEIVING , CONTRACT 60X79, COOK COUNTY, ILLINOIS		
SCALE: GRAPHICAL	EXHIBIT 3-1	DRAWN BY: RKC CHECKED BY: NSB

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0 20 40
SCALE: 1"=20'

KEY PLAN

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Tran Systems

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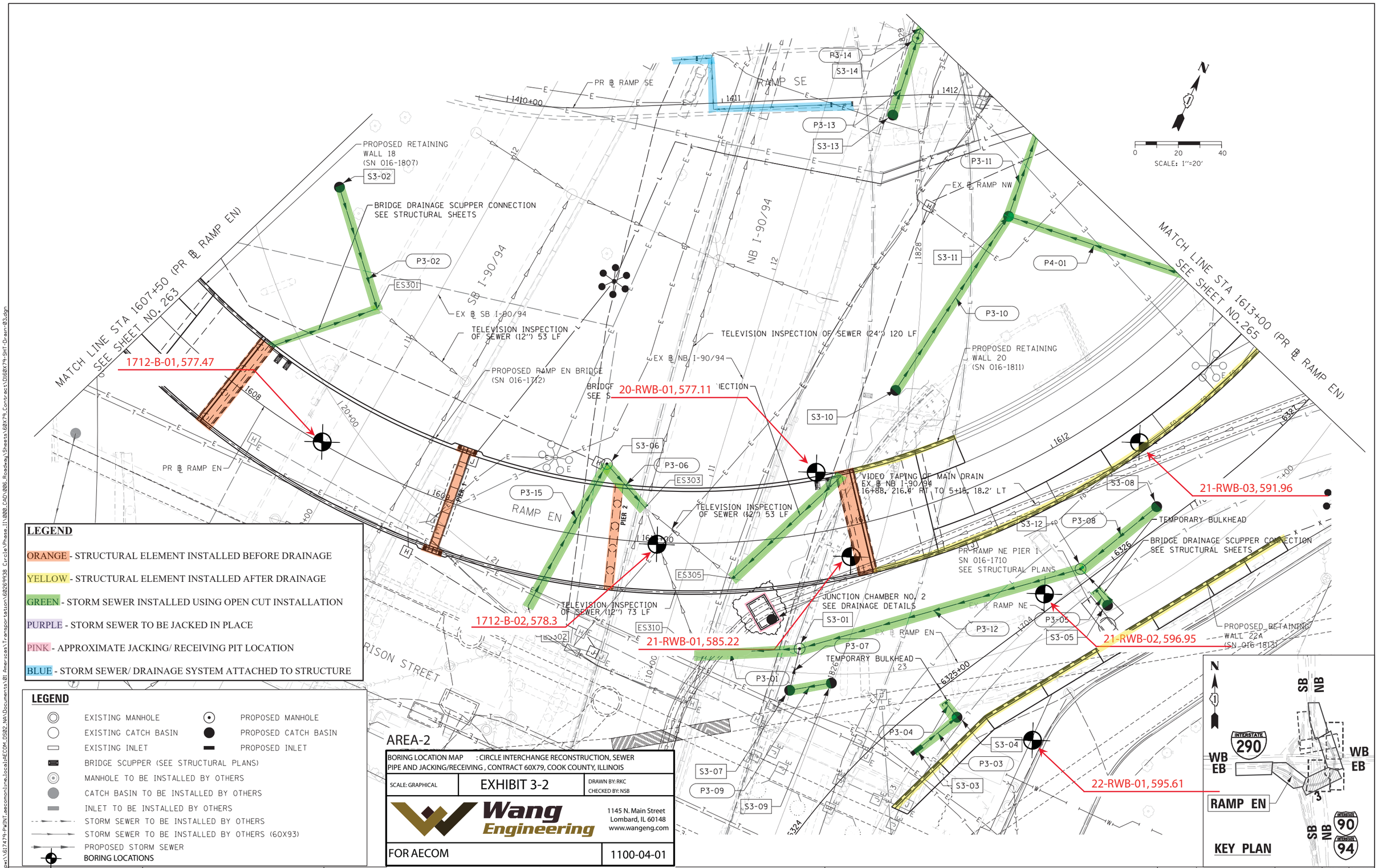
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 2 OF 10 SHEETS | STA. 1602+00 TO STA. 1607+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	263
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

- ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE
- YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE
- GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION
- PURPLE - STORM SEWER TO BE JACKED IN PLACE
- PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION
- BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

LEGEND

◎	EXISTING MANHOLE	⊙	PROPOSED MANHOLE
○	EXISTING CATCH BASIN	●	PROPOSED CATCH BASIN
▭	EXISTING INLET	▬	PROPOSED INLET
▬	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
◎	MANHOLE TO BE INSTALLED BY OTHERS		
●	CATCH BASIN TO BE INSTALLED BY OTHERS		
▬	INLET TO BE INSTALLED BY OTHERS		
- -▸- -	STORM SEWER TO BE INSTALLED BY OTHERS		
—▸—	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
—▸—▸—	PROPOSED STORM SEWER		
⊕	BORING LOCATIONS		

BORING LOCATION MAP	: CIRCLE INTERCHANGE RECONSTRUCTION, SEWER PIPE AND JACKING/RECEIVING, CONTRACT 60X79, COOK COUNTY, ILLINOIS
SCALE: GRAPHICAL	EXHIBIT 3-2
DRAWN BY: RKC	CHECKED BY: NSB

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TranSystems

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PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1''=20' | SHEET 3 OF 10 SHEETS | STA. 1607+50 TO STA. 1613+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	264
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		

FOR MAIN DRAIN INFORMATION UNDER I-90/94 SEE SHEET NO.268

MATCH LINE STA 1613+00 (PR ℄ RAMP EN) SEE SHEET NO.264

MATCH LINE STA 1618+50 (PR ℄ RAMP EN) SEE SHEET NO.266

1704-B-04, 575.36

1703-B-04, 584.71

1703-PZ-01, 582.48

1706-B-02, 573.51

1712-B-03, 584.77

VST-06, 585.69

22-RWB-03, 587.62

22-RWB-05, 594.37

1715-B-02

1703-B-04

1703-PZ-01

1712-B-03

22-RWB-04

22-RWB-03

22-RWB-05

EX ℄ NB I-90/94

EX EB CONGRESS PKWY

EX WB CONGRESS PKWY

PR ℄ EB I-290

PR ℄ WB I-290

PR ℄ RAMP SE

PR ℄ RAMP WN

EX ℄ RAMP WS

RAMP EN

RAMP WN

RAMP WS

JACKING/RECEIVING PIT #3

JACKING/RECEIVING PIT #4

PROPOSED RETAINING WALL 20 (SN 016-1811)

PROPOSED RETAINING WALL 22B (SN 016-1839)

BEGIN INTERIM RAMP WN
STA 2105+76.20
STATION EQUATION
2105 RAMP WN
STA 1105+76.20
INTERIM RAMP WN
STA 2105+76.20

END PROJECT LIMIT
RAMP EN
STA 1617+70.00
STATION EQUATION
RAMP EN
STA 1617+70.00
INTERIM RAMP EN
STA 3617+70.00

BRIDGE DRAINAGE SCUPPER CONNECTION FROM CONTRACT 60X93. CONTRACTOR COORDINATION REQUIRED.

BRIDGE DRAINAGE SCUPPER CONNECTION FROM CONTRACT 60X93. CONTRACTOR COORDINATION REQUIRED.

JUNCTION CHAMBER NO. 1 SEE DRAINAGE DETAILS

CONNECT TO EX CHAMBER SEE DRAINAGE DETAILS

VIDEO TAPING OF MAIN DRAIN EX ℄ NB I-90/94 16+88. 216.4' RT TO 5+15. 18.2' LT

EX 4 1/2" W X 5' H MAIN

SEE SHEET NO.271 FOR PUMP STATION NO. 5 PARKING LOT DRAINAGE PLAN.

AREA-3

LEGEND

- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING INLET
- BRIDGE SCUPPER (SEE STRUCTURAL PLANS)
- MANHOLE TO BE INSTALLED BY OTHERS
- CATCH BASIN TO BE INSTALLED BY OTHERS
- INLET TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS (60X93)
- PROPOSED STORM SEWER
- BORING LOCATIONS
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED INLET

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

BORING LOCATION MAP : CIRCLE INTERCHANGE RECONSTRUCTION, SEWER PIPE AND JACKING/RECEIVING , CONTRACT 60X79, COOK COUNTY, ILLINOIS

SCALE: GRAPHICAL | EXHIBIT 3-3 | DRAWN BY: RKC CHECKED BY: NSB

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1145 N. Main Street
Lombard, IL 60148
www.wangeng.com

FOR AECOM | 1100-04-01

0 20 40
SCALE: 1"=20'

KEY PLAN

SB NB
INTERSTATE 290
WB EB
RAMP EN
INTERSTATE 90
INTERSTATE 94

FILE PATH = pw:\\617479-PWINT.aecomonline.local:aECOM_DS02_NA\Documents\01 Americas\Transportation\60269930 Circle\Phase II\000_CAD\006_Roadway\Sheets\60X79_Contract\D160X79-SHT-Drain-04.dgn

TranSystems

D160X79-SHT-Drain-04.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0017 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 4 OF 10 SHEETS | STA. 1613+00 | TO STA. 1618+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	265
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

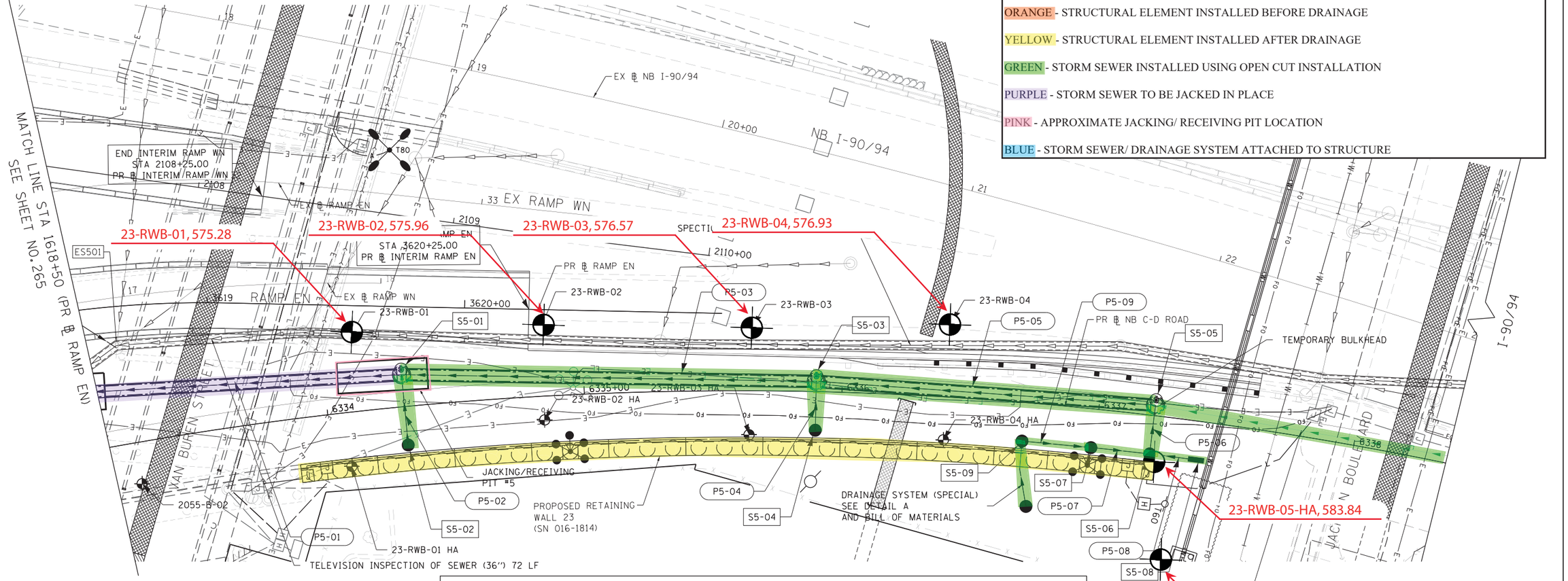
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

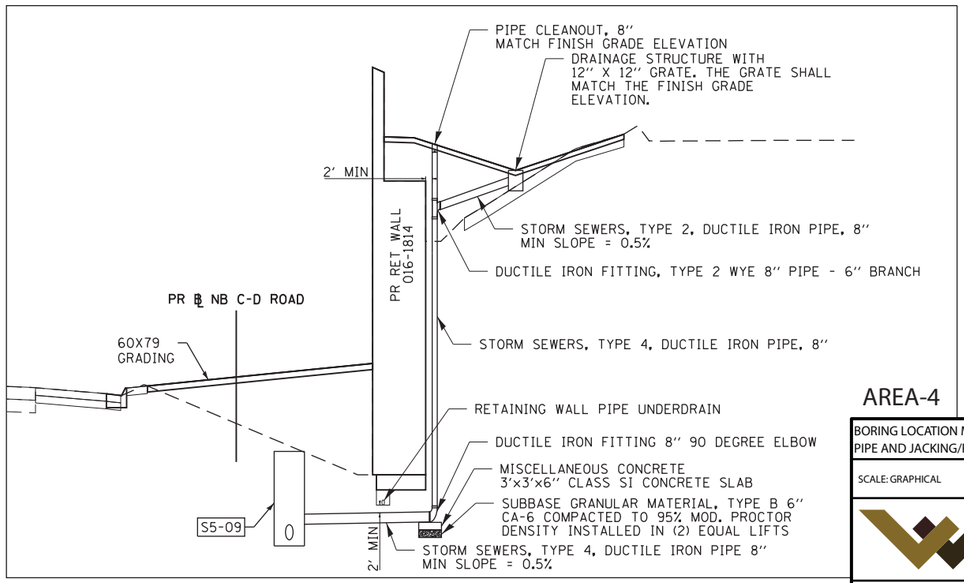


LEGEND

◎	EXISTING MANHOLE	⊙	PROPOSED MANHOLE
○	EXISTING CATCH BASIN	●	PROPOSED CATCH BASIN
▭	EXISTING INLET	▬	PROPOSED INLET
▬	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
◎	MANHOLE TO BE INSTALLED BY OTHERS		
●	CATCH BASIN TO BE INSTALLED BY OTHERS		
▬	INLET TO BE INSTALLED BY OTHERS		
----	STORM SEWER TO BE INSTALLED BY OTHERS		
----	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
----	PROPOSED STORM SEWER		
⊕	BORING LOCATIONS		

BILL OF MATERIAL		
ITEM	UNIT	QUANTITY
DUCTILE IRON FITTING, TYPE 2 WYE 8" PIPE - 6" BRANCH	EACH	1
DUCTILE IRON FITTING 8" 90 DEGREE ELBOW	EACH	1
PIPE CLEANOUT, 8"	EACH	1
STORM SEWERS, TYPE 4, DUCTILE IRON PIPE 8"	FOOT	50
DRAINAGE STRUCTURE	EACH	1
SUBBASE GRANULAR MATERIAL, TYPE B 6"	SQ YD	1
MISCELLANEOUS CONCRETE	CU YD	4.5

NOTE: ALL ITEMS INCLUDED IN THE COST OF DRAINAGE SYSTEM (SPECIAL)



DETAIL A

AREA-4

BORING LOCATION MAP : CIRCLE INTERCHANGE RECONSTRUCTION, SEWER PIPE AND JACKING/RECEIVING , CONTRACT 60X79, COOK COUNTY, ILLINOIS

SCALE: GRAPHICAL | EXHIBIT 3-4 | DRAWN BY: RKC CHECKED BY: NSB

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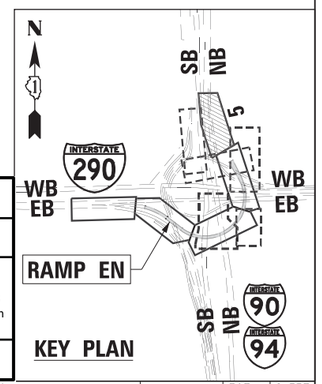


KEY PLAN

TranSystems

D160X79-SHT-Drain-05.dgn	DESIGNED - MRC	REVISED -	
USER NAME = mkwilson	DRAWN - MRC	REVISED -	
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -	
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -	

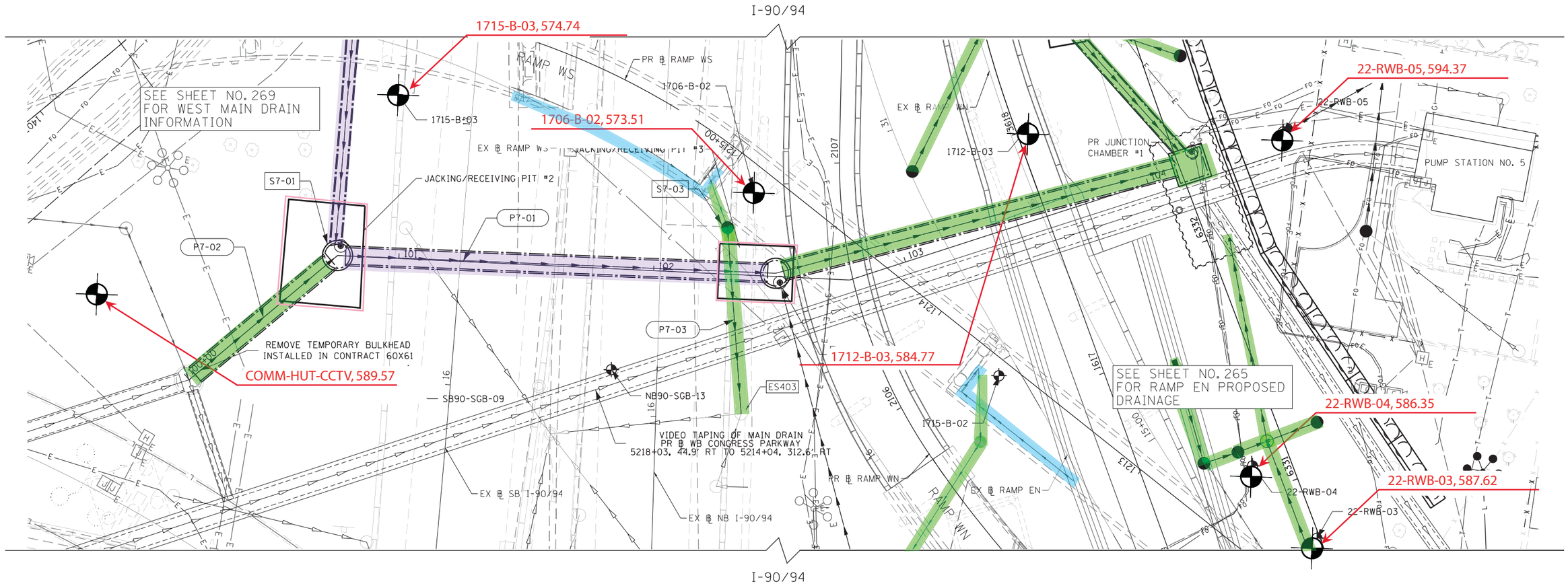
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 5 OF 10 SHEETS | STA. 1618+50 | TO STA. 1624+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	266
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

FILE PATH = pw:\\617479-PWINT.aecomonline.local:AECOM-DS02-NA\Documents\01 Americas\Transportation\60269938 Circle\Phase II\000 CAD\006 Roadway\Sheets\60X79 Contract\D160X79-SHT-Drain-05.dgn



N

0 20 40

SCALE: 1"=20'

LEGEND

	EXISTING MANHOLE		PROPOSED MANHOLE
	EXISTING CATCH BASIN		PROPOSED CATCH BASIN
	EXISTING INLET		PROPOSED INLET
	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
	MANHOLE TO BE INSTALLED BY OTHERS		
	CATCH BASIN TO BE INSTALLED BY OTHERS		
	INLET TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
	PROPOSED STORM SEWER		
	BORING LOCATIONS		

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

AREA-5

BORING LOCATION MAP : CIRCLE INTERCHANGE RECONSTRUCTION, SEWER PIPE AND JACKING/RECEIVING , CONTRACT 60X79, COOK COUNTY, ILLINOIS

SCALE: GRAPHICAL | EXHIBIT 3-5 | DRAWN BY: RKC CHECKED BY: NSB

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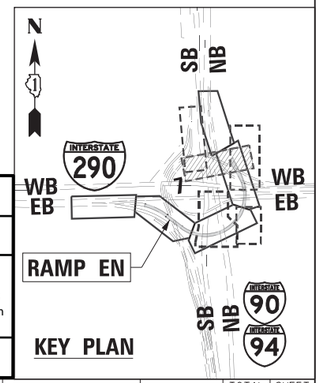

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TranSystems

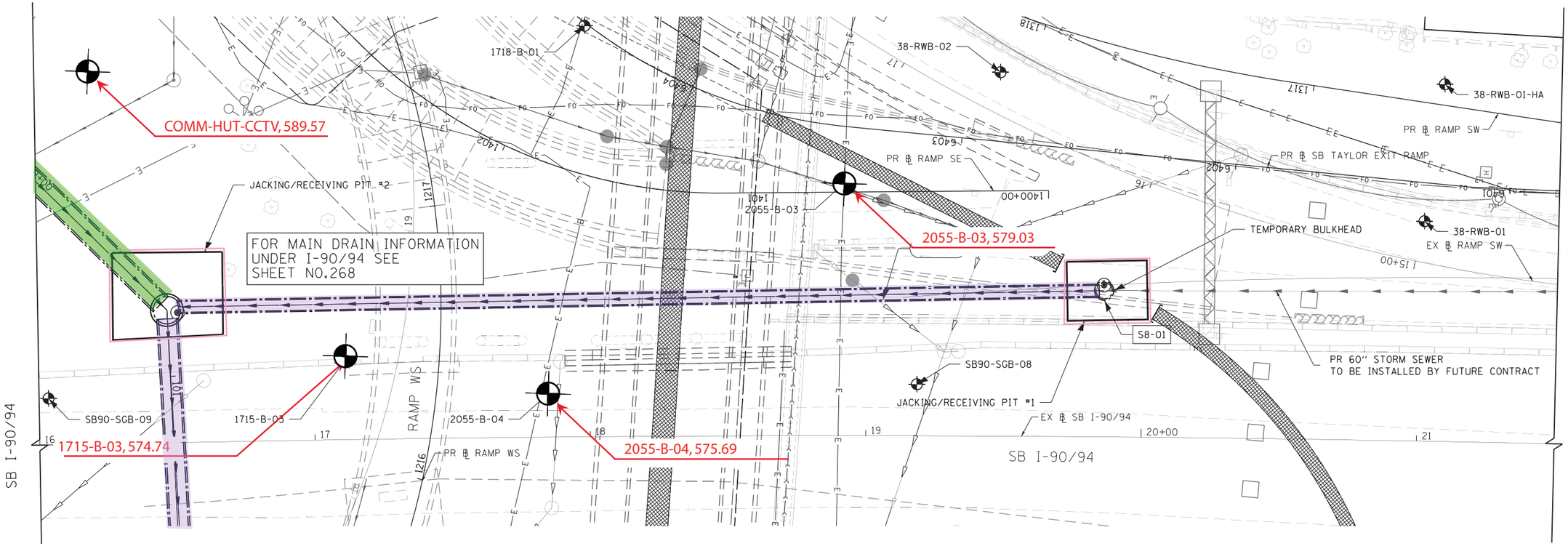
D160X79-SHT-Drain-07.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 7 OF 10 SHEETS | STA. 100+00 | TO STA. 104+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	268
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING INLET
- BRIDGE SCUPPER (SEE STRUCTURAL PLANS)
- MANHOLE TO BE INSTALLED BY OTHERS
- CATCH BASIN TO BE INSTALLED BY OTHERS
- INLET TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS (60X93)
- PROPOSED STORM SEWER
- BORING LOCATIONS
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED INLET

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

N

SCALE: 1"=20'

AREA-6

BORING LOCATION MAP : CIRCLE INTERCHANGE RECONSTRUCTION, SEWER PIPE AND JACKING/RECEIVING , CONTRACT 60X79, COOK COUNTY, ILLINOIS

SCALE: GRAPHICAL | EXHIBIT 3-6 | DRAWN BY: RKC CHECKED BY: NSB

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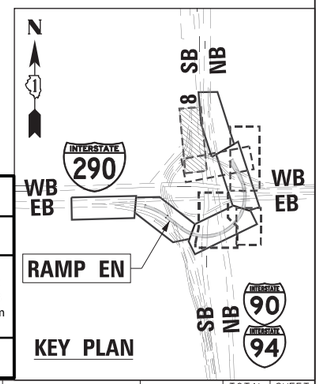

KEY PLAN

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TranSystems

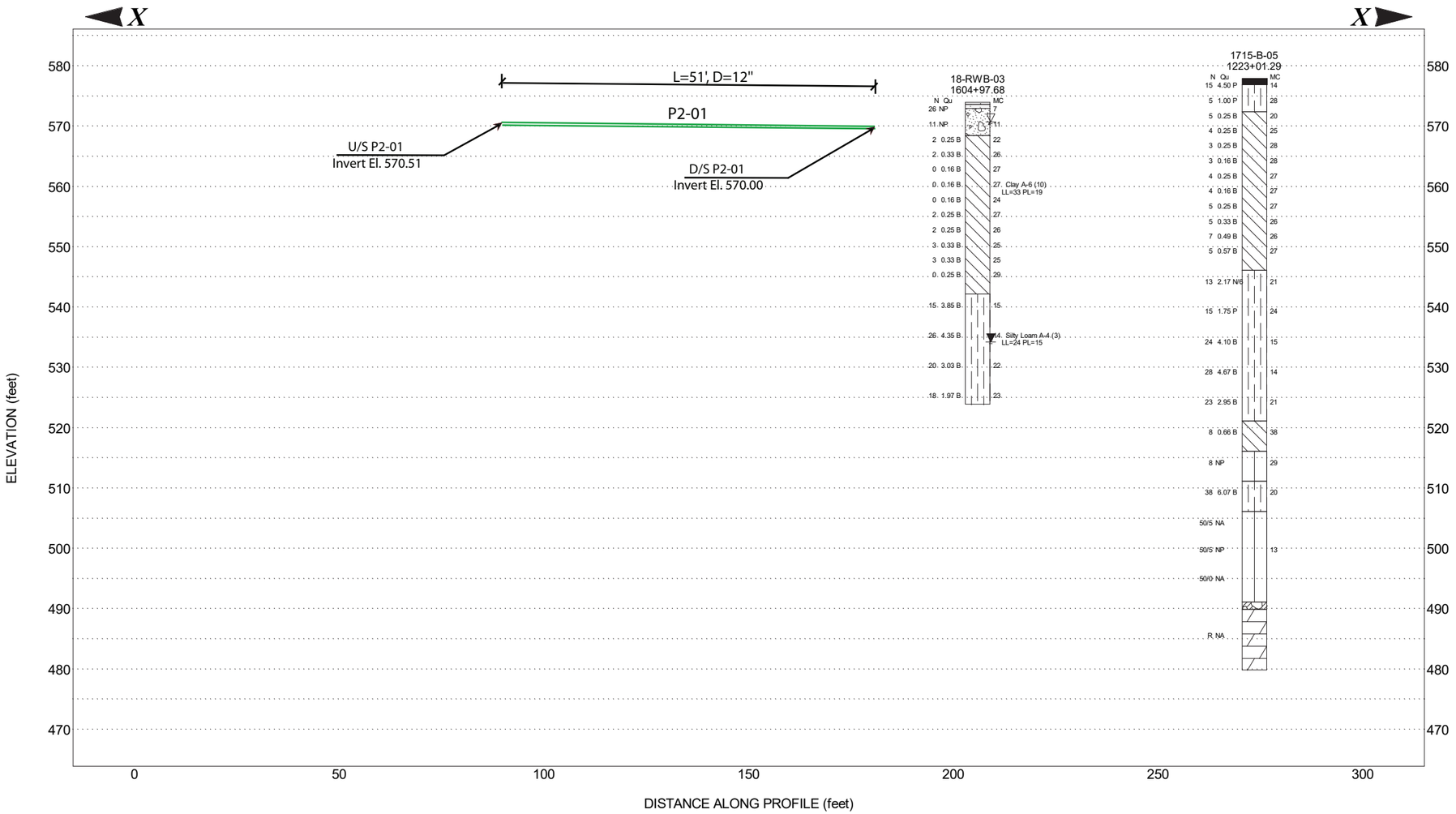
D160X79-SHT-Drain-08.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

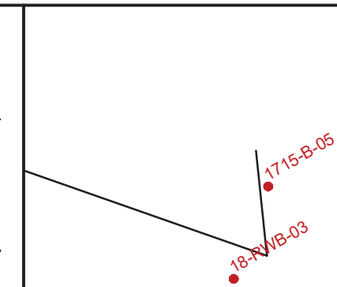
SCALE: 1"=20' | SHEET 8 OF 10 SHEETS | STA. 16+00 TO STA. 21+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	269
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



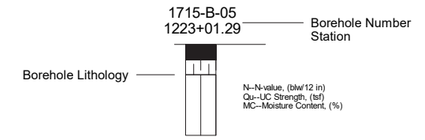
Lithology Graphics

- Topsoil
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- Weathered bedrock
- Dolomite or Dolomitic Limestone
- Pavement
- Concrete
- Gravelly sand, sandy gravel



Site Map Scale 1 inch equals 110 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 30

Horizontal Scale (feet)

Vertical Exaggeration: 1.5x

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

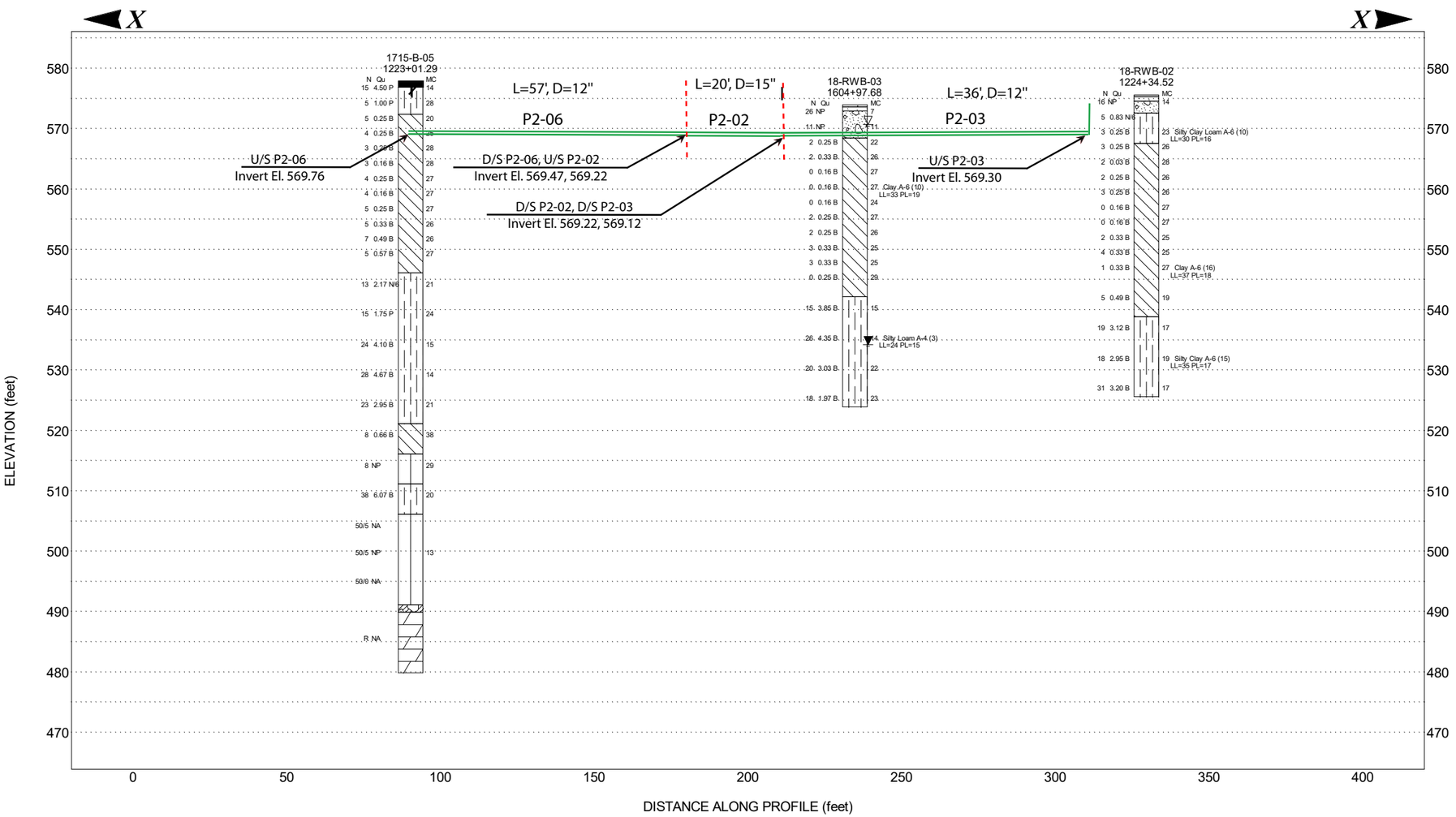
Subsurface Data Profile
Area 1 : Drainage P2-01

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

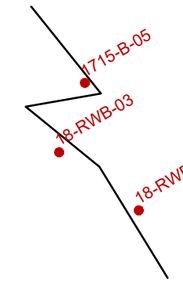
JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-1

WEI 11X17 1100401.GPJ WANGENG.GDT 5/1/18



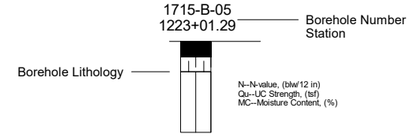
Lithology Graphics

- Topsoil
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- Weathered bedrock
- Dolomite or Dolomitic Limestone
- Pavement
- Concrete
- Gravelly sand, sandy gravel



Site Map Scale 1 inch equals 145 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 40

Horizontal Scale (feet)

Vertical Exaggeration: 2x

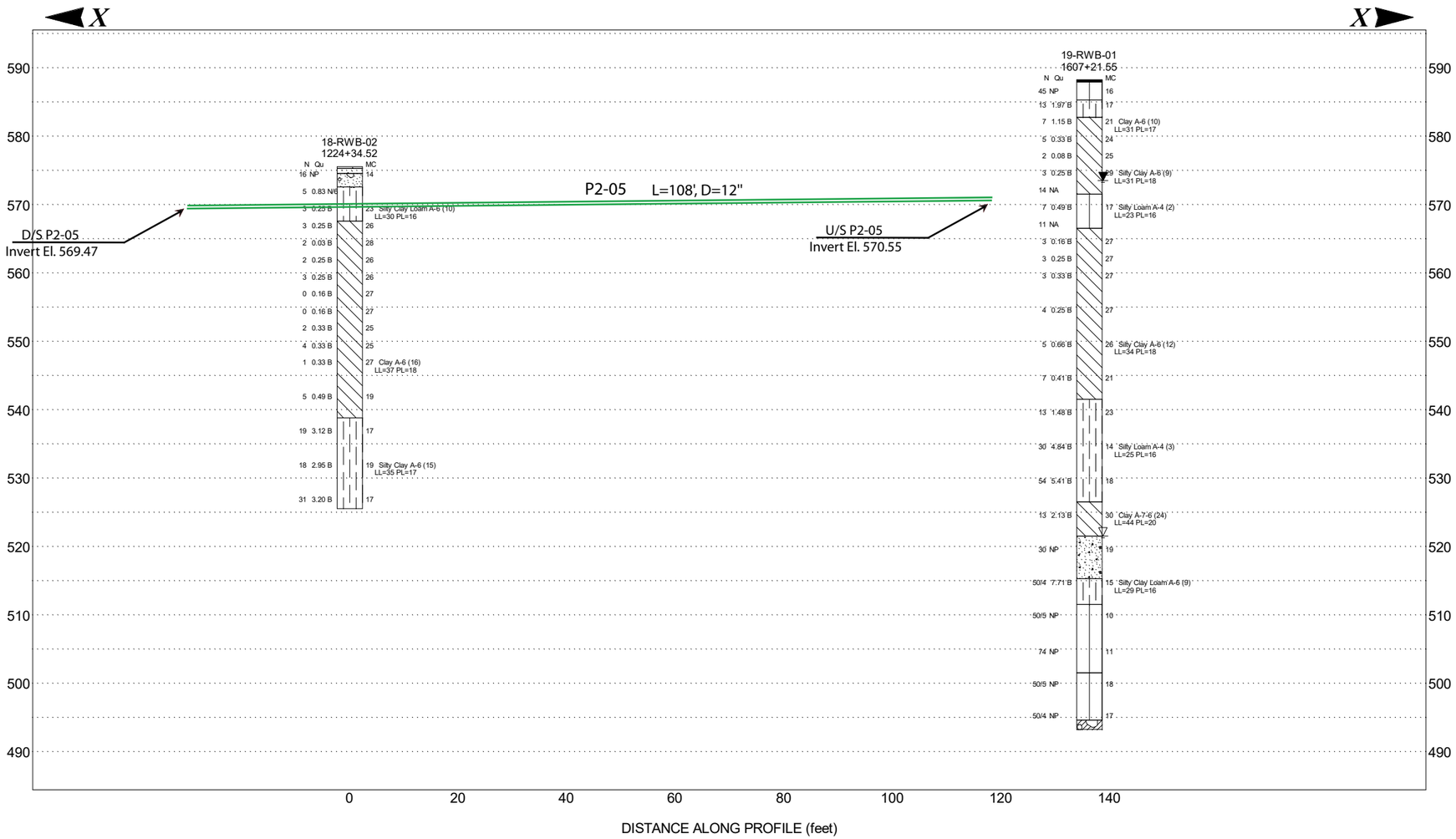
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 1: Drainage P2-02, P2-03, and P2-06

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

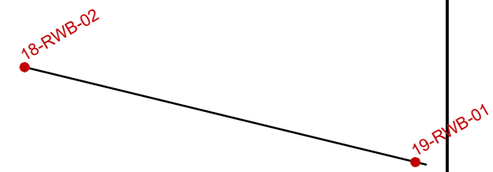
JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-2

WEI 11X17 1100401.GPJ WANGENG.GDT 5/1/18



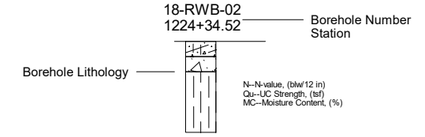
Lithology Graphics

- Pavement
- Concrete
- Gravelly sand, sandy gravel
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- Topsoil
- IDH Silt, Silty Loam
- Coarse sand
- Weathered bedrock



Site Map Scale 1 inch equals 50 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

Horizontal Scale (feet)

Vertical Exaggeration: 1.5x

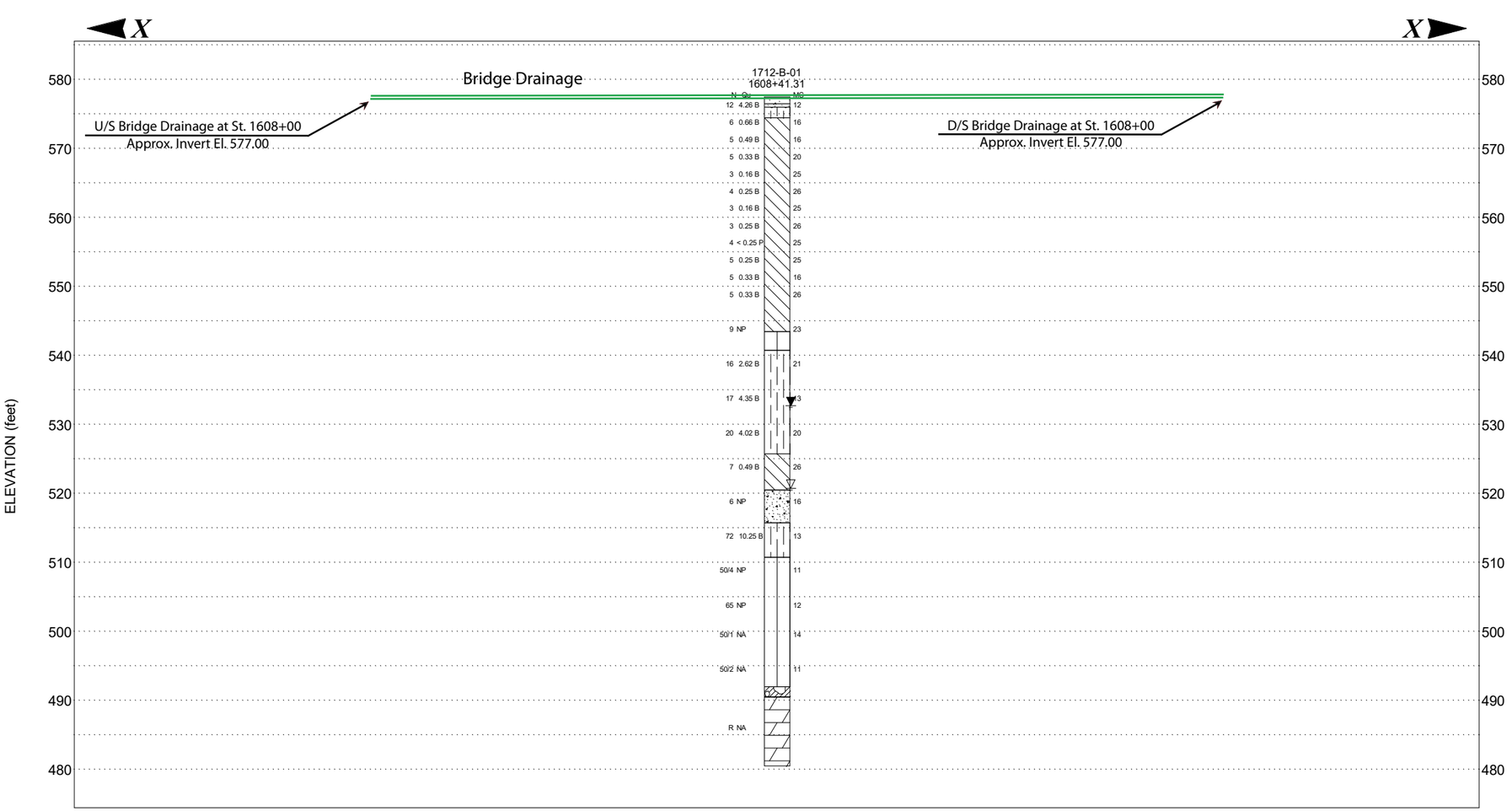
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 1: Drainage P2-05

WEI SINCE 1982

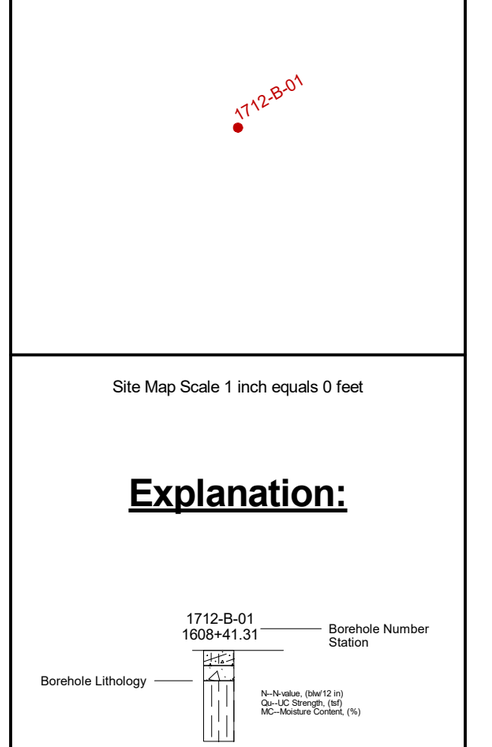
Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-3



Lithology Graphics

- Pavement
- Concrete
- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- Coarse sand
- Weathered bedrock
- Dolomite or Dolomitic Limestone



Site Map Scale 1 inch equals 0 feet

Explanation:

- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 0

Horizontal Scale (feet)

Vertical Exaggeration: 0x

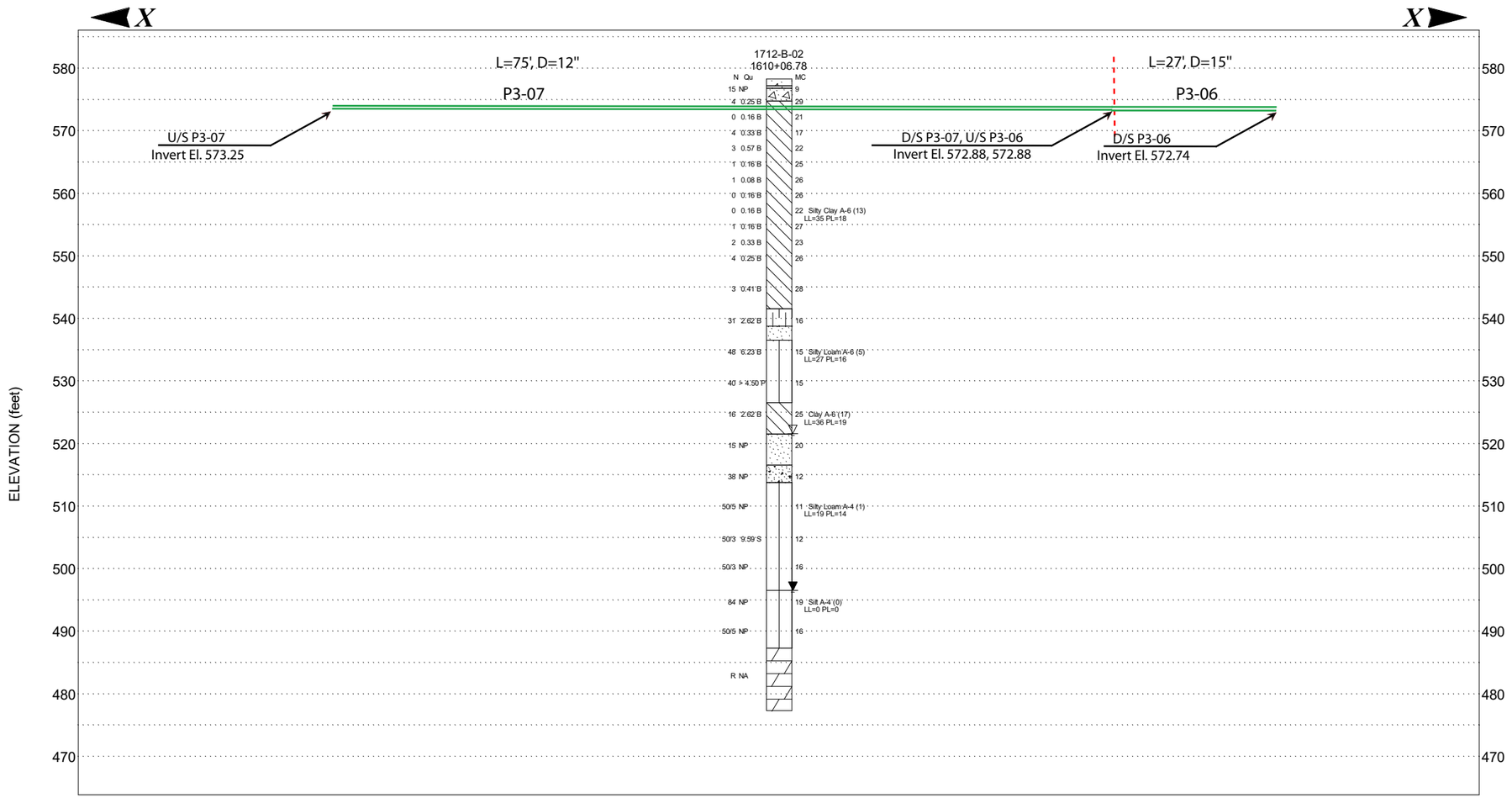
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 2 : Bridge Drainage at Sta. 1608+00.00

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-4



Lithology Graphics

- Concrete
- Pavement
- Crushed stone
- IDH Clay
- IDH Silty Clay, Silty Clay Loam
- IDH Sand, Sandy Loam
- IDH Silt, Silty Loam
- Coarse sand
- Dolomite or Dolomitic Limestone

N

1712-B-02

Site Map Scale 1 inch equals 0 feet

Explanation:

1712-B-02
1610+06.78 — Borehole Number Station

Borehole Lithology

N--N-value, (blw/12 in)
Qu--UC Strength, (tsf)
MC--Moisture Content, (%)

Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 0

Horizontal Scale (feet)

Vertical Exaggeration: 0x

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

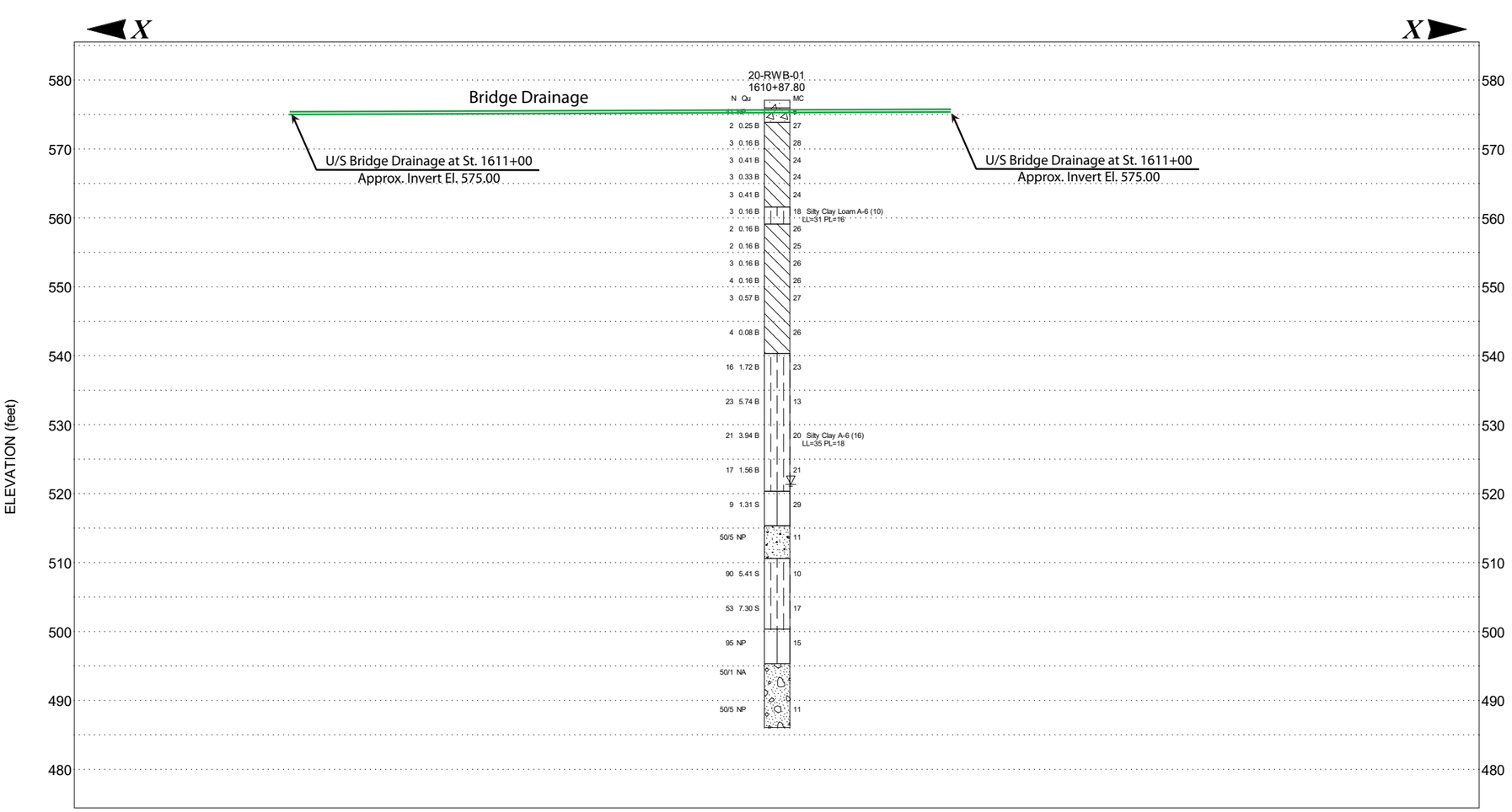
Subsurface Data Profile
Area 2 : Drainage P3-06 and P3-07

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-5

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18



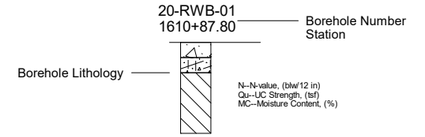
DISTANCE ALONG PROFILE (feet)

Lithology Graphics

- Concrete
- Pavement
- Crushed stone
- IDH Clay
- IDH Silty Clay, Silty Clay Loam
- IDH Silt, Silty Loam
- Coarse sand
- Gravelly sand, sandy gravel

Site Map Scale 1 inch equals 0 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

Vertical Exaggeration: 0x

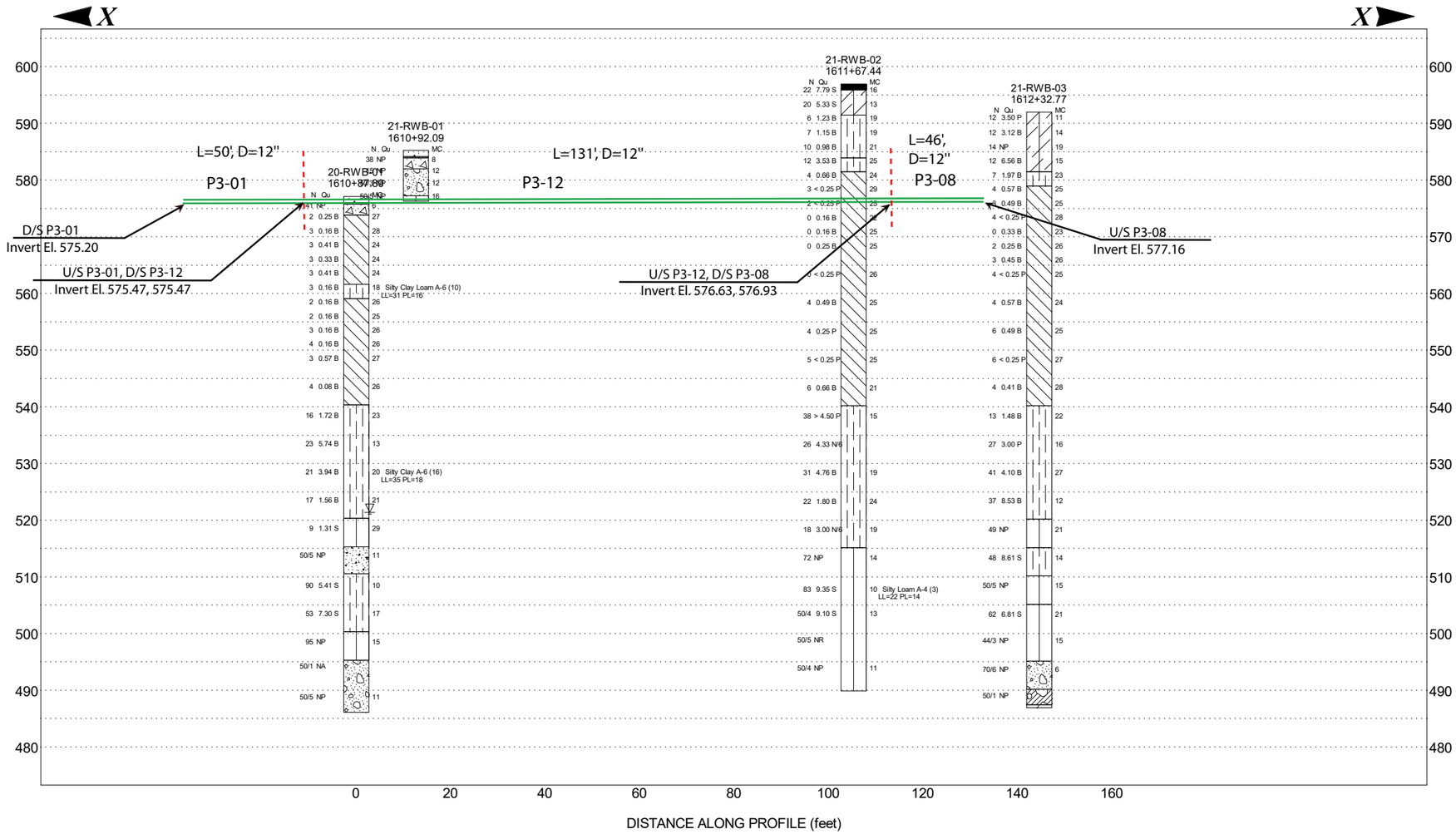
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 2 : Bridge Drainage at Sta. 1611+00.00

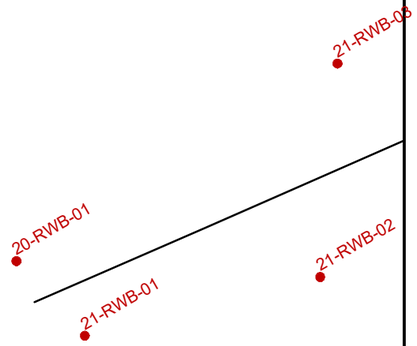
WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-6

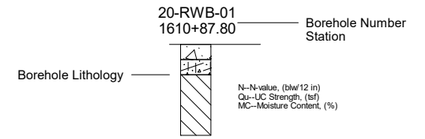


N



Site Map Scale 1 inch equals 60 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

Horizontal Scale (feet)

Vertical Exaggeration: 1x

Lithology Graphics

- Concrete
- Pavement
- Crushed stone
- IDH Clay
- IDH Silty Clay, Silty Clay Loam
- IDH Silt, Silty Loam
- Coarse sand
- Gravelly sand, sandy gravel
- Topsoil
- IDH Clay Loam
- Weathered bedrock
- Dolomite or Dolomitic Limestone

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

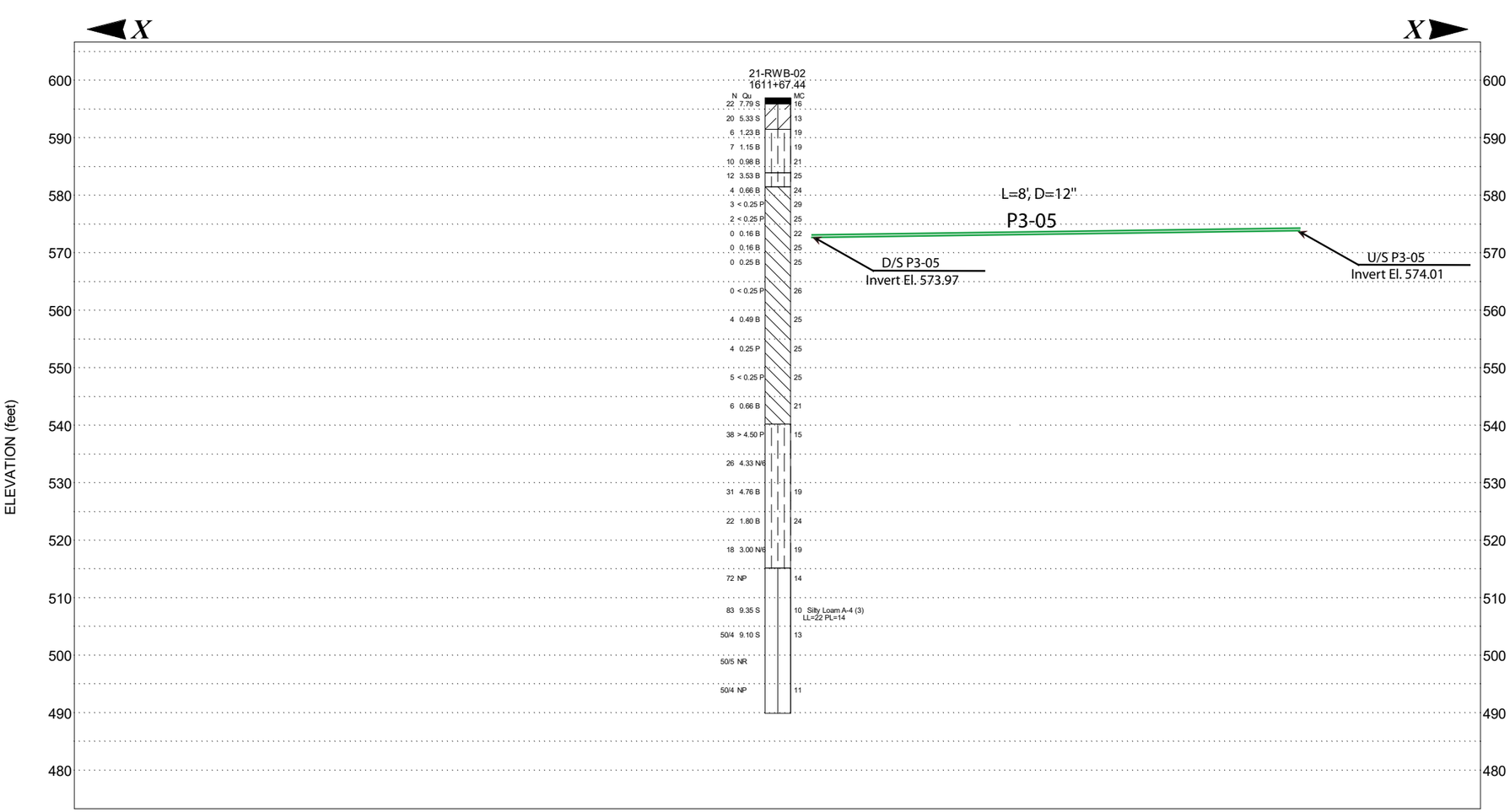
Subsurface Data Profile
Area 2: Drainage P3-01, P3-12, and P3-08

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-7

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18



Lithology Graphics

Topsoil

IDH Clay Loam

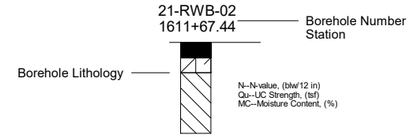
IDH Silty Clay, Silty Clay Loam

IDH Clay

IDH Silt, Silty Loam

Site Map Scale 1 inch equals 0 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

Horizontal Scale (feet)

Vertical Exaggeration: 0x

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

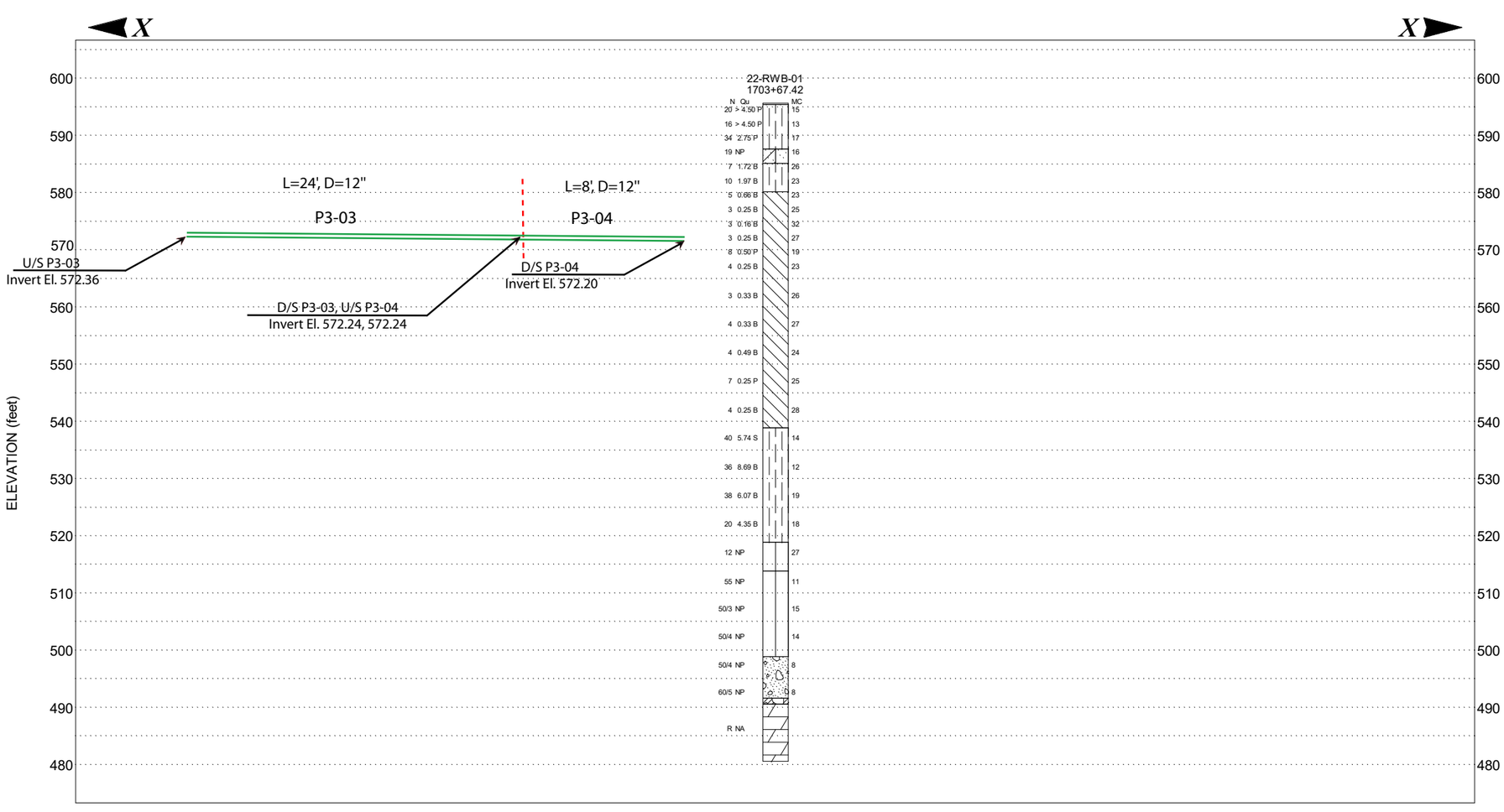
Subsurface Data Profile
Area 2: Drainage P3-05

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-8

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18

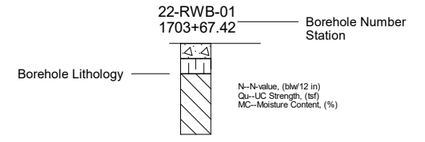


Lithology Graphics

- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Loam
- IDH Clay
- IDH Silt, Silty Loam
- Gravelly sand, sandy gravel
- Weathered bedrock
- Dolomite or Dolomitic Limestone

Site Map Scale 1 inch equals 0 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 0

Horizontal Scale (feet)

Vertical Exaggeration: 0x

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

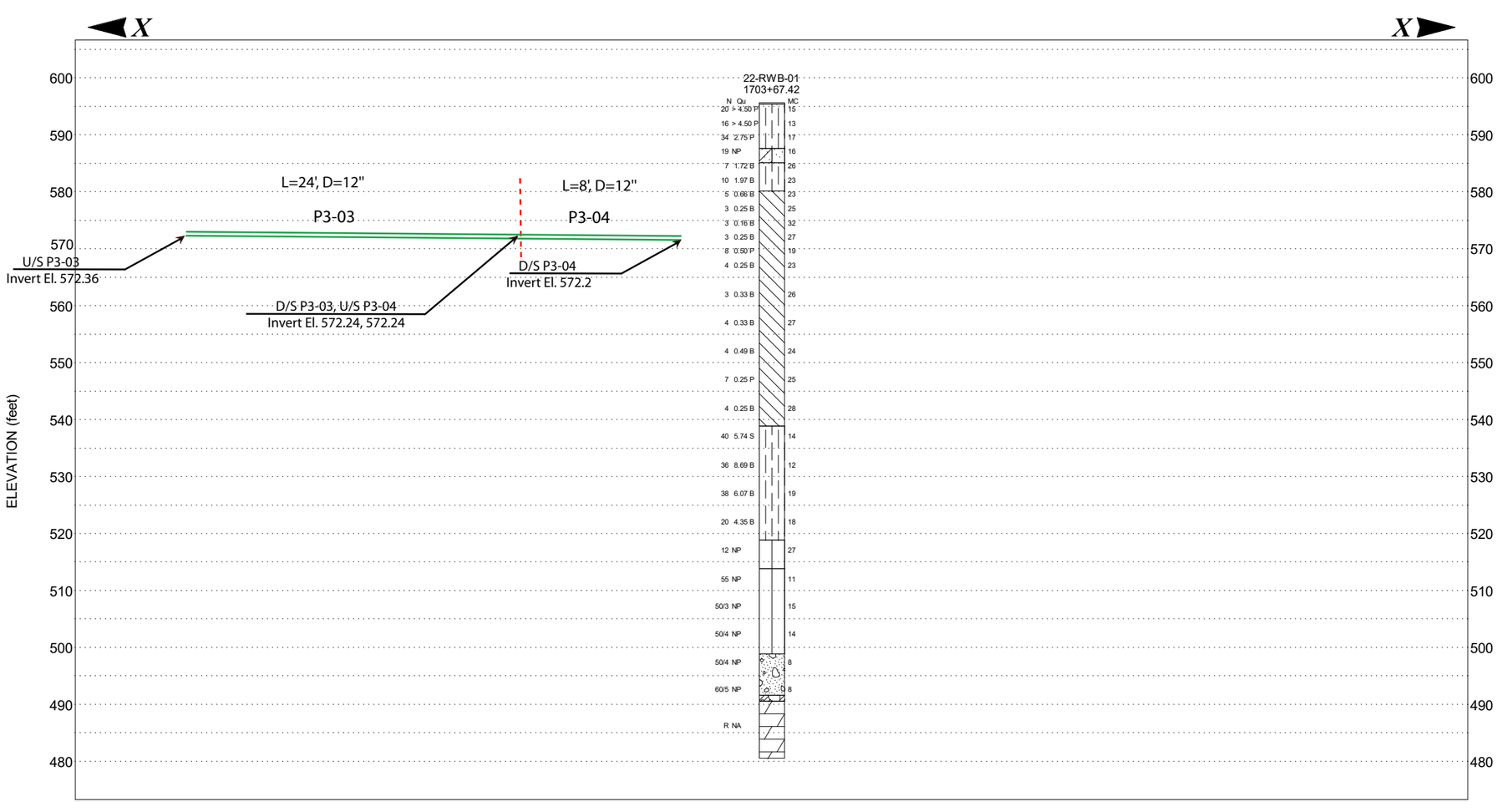
Subsurface Data Profile
Area 2: Drainage P3-03 and P3-04

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-9

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18

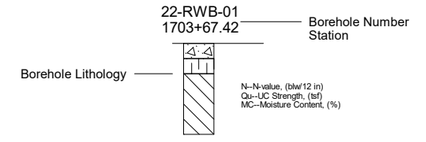


Lithology Graphics

- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Loam
- IDH Clay
- IDH Silt, Silty Loam
- Gravelly sand, sandy gravel
- Weathered bedrock
- Dolomite or Dolomitic Limestone

Site Map Scale 1 inch equals 0 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 0

Horizontal Scale (feet)

Vertical Exaggeration: 0x

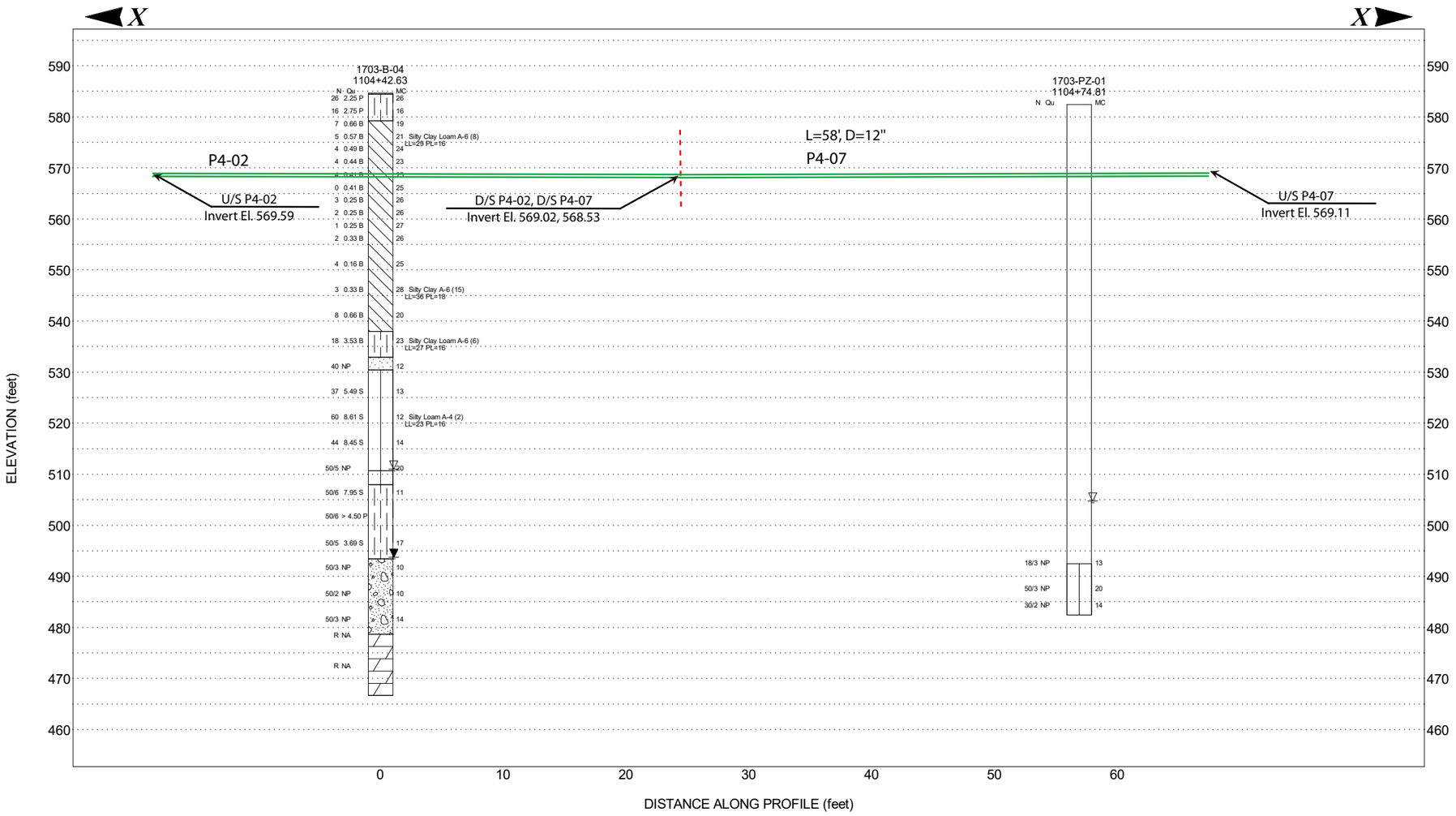
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

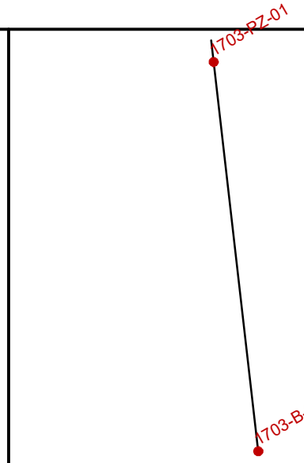
Subsurface Data Profile
Area 2: Drainage P3-03 and P3-04

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

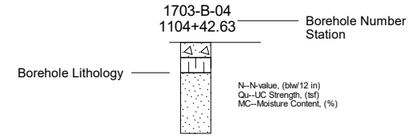
JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-10





Site Map Scale 1 inch equals 20 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 10

Horizontal Scale (feet)

Vertical Exaggeration: 0.5x

Lithology Graphics

Crushed stone

IDH Silty Clay, Silty Clay Loam

IDH Clay

IDH Sand, Sandy Loam

IDH Silt, Silty Loam

Gravelly sand, sandy gravel

Dolomite or Dolomitic Limestone

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

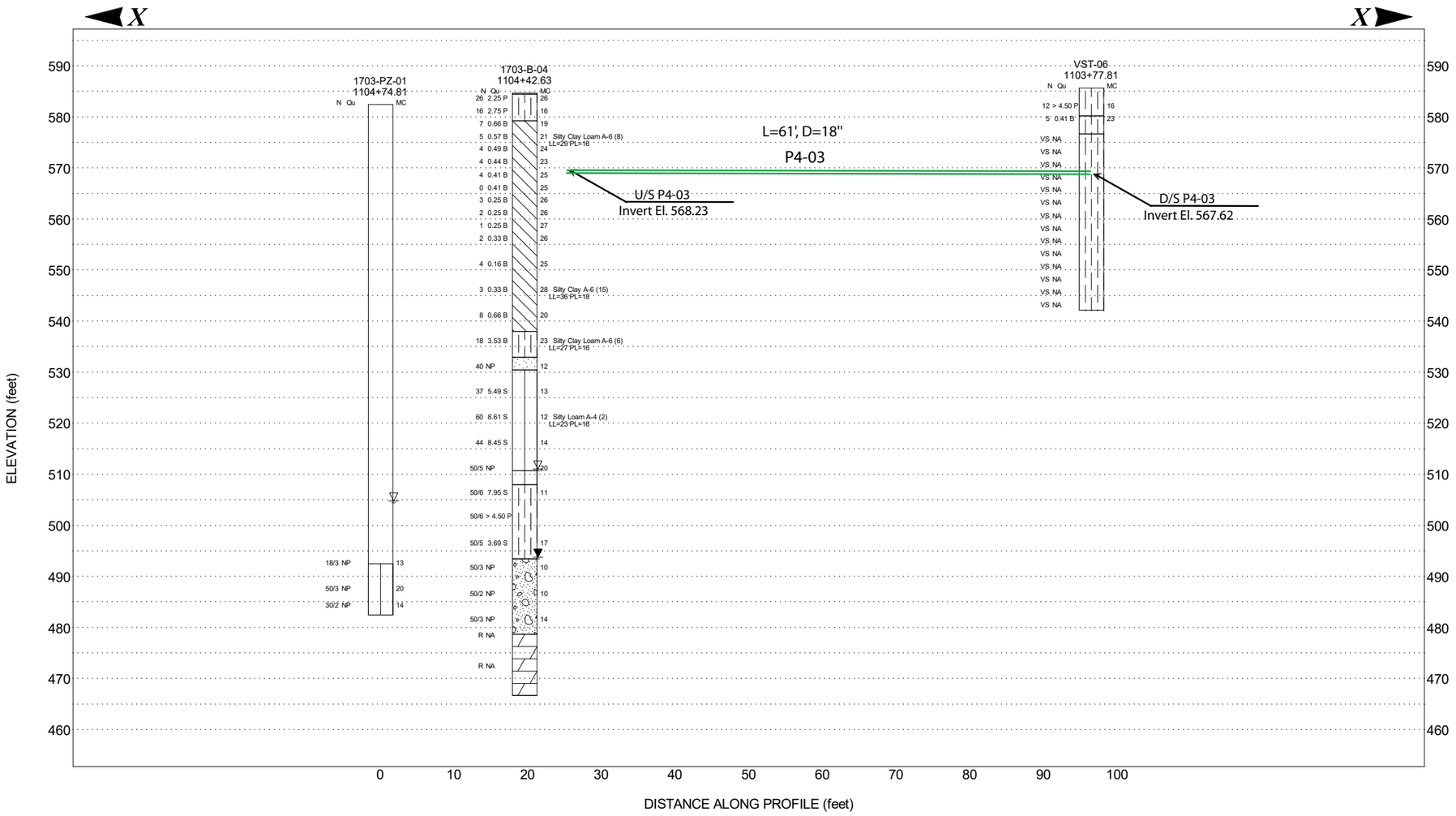
Subsurface Data Profile
Area 3: Drainage P4-02 and P4-07

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

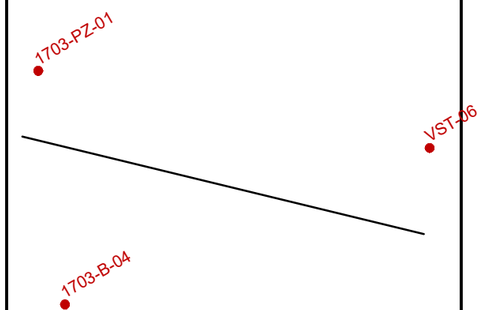
JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-11

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18



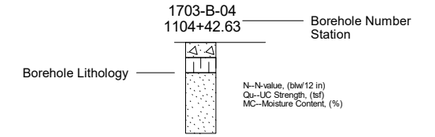
Lithology Graphics

- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Sand, Sandy Loam
- IDH Silt, Silty Loam
- Gravelly sand, sandy gravel
- Dolomite or Dolomitic Limestone



Site Map Scale 1 inch equals 35 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 17

Horizontal Scale (feet)

Vertical Exaggeration: 0.5x

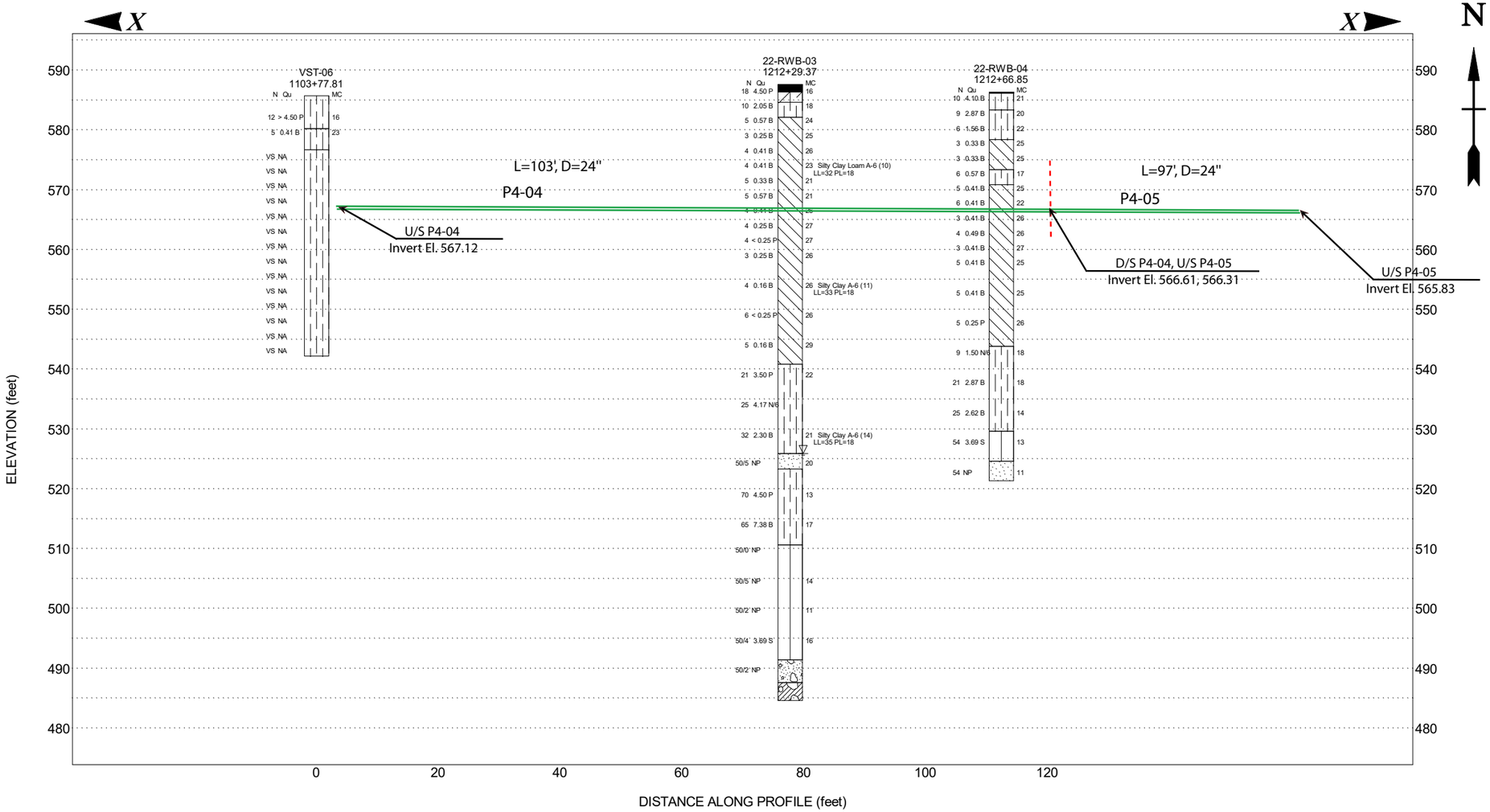
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 3 : Drainage P4-03

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

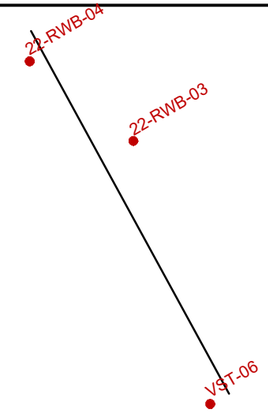
JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-12

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18



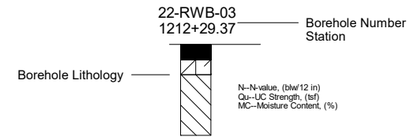
Lithology Graphics

- Topsoil
- IDH Clay Loam
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Sand, Sandy Loam
- IDH Silt, Silty Loam
- Gravelly sand, sandy gravel
- Weathered bedrock



Site Map Scale 1 inch equals 45 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 20

Horizontal Scale (feet)

Vertical Exaggeration: 1x

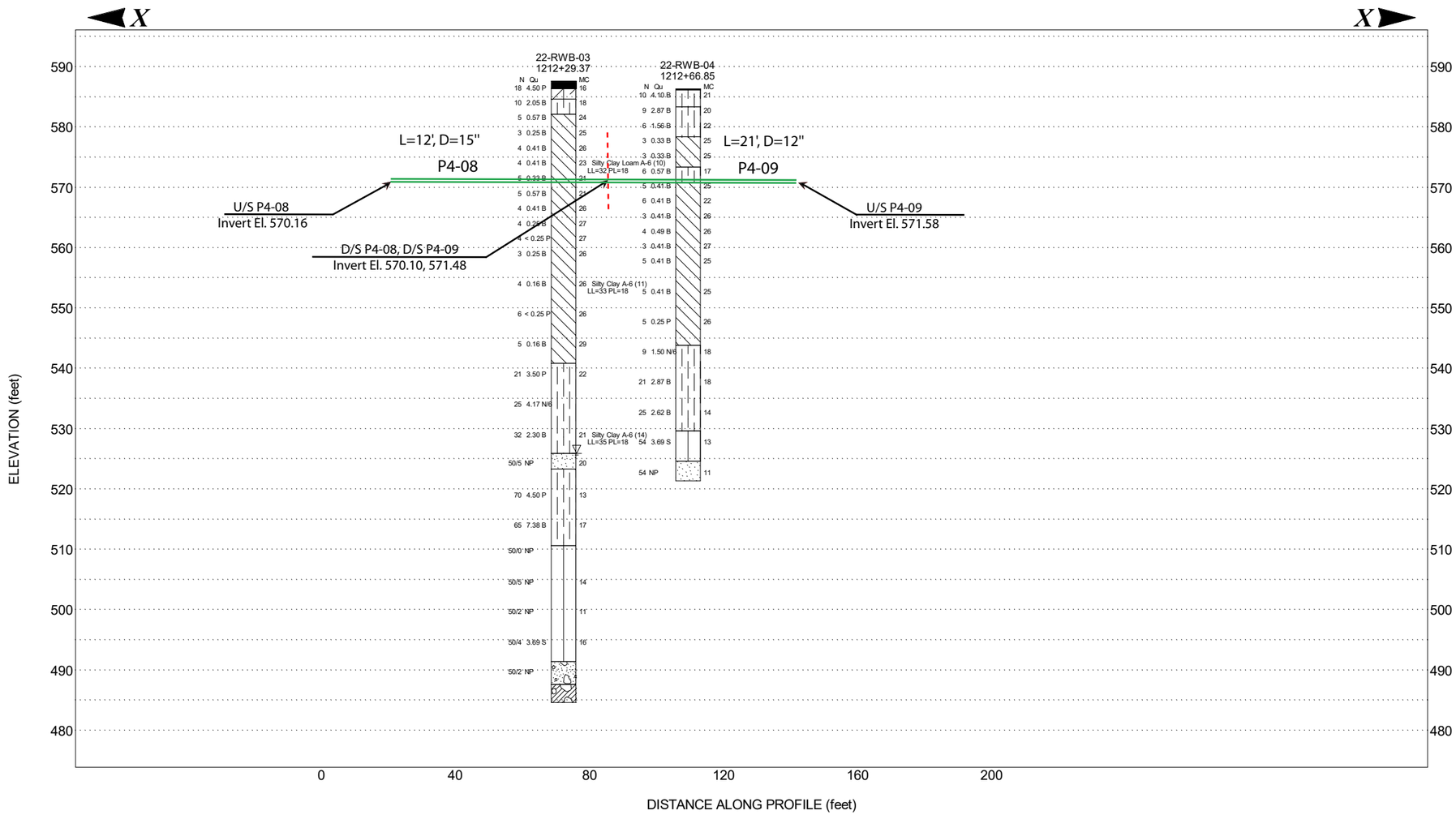
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 3 : Drainage P4-04 and P4-05

WEI SINCE 1982

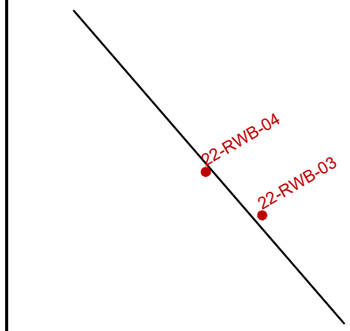
Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-13



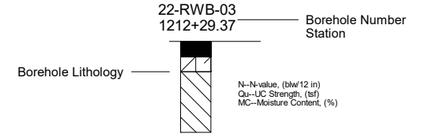
Lithology Graphics

- Topsoil
- IDH Clay Loam
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Sand, Sandy Loam
- IDH Silt, Silty Loam
- Gravelly sand, sandy gravel
- Weathered bedrock



Site Map Scale 1 inch equals 80 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 — 37

Horizontal Scale (feet)

Vertical Exaggeration: 2x

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

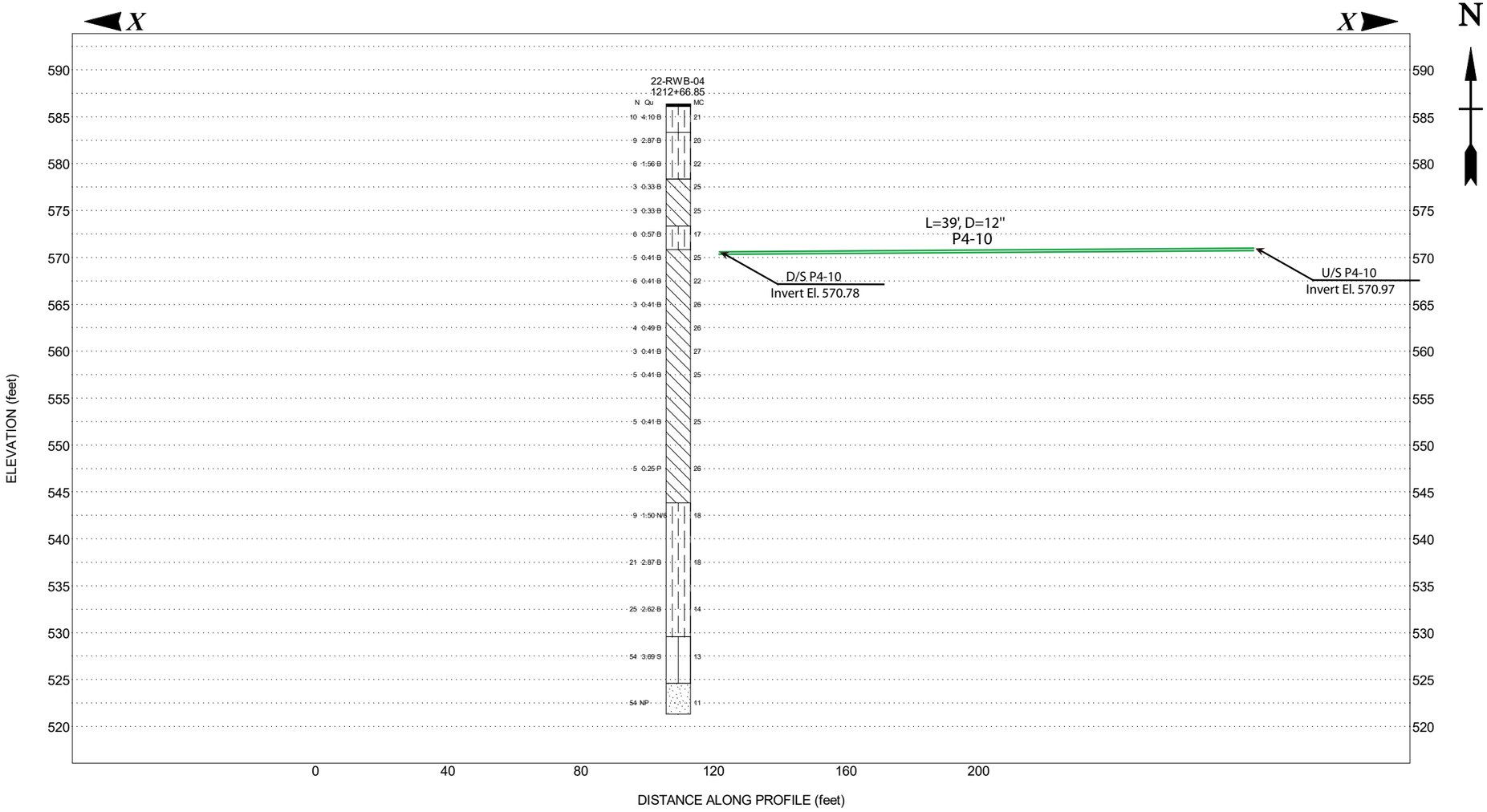
Subsurface Data Profile
Area 3 : Drainage P4-08, P4-09

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

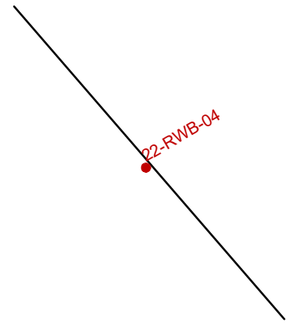
JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-14

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18



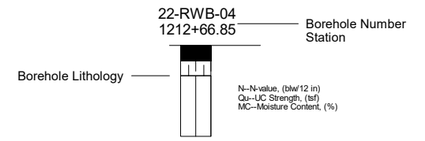
Lithology Graphics

- Topsoil
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- IDH Sand, Sandy Loam



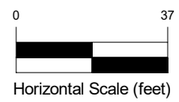
Site Map Scale 1 inch equals 80 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling



Horizontal Scale (feet)

Vertical Exaggeration: 3x

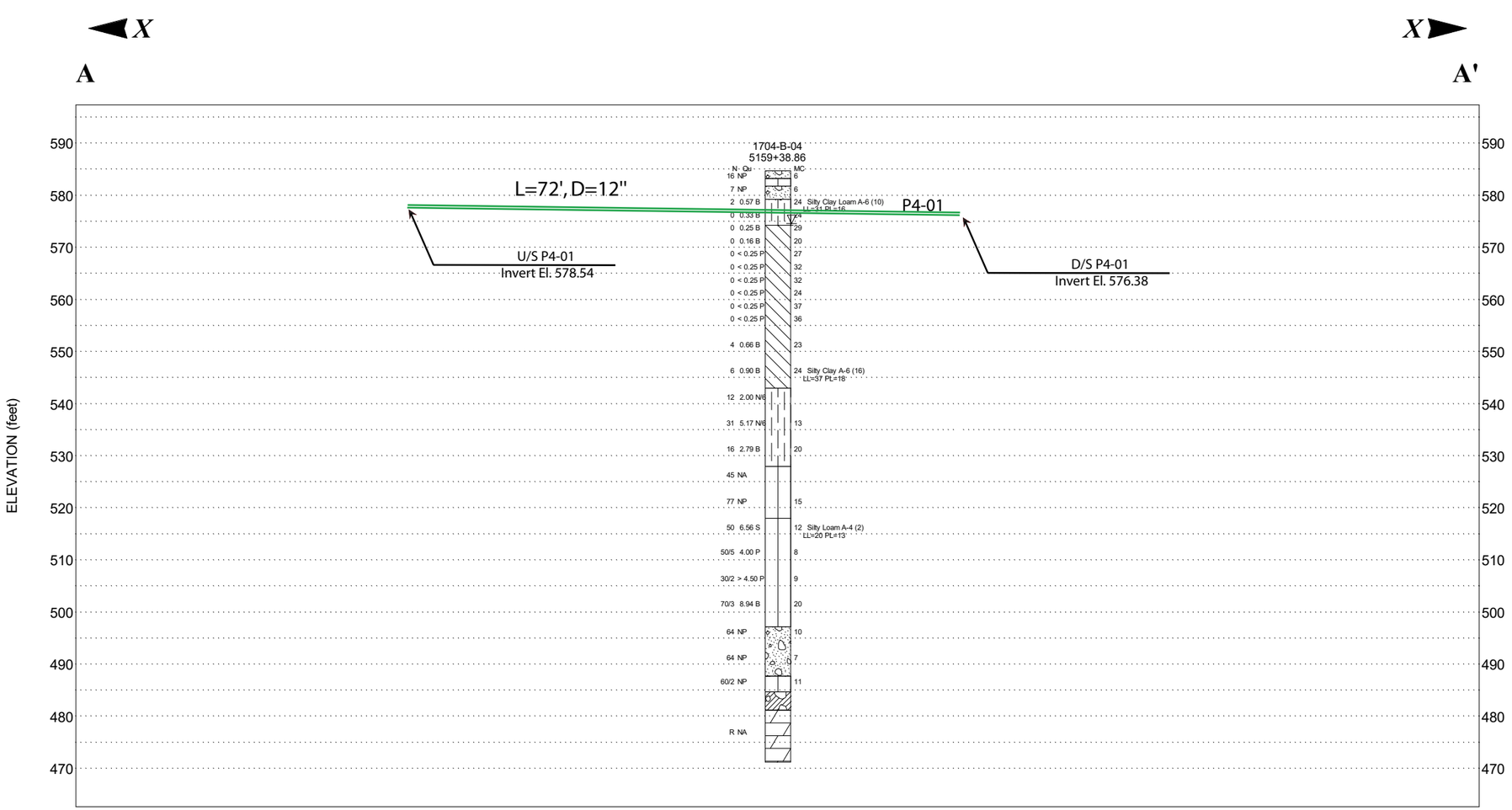
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 3 : Drainage P4-10

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-15

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18

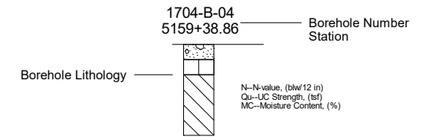


Lithology Graphics

- Gravelly sand, sandy gravel
- IDH Silt, Silty Loam
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- Weathered bedrock
- Dolomite or Dolomitic Limestone

Site Map Scale 1 inch equals 0 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 0

Horizontal Scale (feet)

Vertical Exaggeration: 0x

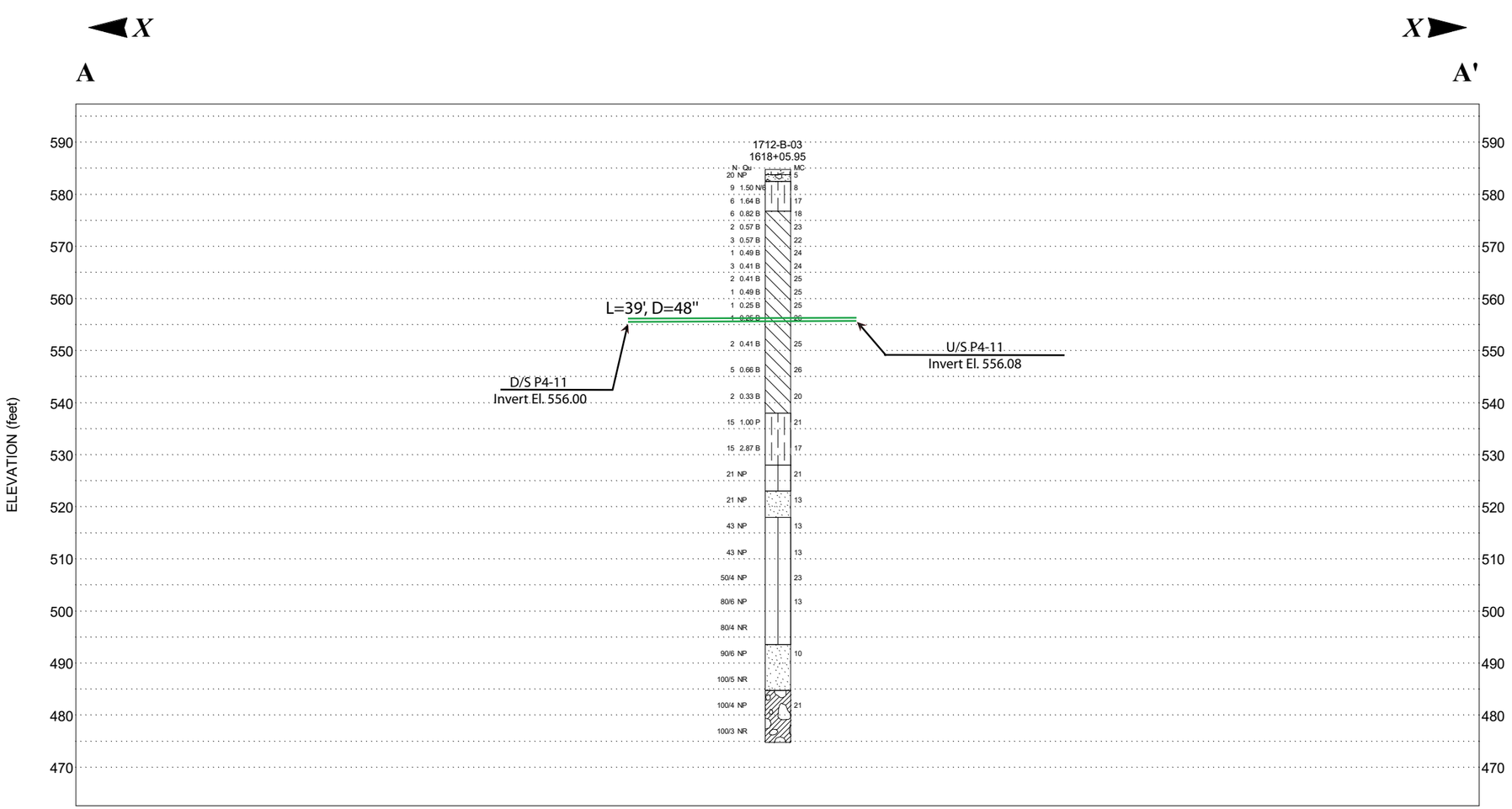
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 3: Drainage P4-01

Jane Byrne Interchange
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-16

WEI 11X17 1100401.GPJ WANGENG.GDT 7/7/18

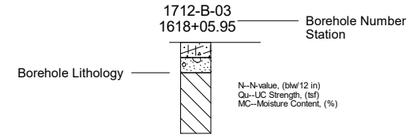


Lithology Graphics

- Pavement
- Gravelly sand, sandy gravel
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- IDH Sand, Sandy Loam
- Weathered bedrock

Site Map Scale 1 inch equals 0 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 0

Horizontal Scale (feet)

Vertical Exaggeration: 0x

Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

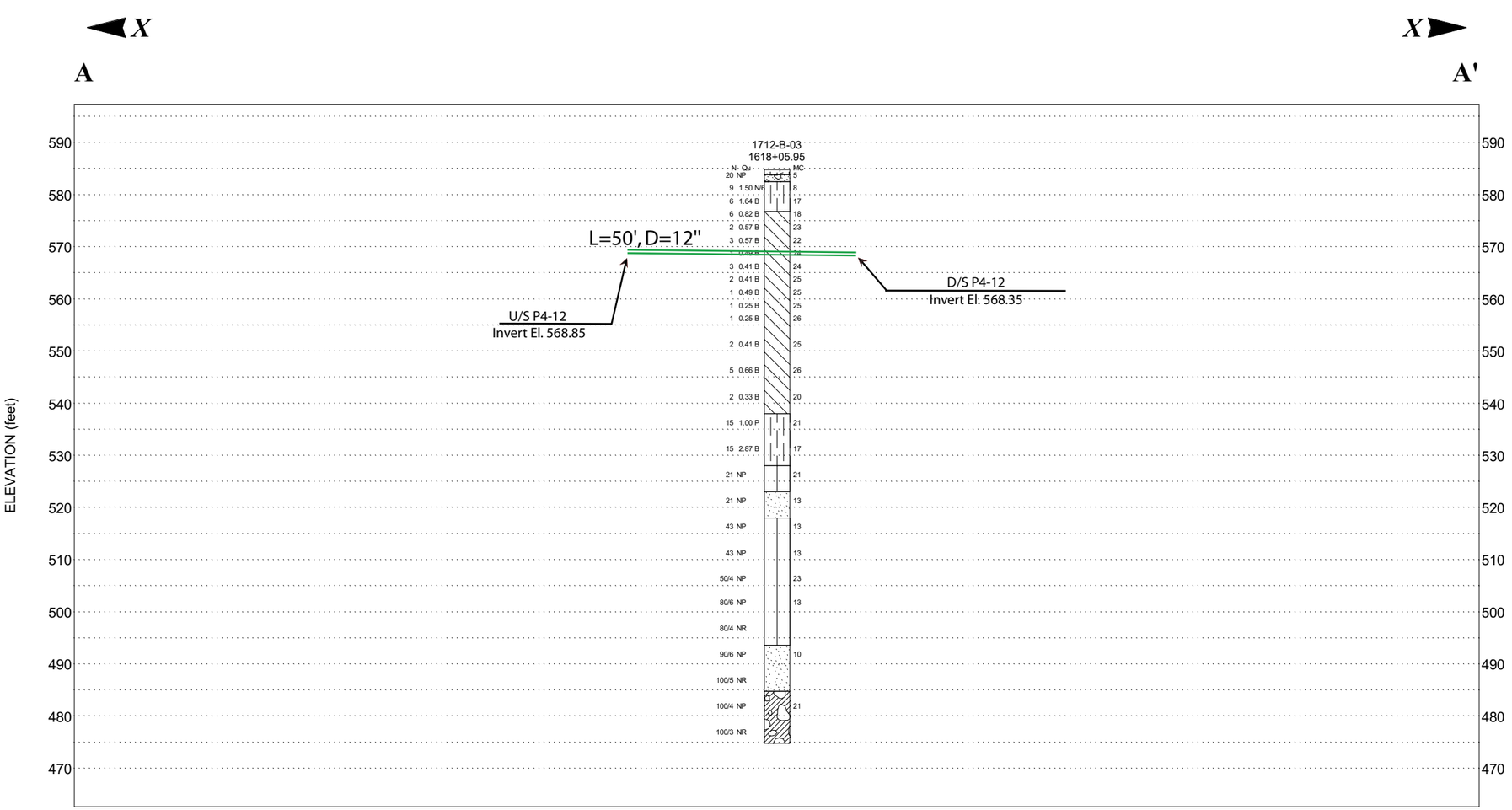
Subsurface Data Profile
Area 3: Drainage P4-11

WEI SINCE 1982

Jane Byrne Interchange
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-17

WEI 11X17 1100401.GPJ WANGENG.GDT 7/7/18

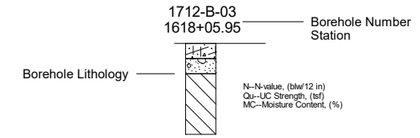


Lithology Graphics

- Pavement
- Gravelly sand, sandy gravel
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- IDH Sand, Sandy Loam
- Weathered bedrock

Site Map Scale 1 inch equals 0 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

Vertical Exaggeration: 0x

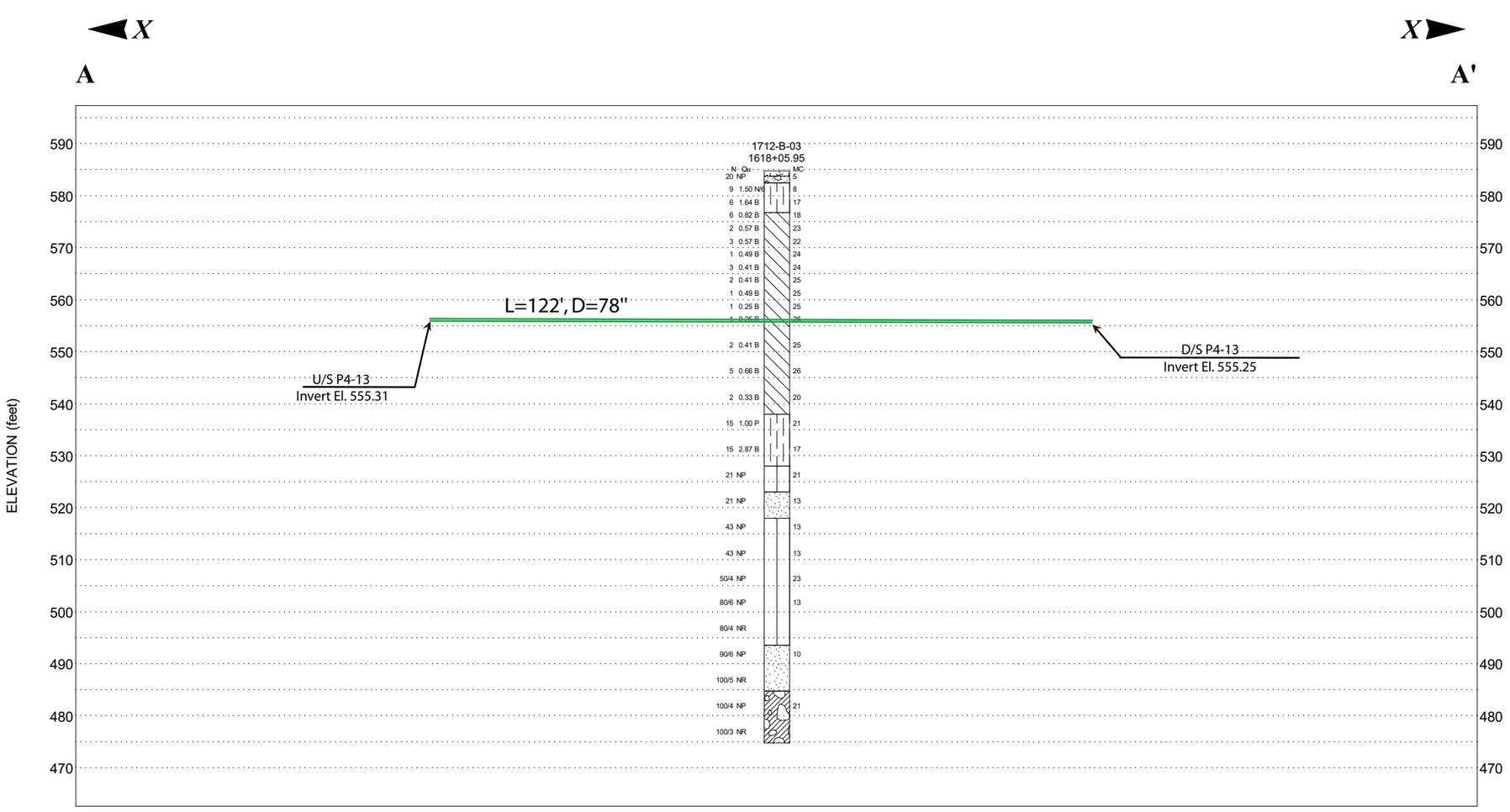
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 3: Drainage P4-12

Jane Byrne Interchange
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-18

WEI 11X17 1100401.GPJ WANGENG.GDT 7/7/18

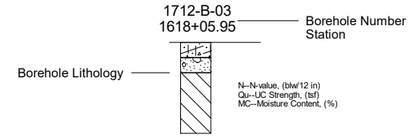


Lithology Graphics

- Pavement
- Gravelly sand, sandy gravel
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- IDH Sand, Sandy Loam
- Weathered bedrock

Site Map Scale 1 inch equals 0 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 0

Horizontal Scale (feet)

Vertical Exaggeration: 0x

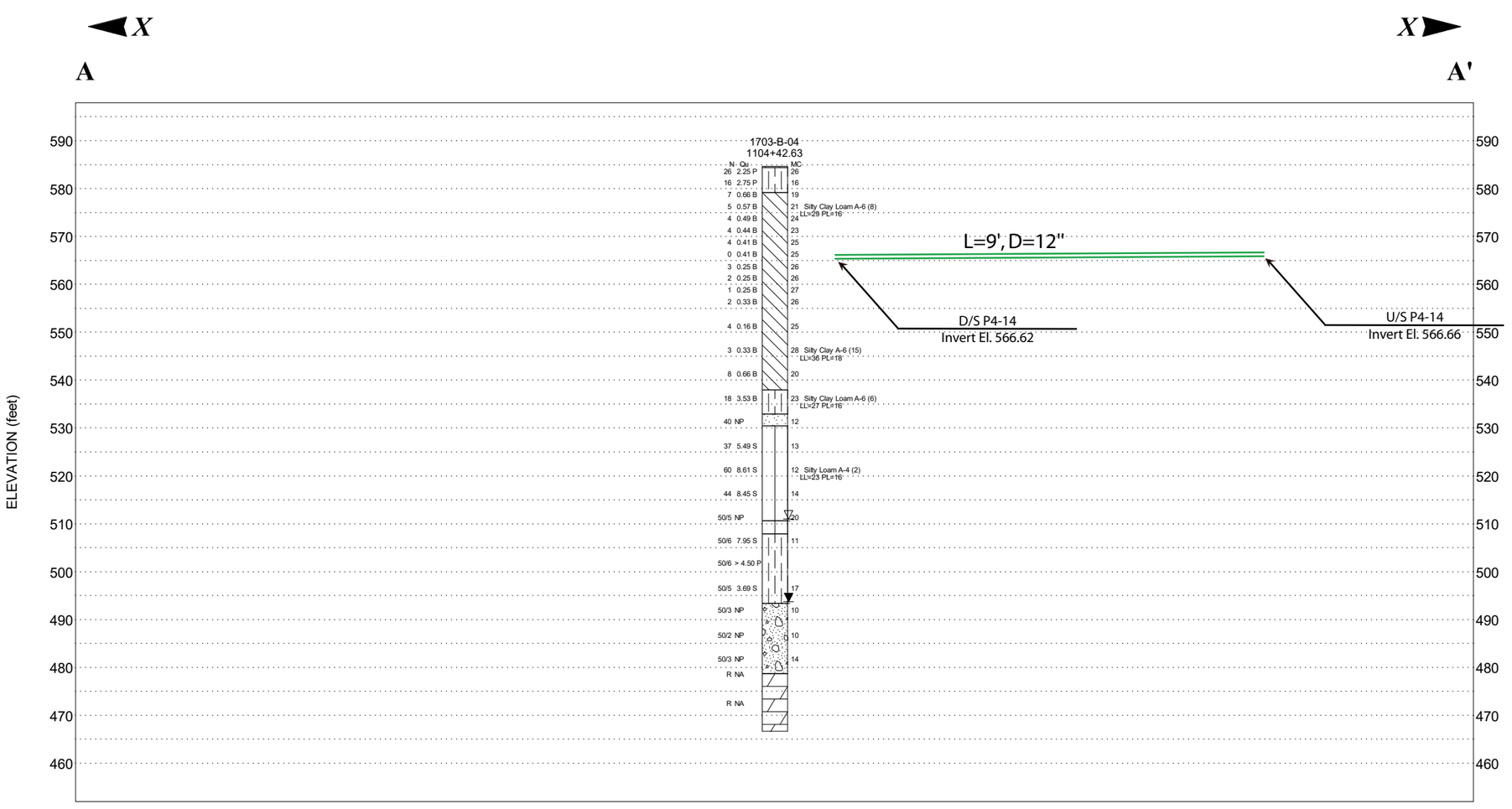
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 3: Drainage P4-13

Jane Byrne Interchange
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-19

WEI 11X17 1100401.GPJ WANGENG.GDT 7/7/18

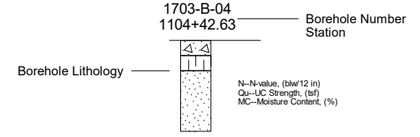


Lithology Graphics

- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Sand, Sandy Loam
- IDH Silt, Silty Loam
- Gravelly sand, sandy gravel
- Dolomite or Dolomitic Limestone

Site Map Scale 1 inch equals 0 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

Vertical Exaggeration: 0x

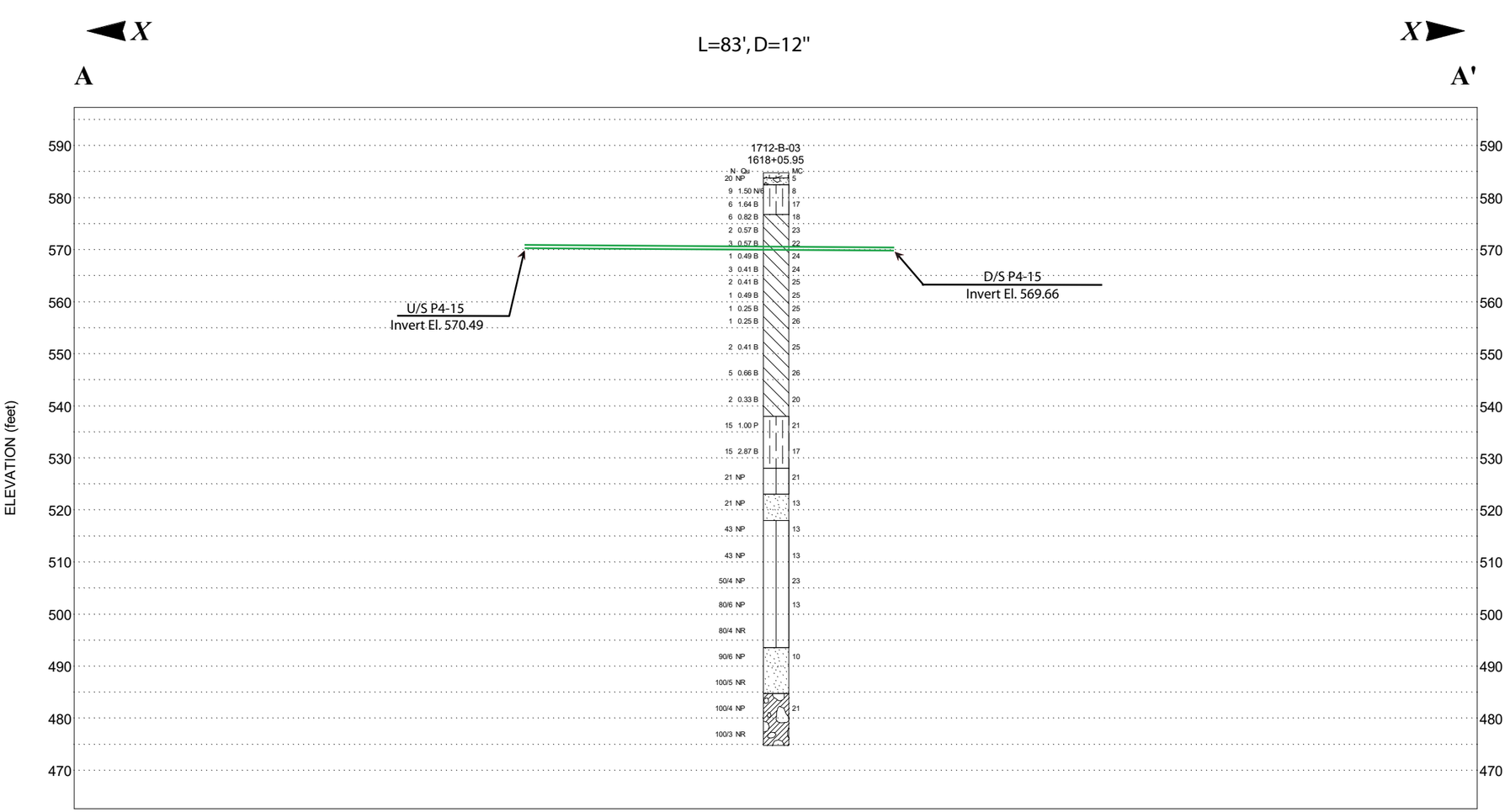
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 3: Drainage P4-14

Jane Byrne Interchange
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-20

WEI 11X17 1100401.GPJ WANGENG.GDT 7/7/18



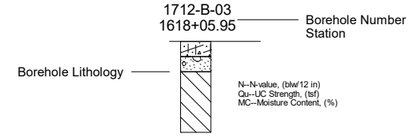
DISTANCE ALONG PROFILE (feet)

Lithology Graphics

- Pavement
- Gravelly sand, sandy gravel
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- IDH Sand, Sandy Loam
- Weathered bedrock

Site Map Scale 1 inch equals 0 feet

Explanation:



Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

Horizontal Scale (feet)

Vertical Exaggeration: 0x

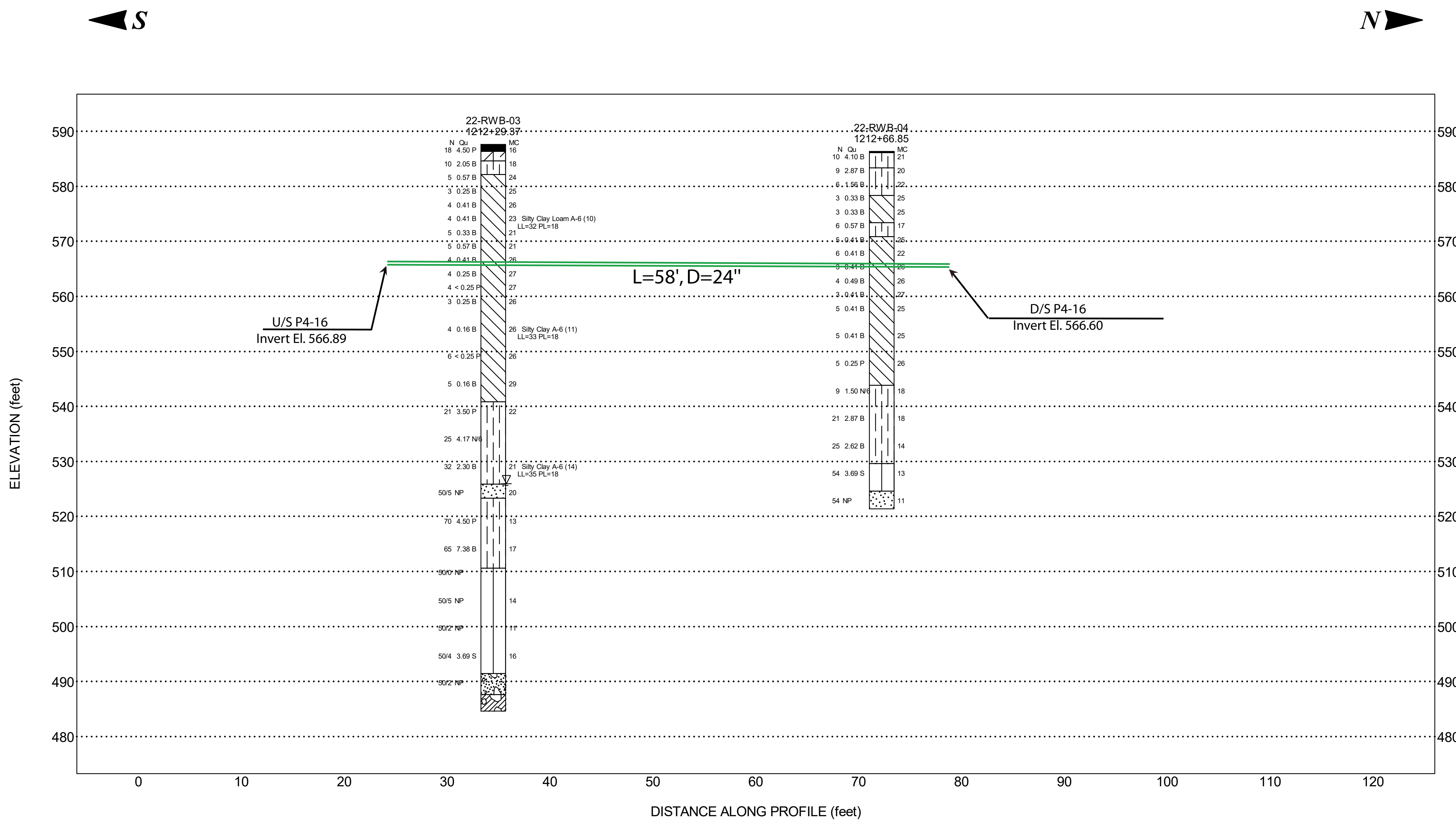
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

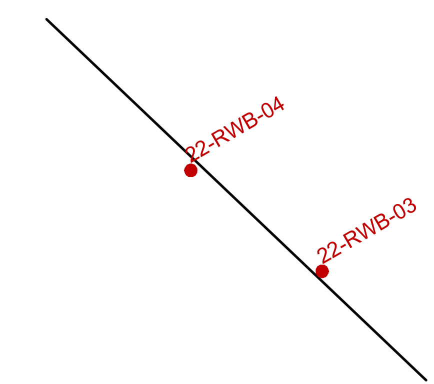
Subsurface Data Profile
Area 3: Drainage P4-15

Jane Byrne Interchange
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-21

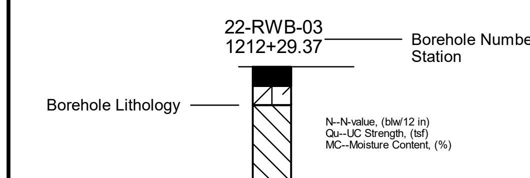
WEI 11X17 1100401.GPJ WANGENG.GDT 7/7/18





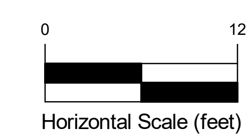
Site Map Scale 1 inch equals 45 feet

Explanation:



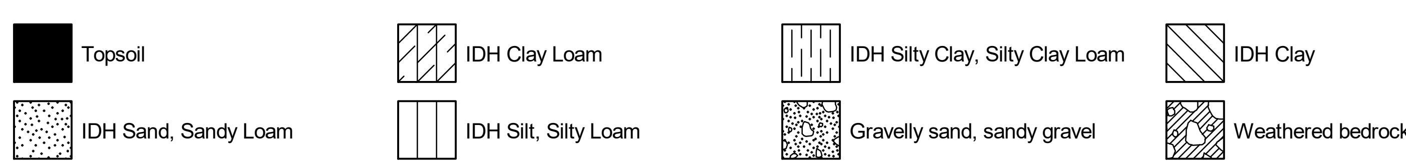
∇ Water Level Reading at time of drilling.

▼ Water Level Reading 24-hr after drilling or at end of drilling



Vertical Exaggeration: 0.5x

Lithology Graphics



Wang Engineering, Inc.
1145 North Main Street
Lombard, IL 60148

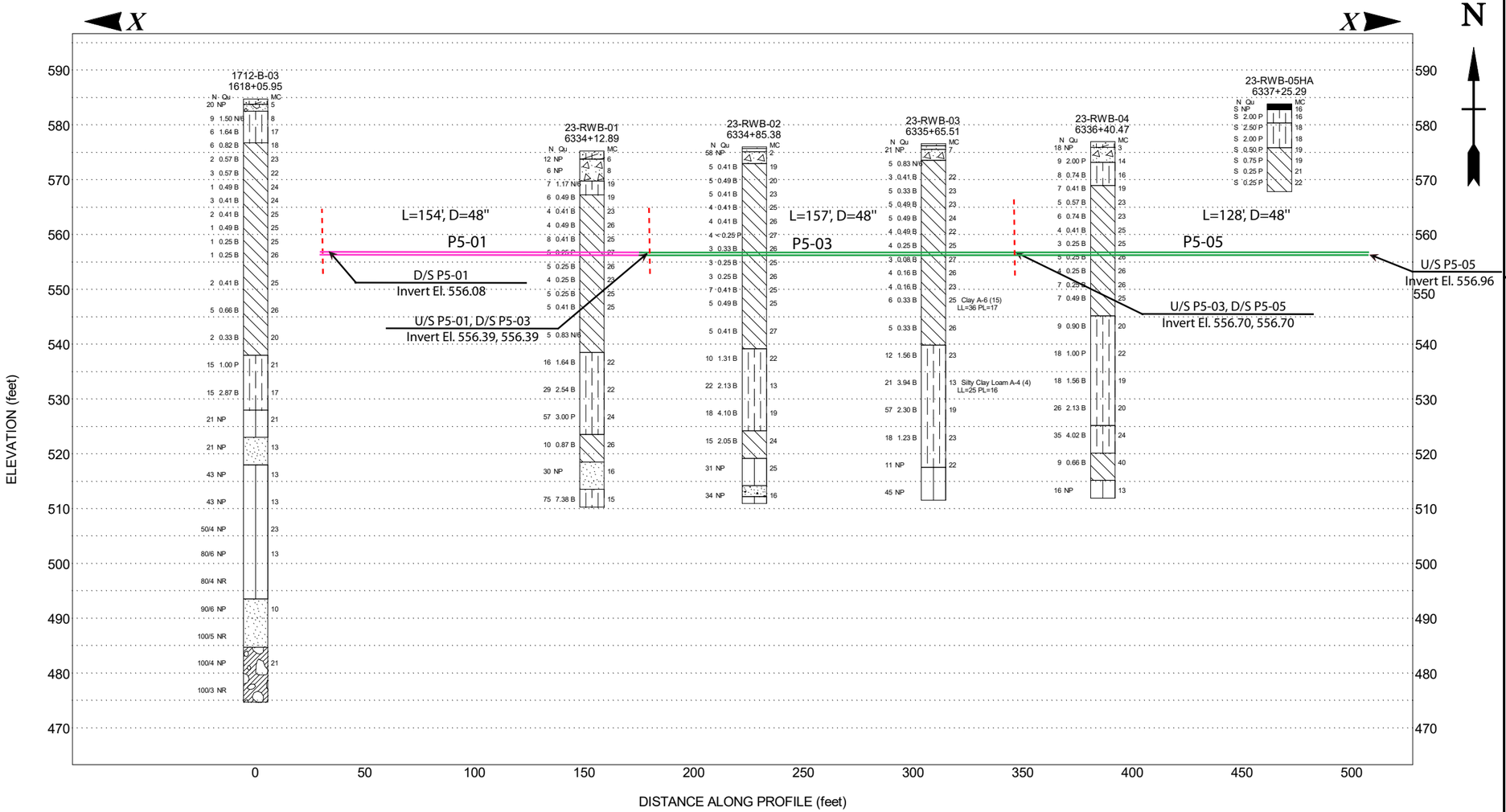
Soil Profile
Area 3: Pipe P4-16

WEI SINCE 1982

Jane Byrne Interchange
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-21

WEI 11X17 11000401.GPJ WANGENG.GDT 7/10/18

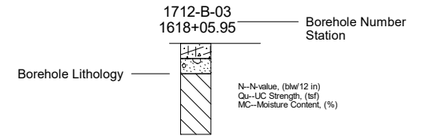


Lithology Graphics

- Pavement
- Gravelly sand, sandy gravel
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- IDH Sand, Sandy Loam
- Weathered bedrock
- Crushed stone
- Concrete
- Coarse sand
- Topsoil

Site Map Scale 1 inch equals 185 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 — 56

Horizontal Scale (feet)

Vertical Exaggeration: 2.5x

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Lombard, IL 60148

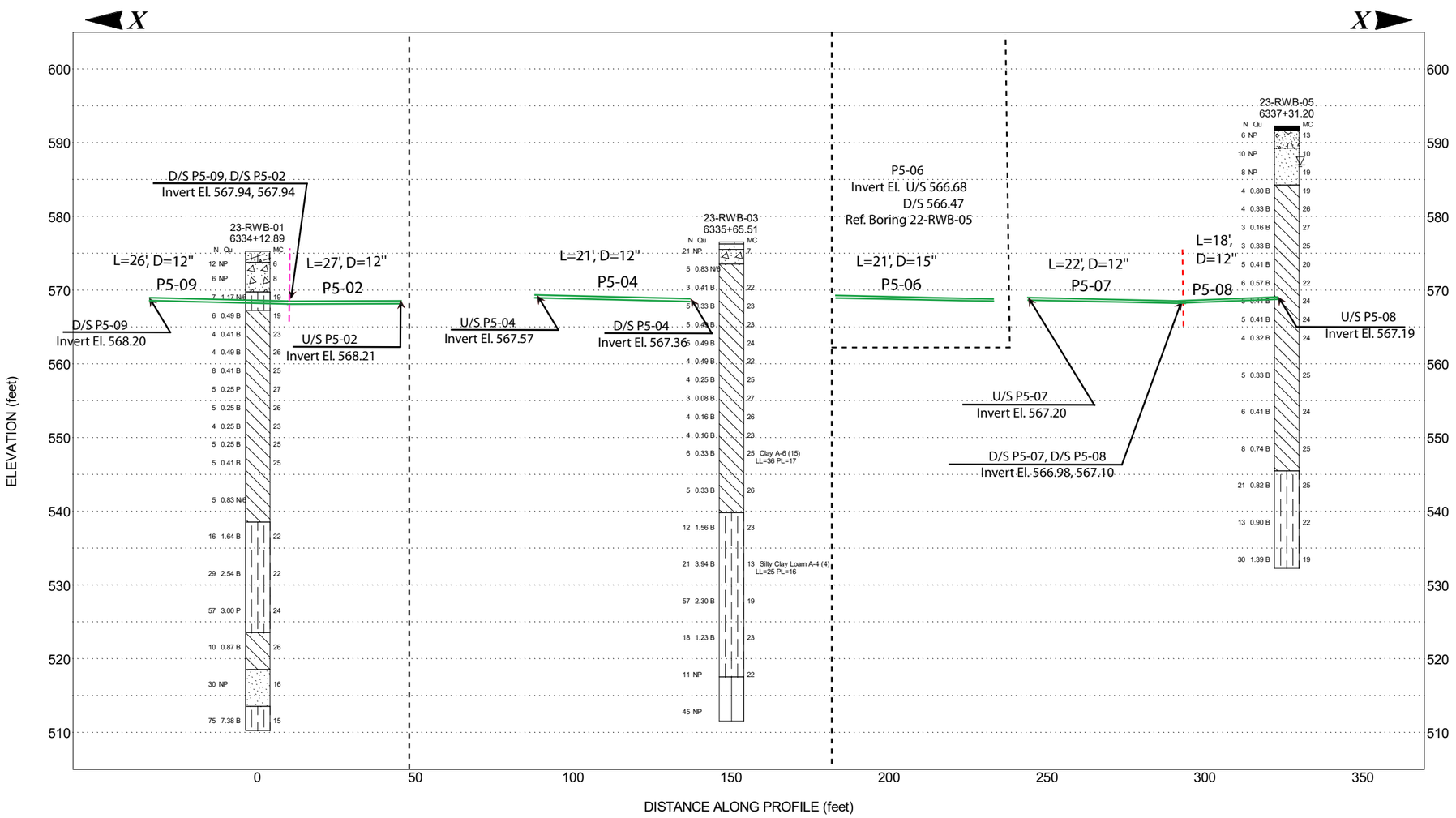
Subsurface Data Profile
Area 4: Drainage, P5-01, P5-03, and P5-05

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

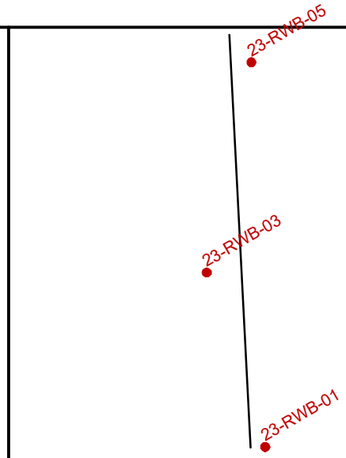
JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-23

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18



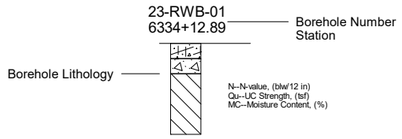
Lithology Graphics

- Pavement
- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Sand, Sandy Loam
- Concrete
- IDH Silt, Silty Loam
- Topsoil
- Gravelly sand, sandy gravel



Site Map Scale 1 inch equals 130 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 — 39

Horizontal Scale (feet)

Vertical Exaggeration: 2.5x

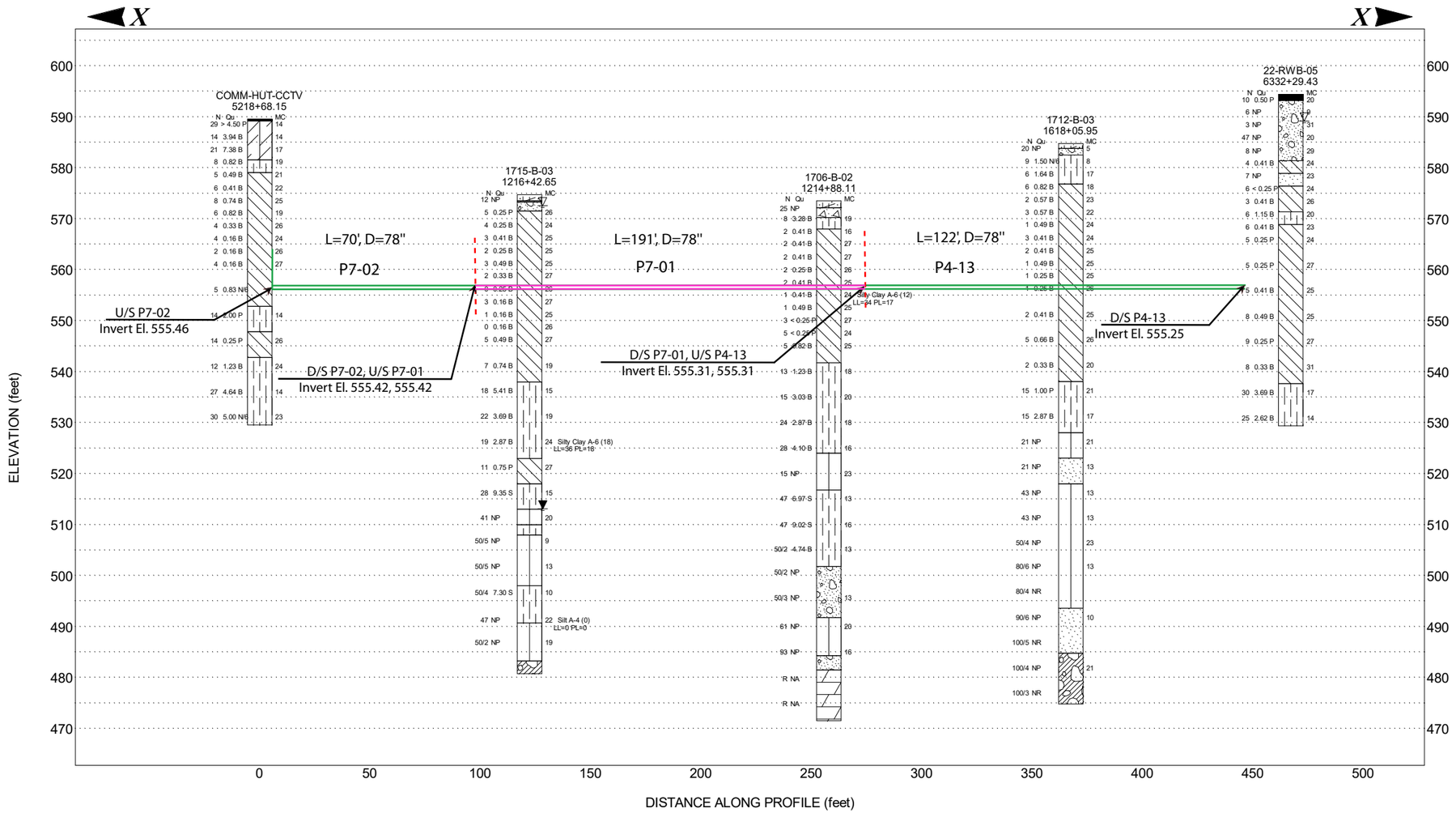
Wang Engineering, Inc.
1145 N Main Street
Lombard, IL 60148

Subsurface Data Profile
Area 4: Drainage P5-02, P5-04, P5-07 to P5-09

WEI SINCE 1982

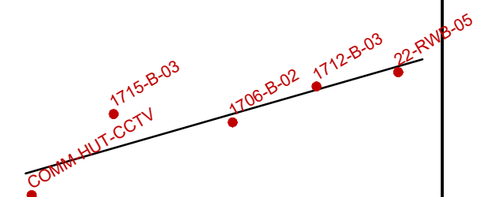
Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-24



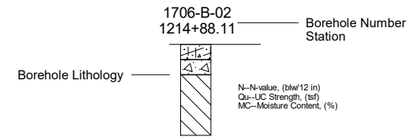
Lithology Graphics

- Pavement
- Crushed stone
- IDH Silty Clay, Silty Clay Loam
- IDH Clay
- IDH Silt, Silty Loam
- Gravelly sand, sandy gravel
- Dolomite or Dolomitic Limestone
- IDH Sand, Sandy Loam
- Weathered bedrock
- Topsoil
- IDH Clay Loam



Site Map Scale 1 inch equals 185 feet

Explanation:



- Water Level Reading at time of drilling.
- Water Level Reading 24-hr after drilling or at end of drilling

0 — 56

Horizontal Scale (feet)

Vertical Exaggeration: 2.5x

Wang Engineering, Inc.
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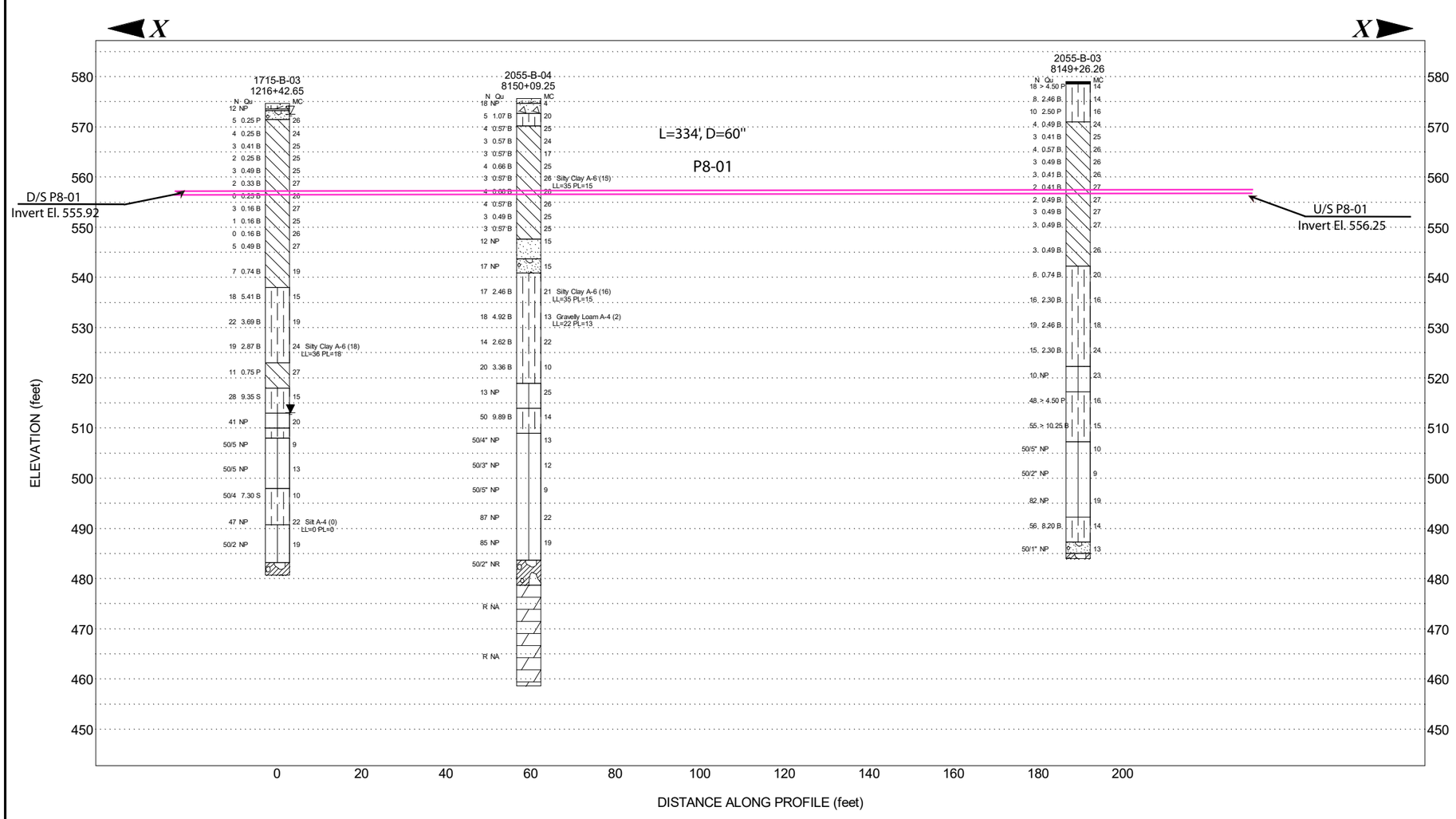
Lombard, IL 60148

Subsurface Data Profile
Area 5: Drainage P7-01, P7-02, and P4-13

WEI SINCE 1982

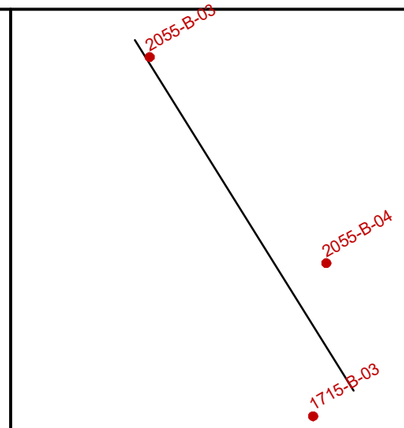
Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-25



Lithology Graphics

- Pavement
- Crushed stone
- Gravelly sand, sandy gravel
- IDH Clay
- IDH Silty Clay, Silty Clay Loam
- IDH Silt, Silty Loam
- Weathered bedrock
- Topsoil
- IDH Sand, Sandy Loam
- Dolomite or Dolomitic Limestone



Site Map Scale 1 inch equals 75 feet

Explanation:

1715-B-03
1216+42.65 — Borehole Number Station

Borehole Lithology

N--N-value, (blw/12 in)
Qu--UC Strength, (tsf)
MC--Moisture Content, (%)

Water Level Reading at time of drilling.

Water Level Reading 24-hr after drilling or at end of drilling

0 29

Horizontal Scale (feet)

Vertical Exaggeration: 1x

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Subsurface Data Profile
Area 6 : Drainage P8-01

WEI SINCE 1982

Circle Interchange Reconstruction
Section 17, T39N, R14E of 3rd PM

JOB NUMBER	PLATE NUMBER
1100-04-01	EXHIBIT 4-26

WEI 11X17 1100401.GPJ WANGENG.GDT 5/2/18

APPENDIX A

Wang Engineering
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BORING LOG 1703-B-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 584.72 ft
North: 1898071.44 ft
East: 1171813.94 ft
Station: 1104+42.63
Offset: 42.6570 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	584.5	3-inch thick CRUSHED STONE						
		--FILL--						
		Very stiff, dark brown and gray SILTY CLAY LOAM, trace gravel, brick and glass fragments			1	5 11 15	2.25 P	26
		--FILL--						
			5		2	3 7 9	2.75 P	16
	579.2							
		Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			3	2 3 4	0.66 B	19
		--L_L(%)=29, P_L(%)=16--			4	2 2 3	0.57 B	21
		--%Gravel=3.8--						
		--%Sand=16.9--						
		--%Silt=54.2--	10					
		--%Clay=25.1--			5	0 1 3	0.49 B	24
		--A-6(8)--						
					6	0 2 2	0.44 B	23
			15					
					7	0 2 2	0.41 B	25
					8	0 0 0	0.41 B	25
			20					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			25		9	0 1 2	0.25 B	26
					10	0 0 2	0.25 B	26
					11	0 0 1	0.25 B	27
			30		12	0 0 2	0.33 B	26
					13	0 2 2	0.16 B	25
		--L_L(%)=36, P_L(%)=18--						
		--%Gravel=1.8--						
		--%Sand=10.7--	40		14	0 1 2	0.33 B	28

GENERAL NOTES

Begin Drilling: **10-10-2013** Complete Drilling: **10-17-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&R** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **74.00 ft**
At Completion of Drilling: **91.25 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1703-B-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 584.72 ft
North: 1898071.44 ft
East: 1171813.94 ft
Station: 1104+42.63
Offset: 42.6570 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Silt=50.0-- --%Clay=37.5-- --A-6(15)--						
			45		15	3 4 4	0.66 B	20
	538.0	Very stiff, gray SILTY CLAY, trace gravel						
		--L_L(%)=27, P_L(%)=16-- --%Gravel=6.1-- --%Sand=20.1-- --%Silt=50.9-- --%Clay=22.9-- --A-6(6)--	50		16	4 7 11	3.53 B	23
	533.0	Dense, gray SANDY LOAM, trace gravel						
	530.5	Hard, gray SILTY LOAM, trace gravel	55		17	11 14 26	NP	12
			60		18	18 15 22	5.49 S	13

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--L_L(%)=23, P_L(%)=16-- --%Gravel=7.7-- --%Sand=23.1-- --%Silt=55.2-- --%Clay=14.0-- --A-4(2)--	65		19	15 25 35	8.61 S	12
			70		20	14 19 25	8.45 S	14
	510.7	Very dense, gray SILTY LOAM, trace gravel	75		21	18 36 50/5	NP	20
		--Saturated--						
	508.0	Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel						
			80		22	34 50/6	7.95 S	11

GENERAL NOTES

Begin Drilling: **10-10-2013** Complete Drilling: **10-17-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&R** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **74.00 ft**
At Completion of Drilling: **91.25 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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Fax: 630-953-9938

BORING LOG 1703-B-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 584.72 ft
North: 1898071.44 ft
East: 1171813.94 ft
Station: 1104+42.63
Offset: 42.6570 LT

Elevation (ft)	Depth (ft)	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	85	--HARD DRILLING-- *--Possible Cobbles--*		23	50/6	> 4.50 P	
	90	--HARD DRILLING-- *--Possible Cobbles--*		24	28 50/5	3.69 S	17
493.5		Very dense, gray GRAVELLY SAND --Saturated--		25	50/3	NP	10
	95						
	100			26	19 50/2	NP	10
	105			27	21 50/3	NP	14
478.7		Strong, light gray, poor to excellent rock mass quality, bedded fresh DOLOSTONE, up to 30-inch beds, 17-inch spaced joints, horizontal joints with less than 0.2-inch infilling, hard joint wall, with stylolitic surfaces, and moderately vuggy porosity. --Run 1 - RECOVERY=88%-- --RQD=26%-- 109.5ft-Qu=10990 psi ---> --Run 2 - RECOVERY=99%-- --RQD=92%-- 113.0ft-Qu=9060 psi --->		1	CORE		
	110				CORE		
	115			2			
466.7		Boring terminated at 118.00 ft					
	120						

GENERAL NOTES

Begin Drilling: **10-10-2013** Complete Drilling: **10-17-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&R** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **74.00 ft**
At Completion of Drilling: **91.25 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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Fax: 630-953-9938

BORING LOG 1703-PZ-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 582.49 ft
North: 1898127.96 ft
East: 1171807.47 ft
Station: 1104+74.81
Offset: 3.30157 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--Drilled without sampling--	5					
			10					
			15					
			20					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Piezometer Data: *--Installed in Nov. 12, 2014* *--Bentonite Seal 70 to 72 feet* *--Top of Sand Pack at 72 feet* *--Top of Screen at 75.3 feet* *--Screen Length 20 feet* *--Bottom of Screen at 95.3 feet*	25					
		--piezometer stabilized water level reading -- --reading during well development (11/20/2014) = 32.00 feet bgs-- --reading date: 12/05/2014 = 31.10 feet bgs--	30					
			35					
			40					

GENERAL NOTES

Begin Drilling: **11-10-2014** Complete Drilling: **11-12-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **4.25" HSA, monitoring water well**

WATER LEVEL DATA

While Drilling: **78.00 ft**
At Completion of Drilling: **NA**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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Fax: 630-953-9938

BORING LOG 1703-PZ-01

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 582.49 ft
North: 1898127.96 ft
East: 1171807.47 ft
Station: 1104+74.81
Offset: 3.30157 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45					
			50					
			55					
			60					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Piezometer Data: *--Installed in Nov. 12, 2014* *--Bentonite Seal 70 to 72 feet* *--Top of Sand Pack at 72 feet* *--Top of Screen at 75.3 feet* *--Screen Length 20 feet* *--Bottom of Screen at 95.3 feet*	65					
			70					
			75					
			80					

GENERAL NOTES

Begin Drilling **11-10-2014** Complete Drilling **11-12-2014**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **P&P** Logger **S. Woods** Checked by **C. Marin**
Drilling Method **4.25" HSA, monitoring water well**

WATER LEVEL DATA

While Drilling ▽ **78.00 ft**
At Completion of Drilling ▼ **NA**
Time After Drilling **NA**
Depth to Water ▼ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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Fax: 630-953-9938

BORING LOG 1703-PZ-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 582.49 ft
North: 1898127.96 ft
East: 1171807.47 ft
Station: 1104+74.81
Offset: 3.30157 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			85					
		Very dense, gray SILTY LOAM, trace gravel --Dry--	90		1	40 42 18/3	NP	13
			95		2	10 23 50/3	NP	20
		--Dolostone fragments--			3	15 30/2	NP	14
	482.5	Boring terminated at 100.00 ft	100					

GENERAL NOTES

Begin Drilling: **11-10-2014** Complete Drilling: **11-12-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **4.25" HSA, monitoring water well**

WATER LEVEL DATA

While Drilling: **78.00 ft**
At Completion of Drilling: **NA**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1706-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 573.51 ft
North: 1898279.12 ft
East: 1171636.73 ft
Station: 1214+88.11
Offset: 8.0782 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		16-inch thick ASPHALT \--PAVEMENT--						
	572.2	Medium dense, white and gray CRUSHED STONE --BASE COURSE--			1	6 12 13	NP	
	570.3	Very stiff, gray SILTY CLAY LOAM, trace gravel	5		2	2 4 4	3.28 B	19
	568.0	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			3	1 1 1	0.41 B	16
			10		4	0 0 2	0.41 B	27
					5	0 1 1	0.41 B	27
			15		6	0 1 1	0.25 B	26
					7	0 1 1	0.41 B	25
		--L_L(%)=34, P_L(%)=17-- --%Gravel=4.2-- --%Sand=15.6--	20		8	0 0 1	0.41 B	24
		--%Silt=49.0-- --%Clay=31.3-- --A-6 (12)--			9	0 0 1	0.49 B	25
			25		10	0 1 2	< 0.25 P	27
					11	1 2 3	< 0.25 P	24
			30		12	2 2 3	0.82 B	25
	541.8	Stiff to hard, gray SILTY CLAY, trace gravel			13	7 6 7	1.23 B	18
			35					
					14	4 7 8	3.03 B	20
			40					

GENERAL NOTES

Begin Drilling: **03-27-2014** Complete Drilling: **03-31-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **M. de los Reyes** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 11000401.GPJ WANGENG.GDT 5/15/18

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BORING LOG 1706-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 573.51 ft
North: 1898279.12 ft
East: 1171636.73 ft
Station: 1214+88.11
Offset: 8.0782 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	4 6 18	2.87 B	18
	524.0							
		Medium dense, gray SILT	50		16	5 15 13	4.10 B	16
		--Wet--	55		17	7 7 8	NP	23
	516.8							
		Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel	60		18	15 20 27	6.97 S	13
			65		19	15 20 27	9.02 S	16
			70		20	16 26 50/2	4.74 B	13
	501.8							
		--HARD DRILLING-- *--Possible Cobbles--*						
		Very dense, gray GRAVELLY SANDY LOAM	75		21	50/2	NP	
		--Wet--	80		22	50/3	NP	13

GENERAL NOTES

Begin Drilling: **03-27-2014** Complete Drilling: **03-31-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **M. de los Reyes** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1706-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 573.51 ft
North: 1898279.12 ft
East: 1171636.73 ft
Station: 1214+88.11
Offset: 8.0782 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING--						
		--Possible Cobbles--						
	491.8							
		Very dense, gray SILT, trace CLAY lamination						
		--DRY--			23	20 33 28	NP	20
			85					
		--DRY--						
	484.3							
		Very dense, gray GRAVELLY SAND	90		24	17 50 43	NP	16
		--Wet--						
	481.5							
		Strong, light gray, good rock mass quality, bedded fresh DOLOSTONE, up to 12-inch beds, 9-inch joints spacing, horizontal and vertical joints with none to more than 0.2-inch infilling, up to 2-inch greenish gray argillaceous partings, hard joint wall, with stylolitic surfaces, and moderately vuggy porosity.	95		1	CORE		
		--Run 1 - RECOVERY=100%--						
		--RQD=83%--						
		--Run 2 - RECOVERY=97%--			2	CORE		
		--RQD=92%--	100					
	471.5							
		Boring terminated at 102.00 ft	105					
			110					
			115					
			120					

GENERAL NOTES

Begin Drilling: **03-27-2014** Complete Drilling: **03-31-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **M. de los Reyes** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1712-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 578.30 ft
North: 1897649.82 ft
East: 1171680.84 ft
Station: 1610+06.78
Offset: 3.2187 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	577.2	13.5-inch thick CONCRETE --PAVEMENT--						
	576.8	4-inch thick ASPHALT --PAVEMENT--						
		Medium dense, brown SANDY GRAVEL --BASE COURSE--			1	12 11 4	NP	9
	574.8	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel						
			5		2	1 2 2	0.25 B	29
					3	0 0 0	0.16 B	21
			10		4	0 1 3	0.33 B	17
					5	1 1 2	0.57 B	22
			15		6	0 0 1	0.16 B	25
					7	0 0 1	0.08 B	26
			20		8	0 0 0	0.16 B	26
		--L_L(%)=35, P_L(%)=18-- --%Gravel=3.5-- --%Sand=14.0-- --%Silt=50.3-- --%Clay=32.2-- --A-6(13)--			9	0 0 0	0.16 B	22
			25		10	0 0 1	0.16 B	27
					11	0 0 2	0.33 B	23
			30		12	1 2 2	0.25 B	26
	541.6	Very stiff, gray SILTY CLAY, trace gravel			13	1 2 1	0.41 B	28
	538.8	Gray SANDY LOAM	40		14	5 13 18	2.62 B	16

GENERAL NOTES

Begin Drilling: **10-15-2013** Complete Drilling: **10-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&R** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **57.00 ft**
At Completion of Drilling: **82.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 1712-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 578.30 ft
North: 1897649.82 ft
East: 1171680.84 ft
Station: 1610+06.78
Offset: 3.2187 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--Moist--						
	536.6	Hard, gray SILTY LOAM to SILTY CLAY LOAM, trace gravel						
		--L_L(%)=27, P_L(%)=16--						
		--%Gravel=8.1--						
		--%Sand=26.9--						
		--%Silt=51.7--	45		15	9 22 26	6.23 B	15
		--%Clay=13.3--						
		--A-6(5)--						
			50		16	12 17 23	> 4.50 P	15
	526.6	Very stiff, gray CLAY						
		--L_L(%)=36, P_L(%)=19--						
		--%Gravel=0.1--						
		--%Sand=2.0--						
		--%Silt=49.4--	55		17	4 7 9	2.62 B	25
		--%Clay=48.5--						
		--A-6(17)--						
	521.6	Medium dense, gray SANDY LOAM, trace gravel						
		--Saturated--						
			60		18	4 6 9	NP	20
	516.6	Gray, coarse SAND, some gravel						
	513.8	Very dense, gray SILTY LOAM, trace gravel	65		19	20 20 18	NP	12
		--L_L(%)=19, P_L(%)=14--						
		--%Gravel=7.4--						
		--%Sand=21.3--						
		--%Silt=59.7--	70		20	32 50/5	NP	11
		--%Clay=11.7--						
		--A-4(1)--						
			75		21	24 44 50/3	9.59 S	12
			80		22	50/3	NP	16

GENERAL NOTES

Begin Drilling: **10-15-2013** Complete Drilling: **10-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&R** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **57.00 ft**
At Completion of Drilling: **82.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1712-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 578.30 ft
North: 1897649.82 ft
East: 1171680.84 ft
Station: 1610+06.78
Offset: 3.2187 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	496.6	Very dense, gray SILT --Saturated--						
		--%Gravel=0.0-- --%Sand=1.7-- --%Silt=91.5-- --%Clay=6.8-- --A-4(0)--	85		23	20 34 50	NP	19
		--HARD DRILLING-- *--Possible Cobbles--*						
					24	30 50/5	NP	16
		--HARD DRILLING-- *--Possible Cobbles--*	90					
	487.3	Strong, light gray, fair rock mass quality, thin bedded, fresh DOLOSTONE, 2- to 44-inch beds, 2- to 44-inch spaced joints, horizontal and vertical joints with less than 0.2-inch infilling, hard joint wall, with stylolitic surfaces, and moderately vuggy porosity, <0.5 inch vugs.				C O R E		
			95					
		--Run 1 - RECOVERY=100%-- --RQD=71%--			1			
			100					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	477.3	Boring terminated at 101.00 ft						
			105					
			110					
			115					
			120					

GENERAL NOTES

Begin Drilling: **10-15-2013** Complete Drilling: **10-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&R** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **57.00 ft**
At Completion of Drilling: **82.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 1712-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 584.78 ft
North: 1898322.61 ft
East: 1171738.21 ft
Station: 1618+05.95
Offset: 4.7838 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	583.8	3-inch thick, ASPHALT over 9-inch thick, CONCRETE --PAVEMENT--						
	582.5	Medium dense, grayish white SANDY GRAVEL --DRY-- --BASE COURSE--			1	12 11 9	NP	5
		Stiff, brown to gray SILTY CLAY LOAM, trace gravel --FILL--	5		2	2 4 5	1.50 N/6	8
					3	1 3 3	1.64 B	17
	576.8	Soft to stiff, gray CLAY to SILTY CLAY, trace gravel	10		4	1 3 3	0.82 B	18
					5	0 0 2	0.57 B	23
			15		6	0 1 2	0.57 B	22
					7	0 0 1	0.49 B	24
			20		8	0 1 2	0.41 B	24
			25		9	0 0 2	0.41 B	25
					10	0 0 1	0.49 B	25
					11	0 0 1	0.25 B	25
			30		12	0 0 1	0.25 B	26
			35		13	0 1 1	0.41 B	25
			40		14	0 2 3	0.66 B	26

GENERAL NOTES

Begin Drilling: **07-28-2014** Complete Drilling: **08-20-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1712-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 584.78 ft
North: 1898322.61 ft
East: 1171738.21 ft
Station: 1618+05.95
Offset: 4.7838 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	0 0 2	0.33 B	20
	538.0							
		Stiff to very stiff, gray SILTY CLAY, trace gravel	50		16	3 6 9	1.00 P	21
			55		17	2 5 10	2.87 B	17
	528.0							
		Medium dense, gray SILTY LOAM, trace gravel	60		18	5 8 13	NP	21
	523.0							
		Medium dense, gray fine SAND, trace gravel --Dry-	65		19	10 8 13	NP	13
	518.0							
		Dense, gray SILTY LOAM, trace gravel --Dry-	70		20	13 15 28	NP	13
			75		21	14 17 26	NP	13
			80		22	18 27 50/4	NP	23

GENERAL NOTES

Begin Drilling: **07-28-2014** Complete Drilling: **08-20-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1712-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 584.78 ft
North: 1898322.61 ft
East: 1171738.21 ft
Station: 1618+05.95
Offset: 4.7838 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	493.6	Very dense, gray, very fine to fine SAND --possible water bearing--	85		23	80/6	NP	13
			90		24	80/4	NR	
			95		25	90/6	NP	10
	484.8		100		26	100/5	NR	
	474.8	Very dense, greenish gray, shaly DOLOSTONE; moist to wet	105		27	100/4	NP	21
			110		28	100/3	NR	
		Boring terminated at 111.00 ft	115					
			120					

GENERAL NOTES

Begin Drilling: **07-28-2014** Complete Drilling: **08-20-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1715-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 578.98 ft
North: 1898224.57 ft
East: 1171745.64 ft
Station: 1105+89.73
Offset: 39.7965 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	578.8	2-inch thick ASPHALT --PAVEMENT--						
	578.0	10-inch thick CONCRETE --PAVEMENT--						
		Loose, light brown CRUSHED STONE						
	576.0	--BASE COURSE--						
		Soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel						
					1	4 5 4	NP	10
			5		2	0 1 2	0.82 B	23
					3	2 2 3	0.41 B	19
			10		4	2 2 3	0.49 B	22
					5	1 2 2	0.74 B	20
			15		6	0 1 2	0.33 B	23
					7	1 1 2	0.33 B	26
			20		8	1 1 2	0.25 B	26
			25		9	0 1 2	0.25 B	27
					10	1 1 2	0.50 N/6	
					11	0 2 2	0.41 B	26
			30		12	1 1 2	0.57 B	26
			35		13	2 2 2	0.33 B	28
			40		14	4 6 9	0.67 B	18

GENERAL NOTES

Begin Drilling: **02-23-2014** Complete Drilling: **03-23-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **3.00 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **24 hours**
Depth to Water: **72.00 ft**

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BORING LOG 1715-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 578.98 ft
North: 1898224.57 ft
East: 1171745.64 ft
Station: 1105+89.73
Offset: 39.7965 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	537.2							
		Very stiff, gray SILTY CLAY LOAM, trace gravel						
			45		15	7 7 7	3.36 B	22
			50		16	6 10 12	2.54 B	16
	527.2							
		Dense, gray SILT --Wet--						
			55		17	14 16 18	NP	16
	522.2							
		Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel						
			60		18	18 24 27	8.19 S	12
	507.2							
		Very dense, gray SILTY LOAM, trace to some gravel --WET--						
			65		19	20 31 42	4.59 S	14
			70		20	20 50/4	5.74 S	13
			75		21	30 50/4	NP	10
		--HARD DRILLING-- *--Possible Cobbles--*						
			80		22	50/5	NP	12

GENERAL NOTES

Begin Drilling: **02-23-2014** Complete Drilling: **03-23-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: ▽ **3.00 ft**
At Completion of Drilling: ▼ **mud in the borehole**
Time After Drilling: **24 hours**
Depth to Water: ▼ **72.00 ft**

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BORING LOG 1715-B-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 578.98 ft
North: 1898224.57 ft
East: 1171745.64 ft
Station: 1105+89.73
Offset: 39.7965 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING-- *--Possible Cobbles--*	85		23	50/3	NP	
		--HARD DRILLING-- *--Possible Cobbles--*	90		24	50/3	NP	10
	488.0	--VERY HARD, STEADY DRILLING-- --WEATHERED BEDROCK--						
	486.0	--ROLLER BIT REFUSAL-- Boring terminated at 93.00 ft	95					
			100					

GENERAL NOTES

Begin Drilling: **02-23-2014** Complete Drilling: **03-23-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: ▽ **3.00 ft**
At Completion of Drilling: ▼ **mud in the borehole**
Time After Drilling: **24 hours**
Depth to Water: ▼ **72.00 ft**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1715-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 574.74 ft
North: 1898289.14 ft
East: 1171492.75 ft
Station: 1216+42.65
Offset: 33.3447 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	573.5	14-inch thick ASPHALT --PAVEMENT--						
	573.2	4-inch thick CRUSHED STONE --BASE COURSE--			1	5 6 6	NP	
		Medium dense, brown SANDY GRAVEL --FILL--						
	571.5	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel	5		2	4 2 3	0.25 P	26
					3	2 1 3	0.25 B	24
			10		4	1 1 2	0.41 B	25
					5	0 0 2	0.25 B	25
			15		6	1 2 1	0.49 B	25
					7	1 1 1	0.33 B	27
			20		8	0 0 0	0.25 B	26
			25		9	1 1 2	0.16 B	27
					10	0 0 1	0.16 B	25
					11	0 0 0	0.16 B	26
			30		12	1 2 3	0.49 B	27
	538.0	Very stiff to hard, gray SILTY CLAY, trace gravel	35		13	1 3 4	0.74 B	19
			40		14	6 8 10	5.41 B	15

GENERAL NOTES

Begin Drilling: **03-19-2014** Complete Drilling: **03-19-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **2.50 ft**
At Completion of Drilling: **62.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1715-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 574.74 ft
North: 1898289.14 ft
East: 1171492.75 ft
Station: 1216+42.65
Offset: 33.3447 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	4 8 14	3.69 B	19
		--L_L(%)=36, P_L(%)=18-- --%Gravel=0.5-- --%Sand=3.1-- --%Silt=59.8-- --%Clay=36.7-- --A-6 (18)--	50		16	5 9 10	2.87 B	24
	523.0	Medium stiff, gray CLAY, trace gravel						
			55		17	4 5 6	0.75 P	27
	518.0	Hard, gray SILTY CLAY LOAM, trace gravel						
			60		18	10 12 16	9.35 S	15

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	513.0	Gray SILT, trace gravel --Wet--						
			65		19	16 20 21	NP	20
	510.0	Hard (>4.5P), gray SILTY CLAY LOAM, trace gravel						
	508.0	Very dense, gray SILTY LOAM, little to some gravel						
			70		20	50/5	NP	9
		--HARD DRILLING-- *--Possible Cobbles--*						
			75		21	50/5	NP	13
	498.0	Hard, gray SILTY CLAY LOAM, trace gravel						
			80		22	33 50/4	7.30 S	10

GENERAL NOTES

Begin Drilling: **03-19-2014** Complete Drilling: **03-19-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **2.50 ft**
At Completion of Drilling: **62.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1715-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 574.74 ft
North: 1898289.14 ft
East: 1171492.75 ft
Station: 1216+42.65
Offset: 33.3447 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	490.7	Very dense, gray SILTY LOAM to SILT, trace gravel	85		23	13 19 28	NP	22
		--Wet-- --L_L(%)=NP, P_L(%)=NP-- --%Gravel=0.1-- --%Sand=1.1-- --%Silt=92.6-- --%Clay=6.3-- --A-4 (0)--						
					24	50/2	NP	19
			90					
	483.2	--DIFFICULT DRILLING-- --WEATHERED BEDROCK--						
	480.7	--ROLLER BIT REFUSAL-- Boring terminated at 94.00 ft						
			95					
			100					

GENERAL NOTES

Begin Drilling: **03-19-2014** Complete Drilling: **03-19-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&P** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **2.50 ft**
At Completion of Drilling: **62.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 1715-B-05

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 577.87 ft
North: 1897826.42 ft
East: 1171228.58 ft
Station: 1223+01.29
Offset: 21.767 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	576.9	Dark brown SILTY LOAM, trace gravel						
		--TOPSOIL--						
		Stiff to hard, brown and gray SILTY CLAY LOAM, trace gravel and roots			1	6 8 7	4.50 P	14
		--FILL--			2	1 3 2	1.00 P	28
	572.4		5					
		Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			3	1 2 3	0.25 B	20
					4	1 2 2	0.25 B	25
			10					
					5	1 1 2	0.25 B	28
					6	1 2 1	0.16 B	28
			15					
					7	1 2 2	0.25 B	27
					8	1 2 2	0.16 B	27
			20					
					9	1 2 3	0.25 B	27
			25		10	2 2 3	0.33 B	26
					11	3 3 4	0.49 B	26
			30		12	2 2 3	0.57 B	27
	546.1	Stiff to hard, gray SILTY CLAY LOAM, trace gravel						
			35		13	4 5 8	2.17 N/6	21
			40		14	4 5 10	1.75 P	24

GENERAL NOTES

Begin Drilling: **04-14-2014** Complete Drilling: **04-17-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **N&J** Logger: **A. Happel** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 1715-B-05

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 577.87 ft
North: 1897826.42 ft
East: 1171228.58 ft
Station: 1223+01.29
Offset: 21.767 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	521.1	Medium stiff, gray CLAY, trace gravel						
			45		15	8 10 14	4.10 B	15
			50		16	10 12 16	4.67 B	14
			55		17	8 9 14	2.95 B	21
			60		18	4 3 5	0.66 B	38
	516.1	Loose, gray SILT						
			65		19	4 4 4	NP	29
	511.1	Hard, gray SILTY CLAY LOAM, trace gravel						
			70		20	10 16 22	6.07 B	20
	506.1	Very dense, gray SILTY LOAM, some gravel						
			75		21	7 36 50/5	NA	
		--HARD DRILLING-- *--Possible Cobbles--*						
			80		22	50/5	NP	13

GENERAL NOTES

Begin Drilling: **04-14-2014** Complete Drilling: **04-17-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **N&J** Logger: **A. Happel** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 1715-B-05

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 577.87 ft
North: 1897826.42 ft
East: 1171228.58 ft
Station: 1223+01.29
Offset: 21.767 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
					23	50/0		
		--HARD DRILLING--						
		--Possible Cobbles--	85					
	491.1	--DIFFICULT DRILLING--						
		--WEATHERED BEDROCK--						
	489.9							
		Strong, light gray, fair rock quality, bedded DOLOSTONE, beds up to 10 inch, 6 inch joint spacing, joints with more than 0.2 inch or no infilling, vuggy, and with stylolitic surfaces.	90			C O R E		
		--Run 1 -RECOVERY= 91%--			1			
		--RQD= 66%--						
			95					
	479.9							
		Boring terminated at 98.00 ft						
			100					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)

GENERAL NOTES

Begin Drilling: **04-14-2014** Complete Drilling: **04-17-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **N&J** Logger: **A. Happel** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: ▽ **Rotary wash**
At Completion of Drilling: ▼ **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: ▼ **NA**

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BORING LOG 18-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 585.35 ft
North: 1897627.64 ft
East: 1171433.33 ft
Station: 1607+57.15
Offset: 14.1384 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	585.0	4-inch thick, black SILTY LOAM --TOPSOIL--						
		Very stiff to hard, brown and gray SILTY CLAY LOAM, trace gravel --FILL--			1	13 11 12	> 4.50 P	17
			5		2	6 6 8	3.44 B	17
	579.8							
		Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			3	2 2 3	0.41 B	20
			10		4	2 2 3	0.49 B	20
					5	0 1 2	0.25 B	25
			15		6	2 3 4	0.66 B	21
					7	2 3 4	0.57 B	22
			20		8	1 3 3	0.49 B	25
			25		9	1 2 3	0.41 B	24
					10	1 2 2	0.33 B	26
					11	1 1 2	0.25 B	27
			30		12	1 1 2	0.16 B	25
			35		13	2 2 4	0.66 B	24
			40		14	2 3 4	0.49 B	26

GENERAL NOTES

Begin Drilling: **10-16-2013** Complete Drilling: **10-17-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **52.00 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 18-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 585.35 ft
North: 1897627.64 ft
East: 1171433.33 ft
Station: 1607+57.15
Offset: 14.1384 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	543.6							
		Very stiff to hard, gray SILTY CLAY LOAM, trace gravel						
			45		15	5 6 14	3.12 B	14
			50		16	9 14 18	4.76 B	14
	533.6							
		Gray, medium to coarse SAND, trace gravel --Wet--						
	531.3							
		Very stiff to hard, gray SILTY CLAY, trace gravel						
			55		17	13 22 32	5.00 B	18
			60		18	11 11 23	3.85 B	22
	523.6							
		Dense to very dense, gray GRAVELLY SAND --Wet--						
			65		19	17 19 17	NP	13
			70		20	26 26 21	NP	12
		--HARD DRILLING-- *--Possible Cobbles--*						
					21	22 50/3	NR	
	510.3		75					
		Boring terminated at 75.00 ft						
			80					

GENERAL NOTES

Begin Drilling: **10-16-2013** Complete Drilling: **10-17-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **52.00 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 18-RWB-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.58 ft
North: 1897703.15 ft
East: 1171280.67 ft
Station: 1224+34.52
Offset: 9.451 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	575.3	3-inch thick ASPHALT --PAVEMENT--						
	574.6	9-inch thick CONCRETE --PAVEMENT--						
		Medium dense, brown SANDY GRAVEL			1	11 10 6	NP	14
	572.6	--FILL--						
		Soft to medium stiff, gray SILTY CLAY LOAM, trace gravel			2	2 2 3	0.83 N/6	
		--L_L(%)=30, P_L(%)=14-- --%Gravel=3.5-- --%Sand=15.1-- --%Silt=56.3-- --%Clay=25.2-- --A-6 (10)--	5		3	1 1 2	0.25 B	23
	567.6	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			4	1 1 2	0.25 B	26
			10		5	0 0 2	0.03 B	28
					6	0 1 1	0.25 B	26
			15		7	0 1 2	0.25 B	26
					8	0 0 0	0.16 B	27
			20		9	0 0 0	0.16 B	27
					10	0 0 2	0.33 B	25
			25		11	0 2 2	0.33 B	25
		--L_L(%)=37, P_L(%)=18-- --%Gravel=3.2-- --%Sand=10.5-- --%Silt=47.4-- --%Clay=38.9-- --A-6 (16)--			12	0 0 1	0.33 B	27
			30					
	538.8	Very stiff, gray SILTY CLAY, trace gravel			13	1 2 3	0.49 B	19
			35					
					14	4 9 10	3.12 B	17
			40					

GENERAL NOTES

Begin Drilling: **10-14-2013** Complete Drilling: **10-14-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 18-RWB-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.58 ft
North: 1897703.15 ft
East: 1171280.67 ft
Station: 1224+34.52
Offset: 9.451 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--L_L(%)=35, P_L(%)=17--						
		--%Gravel=2.2--						
		--%Sand=9.4--						
		--%Silt=51.7--	45					
		--%Clay=36.7--						
		--A-6 (15)-						
					15	4 8 10	2.95 B	19
	525.6		50		16	6 17 14	3.20 B	17
		Boring terminated at 50.00 ft						
			55					
			60					

GENERAL NOTES

Begin Drilling: **10-14-2013** Complete Drilling: **10-14-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 18-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 573.93 ft
North: 1897759.34 ft
East: 1171203.61 ft
Station: 1604+97.68
Offset: 33.9208 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	573.6	4-inch thick ASPHALT --PAVEMENT--						
	572.9	8-inch thick CONCRETE --PAVEMENT--						
		Medium dense, brown SANDY GRAVEL and CRUSHED STONE --FILL--			1	12 14 12	NP	7
			5		2	4 5 6	NP	11
	568.4	Very soft to soft, gray CLAY to SILTY CLAY, trace gravel			3	2 1 1	0.25 B	22
			10		4	0 1 1	0.33 B	26
					5	0 0 0	0.16 B	27
		--L_L(%)=33, P_L(%)=19-- --%Gravel=2.2-- --%Sand=9.4-- --%Silt=51.7-- --%Clay=36.7-- --A-6 (10)--	15		6	0 0 0	0.16 B	27
					7	0 0 0	0.16 B	24
			20		8	0 1 1	0.25 B	27
			25		9	0 0 2	0.25 B	26
					10	0 1 2	0.33 B	25
			30		11	0 1 2	0.33 B	25
					12	0 0 0	0.25 B	29
	542.2	Stiff to hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel						
			35		13	3 5 10	3.85 B	15
		--L_L(%)=24, P_L(%)=15-- --%Gravel=8.4-- --%Sand=24.5--	40		14	8 12 14	4.35 B	14

GENERAL NOTES

Begin Drilling: **10-14-2013** Complete Drilling: **10-14-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **3.50 ft**
At Completion of Drilling: **40.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 18-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 573.93 ft
North: 1897759.34 ft
East: 1171203.61 ft
Station: 1604+97.68
Offset: 33.9208 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Silt=49.1--						
		--%Clay=18.1--						
		--A-4 (3)--						
			45		15	5 8 12	3.03 B	22
	523.9		50		16	5 8 10	1.97 B	23
		Boring terminated at 50.00 ft						
			55					
			60					

GENERAL NOTES

Begin Drilling: **10-14-2013** Complete Drilling: **10-14-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **D. Kolpacki** Checked by: **C. Marin**
Drilling Method: **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **3.50 ft**
At Completion of Drilling: **40.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENGINC 11000401.GPJ WANGENG.GDT 5/15/18

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BORING LOG 19-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 588.28 ft
North: 1897670.99 ft
East: 1171413.08 ft
Station: 1607+21.55
Offset: 18.1192 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	588.0	4-inch thick, dark brown SILTY LOAM --TOPSOIL-- Dense, dark brown SILTY LOAM, trace gravel --FILL--			1	6 23 22	NP	16
	585.3	Stiff, brown and gray SILTY CLAY LOAM, trace gravel	5		2	3 6 7	1.97 B	17
	582.8	Very soft to stiff, gray CLAY to SILTY CLAY, trace gravel --L_L(%)=31, P_L(%)=17-- --%Gravel=2.2-- --%Sand=18.3-- --%Silt=47.1-- --%Clay=32.3-- --A-6 (10)--			3	3 3 4	1.15 B	21
			10		4	1 2 3	0.33 B	24
					5	1 1 1	0.08 B	25
		--L_L(%)=31, P_L(%)=18-- --%Gravel=4.1-- --%Sand=13.3-- --%Silt=51.6-- --%Clay=31.0-- --A-6 (9)--	15		6	1 1 2	0.25 B	29
	571.5	Soft, gray SILTY LOAM, trace gravel			7	1 4 10	NA	
		--L_L(%)=23, P_L(%)=16-- --%Gravel=6.9-- --%Sand=23.7--	20		8	4 3 4	0.49 B	17
		--%Silt=57.5-- --%Clay=11.8-- --A-4 (2)--						
	566.5	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			9	4 6 5	NA	
			25		10	1 1 2	0.16 B	27
					11	1 1 2	0.25 B	27
			30		12	1 1 2	0.33 B	27
			35		13	0 2 2	0.25 B	27
		--L_L(%)=34, P_L(%)=18-- --%Gravel=2.9-- --%Sand=13.1--	40		14	2 2 3	0.66 B	26

GENERAL NOTES

Begin Drilling: **10-14-2013** Complete Drilling: **10-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **67.00 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **48 hours**
Depth to Water: **15.00 ft**

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BORING LOG 19-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 588.28 ft
North: 1897670.99 ft
East: 1171413.08 ft
Station: 1607+21.55
Offset: 18.1192 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Silt=49.6-- --%Clay=34.3-- --A-6 (12)--						
			45		15	2 2 5	0.41 B	21
	541.5							
		Stiff to hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel						
			50		16	3 5 8	1.48 B	23
		--L_L(%)=25, P_L(%)=16-- --%Gravel=6.5-- --%Sand=26.5-- --%Silt=49.4-- --%Clay=17.6-- --A-4 (3)--	55		17	6 11 19	4.84 B	14
			60		18	14 23 31	5.41 B	18
	526.5							
		Very stiff, gray CLAY, trace gravel						
		--L_L(%)=44, P_L(%)=20-- --%Gravel=1.2-- --%Sand=5.0-- --%Silt=39.6-- --%Clay=54.2-- --A-7-6 (24)--	65		19	5 6 7	2.13 B	30
	521.5							
		Dense, gray, medium SAND --Saturated--						
			70		20	11 13 17	NP	19
		--Change in drilling conditions at 73 ft--						
	515.3							
		Hard, gray SILTY CLAY LOAM, trace gravel --L_L(%)=29, P_L(%)=16-- --%Gravel=3.6-- --%Sand=13.5-- --%Silt=56.0-- --%Clay=26.9-- --A-6 (9)--	75		21	17 32 50/4	7.71 B	15
	511.5							
		Very dense, gray SILTY LOAM, trace gravel						
			80		22	37 50/5	NP	10

GENERAL NOTES

Begin Drilling: **10-14-2013** Complete Drilling: **10-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **67.00 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **48 hours**
Depth to Water: **15.00 ft**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 19-RWB-01

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 588.28 ft
North: 1897670.99 ft
East: 1171413.08 ft
Station: 1607+21.55
Offset: 18.1192 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING--						
		--Possible Cobbles--						
			85		23	29 34 40	NP	11
	501.5	Very dense, gray SILT						
			90		24	15 50/5	NP	18
	494.6	DOLOSTONE fragments			25	50/4	NP	17
		--DIFFICULT DRILLING--						
	493.3	--WEATHERED BEDROCK--	95					
		Boring terminated at 95.00 ft						
			100					

GENERAL NOTES

Begin Drilling **10-14-2013** Complete Drilling **10-16-2013**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **P&N** Logger **F. Bozga** Checked by **C. Marin**
Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **67.00 ft**
At Completion of Drilling ▼ **mud in the borehole**
Time After Drilling **48 hours**
Depth to Water ▼ **15.00 ft**

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BORING LOG 2055-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 579.03 ft
North: 1898462.94 ft
East: 1171413.63 ft
Station: 8149+26.26
Offset: 58.3388 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	578.5	6-inch thick, black SILTY CLAY LOAM --TOPSOIL--						
		Very stiff to hard, brown and gray SILTY CLAY LOAM, trace gravel and brick --FILL--			1	7 9 9	> 4.50 P	14
			5		2	3 4 4	2.46 B	14
					3	4 5 5	2.50 P	16
	571.0	Soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			4	1 2 2	0.49 B	24
			10		5	0 2 1	0.41 B	25
			15		6	0 2 2	0.57 B	26
					7	0 1 2	0.49 B	26
			20		8	0 1 2	0.41 B	26
			25		9	1 1 1	0.41 B	27
					10	1 1 1	0.49 B	27
					11	0 2 1	0.49 B	27
			30		12	0 2 1	0.49 B	27
	542.3	Medium stiff to very stiff, gray SILTY CLAY to CLAY, trace gravel	35		13	1 1 2	0.49 B	26
			40		14	2 2 4	0.74 B	20

GENERAL NOTES

Begin Drilling: **05-15-2013** Complete Drilling: **05-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 2055-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 579.03 ft
North: 1898462.94 ft
East: 1171413.63 ft
Station: 8149+26.26
Offset: 58.3388 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	522.3	Medium dense, gray SILT	45		15	3 7 9	2.30 B	16
			50		16	4 8 11	2.46 B	18
			55		17	3 7 8	2.30 B	24
			60		18	2 4 6	NP	23
	517.3	Hard, gray SILTY CLAY LOAM, trace gravel	65		19	13 18 30	> 4.50 P	16
			70		20	13 23 32	> 10.25 B	15
	507.3	Very dense, gray SILT to SILTY LOAM, trace gravel	75		21	32 50/5"	NP	10
			80		22	40 50/2"	NP	9

GENERAL NOTES

Begin Drilling: **05-15-2013** Complete Drilling: **05-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 2055-B-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 579.03 ft
North: 1898462.94 ft
East: 1171413.63 ft
Station: 8149+26.26
Offset: 58.3388 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			85		23	26 38 44	NP	19
	492.3	Hard, gray SILTY CLAY LOAM						
			90		24	18 21 35	8.20 B	14
	487.3	Very dense, gray SANDY GRAVEL with dolostone clasts						
	485.0	Probably weathered DOLOSTONE			25	48 50/1"	NP	13
	484.0	--AUGER REFUSAL--	95					
		Boring terminated at 95.00 ft	100					

GENERAL NOTES

Begin Drilling: **05-15-2013** Complete Drilling: **05-16-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 2055-B-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.69 ft
North: 1898363.22 ft
East: 1171499.16 ft
Station: 8150+09.25
Offset: 43.5063 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	574.7	5-inch thick ASPHALT over 7-inch thick CONCRETE --PAVEMENT--						
		Medium dense, brown SANDY GRAVEL --BASE COURSE--			1	5 9 9	NP	4
	572.7	Stiff, gray SILTY CLAY						
			5		2	3 2 3	1.07 B	20
	570.2	Soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel						
					3	1 2 2	0.57 B	25
			10		4	1 1 2	0.57 B	24
					5	0 1 2	0.57 B	17
			15		6	0 2 2	0.66 B	25
		--L_L(%)=35, P_L(%)=15-- --%Gravel=4.3-- --%Sand=15.2-- --%Silt=48.0-- --%Clay=32.4-- --A-6 (15)--			7	0 1 2	0.57 B	26
			20		8	0 2 2	0.66 B	26
			25		9	0 2 2	0.57 B	26
					10	0 1 2	0.49 B	25
					11	0 1 2	0.57 B	25
	547.7	Medium dense, gray, coarse SAND, little gravel	30		12	2 5 7	NP	15
	543.7	Medium dense, gray SANDY GRAVEL			13	8 8 9	NP	15
	540.9	Very stiff, gray SILTY CLAY to SILTY CLAY LOAM to LOAM, trace to some gravel	35					
		--L_L(%)=35, P_L(%)=15-- --%Gravel=3.6-- --%Sand=9.8-	40		14	4 7 10	2.46 B	21

GENERAL NOTES

Begin Drilling: **05-19-2013** Complete Drilling: **05-20-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 2055-B-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.69 ft
North: 1898363.22 ft
East: 1171499.16 ft
Station: 8150+09.25
Offset: 43.5063 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--%Silt=50.5--						
		--%Clay=36.1--						
		--A-6 (16)--						
		--L_L(%)=22, P_L(%)=13--						
		--%Gravel=15.4--						
		--%Sand=31.5--						
		--%Silt=41.5--	45		15	5 8 10	4.92 B	13
		--%Clay=11.6--						
		--A-4 (2)--						
			50		16	4 6 8	2.62 B	22
			55		17	5 8 12	3.36 B	10
	518.9	Medium dense, gray SILT						
			60		18	4 5 8	NP	25
	513.9	Hard, gray SILTY CLAY LOAM, trace gravel						
			65		19	12 21 29	9.89 B	14
	508.9	Very dense, gray SILT to SILTY LOAM, trace to some gravel						
			70		20	23 50/4"	NP	13
			75		21	36 50/3"	NP	12
			80		22	50/5"	NP	9

GENERAL NOTES

Begin Drilling: **05-19-2013** Complete Drilling: **05-20-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 2055-B-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.69 ft
North: 1898363.22 ft
East: 1171499.16 ft
Station: 8150+09.25
Offset: 43.5063 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			85		23	34 42 45	NP	22
			90		24	22 40 45	NP	19
	483.7	--HARD DRILLING-- Boulders, Sandy Gravel						
			95		25	50/2"	NR	
	478.7	--AUGER REFUSAL-- Strong, light gray, fair rock mass quality, bedded fresh DOLOSTONE, up to 18-inch beds, 1- to 18-inch spaced joints, horizontal and oblique joints with less than 0.2- to 3-inch greenish gray silty infilling, hard joint wall,	100	C O R E				

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		with stylolitic surfaces, and moderately vuggy porosity. --Run 1 - RECOVERY = 95% RQD = 53%	105		1	C O R E		
		--Run 1 - RECOVERY = 98% --RQD = 53%	110		2			
	458.7	Boring terminated at 117.00 ft	115 120					

GENERAL NOTES

Begin Drilling: **05-19-2013** Complete Drilling: **05-20-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 20-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 577.12 ft
North: 1897711.41 ft
East: 1171734.33 ft
Station: 1610+87.80
Offset: 31.0288 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	576.0	13.5-inch thick CONCRETE --PAVEMENT--						
	575.8	4.5-inch thick ASPHALT --PAVEMENT--						
		Dense, white CRUSHED STONE --BASE COURSE--			1	26 30 11	NP	6
	573.9	Very soft to soft, gray CLAY to SILTY CLAY, trace gravel			2	2 1 1	0.25 B	27
			5		3	2 2 1	0.16 B	28
			10		4	1 1 2	0.41 B	24
					5	1 2 1	0.33 B	24
			15		6	1 1 2	0.41 B	24
	561.6	Soft, gray SILTY CLAY LOAM, trace gravel --L_L(%)=31, P_L(%)=16-- --%Gravel=4.8-- --%Sand=16.1-- --%Silt=54.8-- --%Clay=24.3-- --A-6 (10)--			7	2 1 2	0.16 B	18
	559.1	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace	20		8	0 1 1	0.16 B	26
		gravel	25		9	0 1 1	0.16 B	25
					10	0 1 2	0.16 B	26
			30		11	1 2 2	0.16 B	26
					12	2 2 1	0.57 B	27
			35		13	1 2 2	0.08 B	26
	540.4	Stiff to hard, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel	40		14	3 6 10	1.72 B	23

GENERAL NOTES

Begin Drilling: **10-28-2013** Complete Drilling: **11-03-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Tomaras** Checked by: **CLM**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **56.00 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 20-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 577.12 ft
North: 1897711.41 ft
East: 1171734.33 ft
Station: 1610+87.80
Offset: 31.0288 LT

Depth (ft)	Elevation (ft)	Profile	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
45					15	7 8 15	5.74 B	13
			--L_L(%)=35, P_L(%)=18-- --%Gravel=1.0-- --%Sand=6.7-- --%Silt=53.8-- --%Clay=38.6-- --A-6 (16)--					
50					16	6 9 12	3.94 B	20
55					17	6 8 9	1.56 B	21
	520.4		Loose, gray SILT --Saturated--					
60					18	3 3 6	1.31 S	29
	515.4		--HARD DRILLING-- *--Possible Cobbles--* Very dense, gray, coarse SAND					
65					19	48 50/5	NP	11
	510.6		--HARD DRILLING-- *--Possible Cobbles--* Hard, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel					
70					20	32 45 45	5.41 S	10
75					21	20 18 35	7.30 S	17
	500.4		Very dense, gray SILTY LOAM, trace gravel					
80					22	39 47 48	NP	15

GENERAL NOTES

Begin Drilling: **10-28-2013** Complete Drilling: **11-03-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Tomaras** Checked by: **CLM**
Drilling Method: **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **56.00 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 20-RWB-01

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 577.12 ft
North: 1897711.41 ft
East: 1171734.33 ft
Station: 1610+87.80
Offset: 31.0288 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING-- *--Possible Cobbles--*						
	495.4							
		Very dense, gray GRAVELLY SAND, some cobbles			23	50/1	NA	
			85					
					24	39 50/5	NP	11
		--HARD DRILLING-- *--Possible Boulders--*	90					
	486.1	--ROLLER BIT REFUSAL--						
		Boring terminated at 91.00 ft						
			95					
			100					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)

GENERAL NOTES

Begin Drilling **10-28-2013** Complete Drilling **11-03-2013**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **R&J** Logger **A. Tomaras** Checked by **CLM**
Drilling Method **2.25" SSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **56.00 ft**
At Completion of Drilling ▼ **mud in the borehole**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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BORING LOG 21-RWB-01

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 585.23 ft
North: 1897682.52 ft
East: 1171760.80 ft
Station: 1610+92.09
Offset: 7.9354 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	584.1	13-inch thick CONCRETE --PAVEMENT--						
	583.9	3-inch thick ASPHALT --PAVEMENT--						
		CRUSHED STONE --BASE COURSE--			1	13 20 18	NP	8
	582.0	Medium dense to very dense, brown GRAVELLY SAND --FILL--			2	9 10 5	NP	12
			5		3	25 50/3	NP	12
	577.2	Very dense, brown SILTY LOAM, trace gravel						
	576.3	--FILL--			4	50/5	NP	16
		--AUGER REFUSAL-- --Obstruction--	10					
		Boring terminated at 8.90 ft						
			15					
			20					

GENERAL NOTES

Begin Drilling **10-13-2013** Complete Drilling **10-13-2013**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **R&N** Logger **D. Kolpacki** Checked by **L. Iordache**
Drilling Method **2.25" SSA , boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **DRY**
At Completion of Drilling ▼ **DRY**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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BORING LOG 21-RWB-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 596.95 ft
North: 1897705.23 ft
East: 1171851.95 ft
Station: 1611+67.44
Offset: 53.9743 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	596.0	12-inch thick, brown LOAM, trace gravel						
		--TOPSOIL--						
		Hard, gray CLAY LOAM, trace gravel			1	13 11 11	7.79 S	16
		--FILL--						
			5		2	5 9 11	5.33 S	13
	591.5	Stiff to medium stiff, gray and brown, SILTY CLAY, trace gravel, slag, brick and wood			3	2 2 4	1.23 B	19
		--FILL--						
			10		4	2 3 4	1.15 B	19
					5	3 5 5	0.98 B	21
	584.0	Very stiff, brown and gray SILTY CLAY, trace gravel						
			15		6	3 5 7	3.53 B	25
	581.5	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			7	0 2 2	0.66 B	24
			20		8	1 1 2	< 0.25 P	29
			25		9	1 1 1	< 0.25 P	25
					10	0 0 0	0.16 B	22
			30		11	0 0 0	0.16 B	25
					12	0 0 0	0.25 B	25
			35		13	0 0 0	< 0.25 P	26
			40		14	0 1 3	0.49 B	25

GENERAL NOTES

Begin Drilling: **09-25-2013** Complete Drilling: **09-30-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Tomaras** Checked by: **L. Iordache**
Drilling Method: **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 21-RWB-02

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 596.95 ft
North: 1897705.23 ft
East: 1171851.95 ft
Station: 1611+67.44
Offset: 53.9743 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	540.2	Stiff to hard, gray SILTY CLAY LOAM, trace gravel	45		15	2 2 2	0.25 P	25
			50		16	1 2 3	< 0.25 P	25
			55		17	1 3 3	0.66 B	21
			60		18	15 17 21	> 4.50 P	15
			65		19	11 10 16	4.33 N/6	
			70		20	10 12 19	4.76 B	19
			75		21	6 10 12	1.80 B	24
			80		22	6 8 10	3.00 N/6	19

GENERAL NOTES

Begin Drilling **09-25-2013** Complete Drilling **09-30-2013**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **R&J** Logger **A. Tomaras** Checked by **L. Iordache**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **Rotary wash**
At Completion of Drilling **mud in the borehole**
Time After Drilling **NA**
Depth to Water **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 21-RWB-02

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 596.95 ft
North: 1897705.23 ft
East: 1171851.95 ft
Station: 1611+67.44
Offset: 53.9743 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	515.2	Very dense, gray SILTY LOAM, little to some gravel and cobbles						
			85		23	13 31 41	NP	14
			90		24	18 35 48	9.35 S	10
			95		25	20 36 50/4	9.10 S	13
		--HARD DRILLING-- *--Possible Cobbles--*						
			100		26	50/5	NR	
		--HARD DRILLING-- *--Possible Cobbles--*	105		27	50/4	NP	11
	490.0	--ROLLER BIT REFUSAL-- Boring terminated at 107.00 ft	110					
			115					
			120					

GENERAL NOTES

Begin Drilling **09-25-2013** Complete Drilling **09-30-2013**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **R&J** Logger **A. Tomaras** Checked by **L. Iordache**
Drilling Method **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **Rotary wash**
At Completion of Drilling ▼ **mud in the borehole**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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BORING LOG 21-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 591.97 ft
North: 1897787.89 ft
East: 1171858.64 ft
Station: 1612+32.77
Offset: 11.8407 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Very stiff to hard, brown CLAY LOAM, trace brick fragments --FILL--			1	3 4 8	3.50 P	11
			5		2	5 5 7	3.12 B	14
		--3-inch thick, red, crushed Brick--			3	13 8 6	NP	19
			10		4	5 5 7	6.56 B	15
	581.5							
		Stiff, gray SILTY CLAY, trace gravel			5	2 3 4	1.97 B	23
	579.0							
		Very soft to medium stiff, gray CLAY, trace gravel			6	2 1 3	0.57 B	25
			15		7	2 1 2	0.49 B	25
			20		8	2 2 2	< 0.25 P	28
			25		9	0 0 0	0.33 B	23
					10	0 0 2	0.25 B	26
					11	0 1 2	0.45 B	26
			30		12	2 2 2	< 0.25 P	25
			35		13	1 2 2	0.57 B	24
			40		14	2 3 3	0.49 B	25

GENERAL NOTES

Begin Drilling: **09-23-2013** Complete Drilling: **09-23-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Tomaras** Checked by: **L. Iordache**
Drilling Method: **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 21-RWB-03

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 591.97 ft
North: 1897787.89 ft
East: 1171858.64 ft
Station: 1612+32.77
Offset: 11.8407 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	2 3 3	< 0.25 P	27
			50		16	0 2 2	0.41 B	28
	540.2	Very stiff to hard, SILTY CLAY to SILTY CLAY LOAM, trace gravel	55		17	4 5 8	1.48 B	22
			60		18	14 12 15	3.00 P	16
	520.2	Dense, gray SILT	65		19	15 17 24	4.10 B	27
			70		20	16 17 20	8.53 B	12
			75		21	20 26 23	NP	21
	515.2	Hard, gray SILTY CLAY LOAM, trace gravel	80		22	19 20 28	8.61 S	14

GENERAL NOTES

Begin Drilling **09-23-2013** Complete Drilling **09-23-2013**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **R&J** Logger **A. Tomaras** Checked by **L. Iordache**
Drilling Method **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling **Rotary wash**
At Completion of Drilling **mud in the borehole**
Time After Drilling **NA**
Depth to Water **NA**

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BORING LOG 21-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 591.97 ft
North: 1897787.89 ft
East: 1171858.64 ft
Station: 1612+32.77
Offset: 11.8407 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	510.2	Very dense, gray SILT --HARD DRILLING--						
					23	31 32 50/5	NP	15
			85					
	505.2	Very dense, gray SILTY LOAM, trace gravel						
					24	23 33 29	6.81 S	21
			90					
					25	66/6 44/3	NP	15
			95					
	495.2	--HARD DRILLING-- Very dense, brown SANDY GRAVEL --possibly underpressure groundwater bearing--						
					26	30 70/6	NP	6
			100					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	490.2	Very dense, weathered DOLOSTONE fragments --WEATHERED BEDROCK--						
					27	50/1	NP	
	487.5	--ROLLER BIT REFUSAL--						
	487.0	--BEDROCK--	105					
		Boring terminated at 104.50 ft						
			110					
			115					
			120					

GENERAL NOTES

Begin Drilling: **09-23-2013** Complete Drilling: **09-23-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Tomaras** Checked by: **L. Iordache**
Drilling Method: **3.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 22-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 595.62 ft
North: 1897646.18 ft
East: 1171875.74 ft
Station: 1703+67.42
Offset: 31.6147 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	595.4	2-inch thick CRUSHED STONE						
		Very stiff to hard, brown and gray SILTY CLAY LOAM, trace gravel and brick fragments --FILL--			1	7 10 10	> 4.50 P	15
			5		2	4 7 9	> 4.50 P	13
					3	3 22 12	2.75 P	17
	587.6							
		Medium dense, dark brown GRAVELLY LOAM; wet --FILL--	10		4	19 9 10	NP	16
	585.1							
		Stiff, gray SILTY CLAY, trace gravel			5	3 3 4	1.72 B	26
			15		6	2 4 6	1.97 B	23
	580.1							
		Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			7	1 2 3	0.66 B	23
			20		8	1 1 2	0.25 B	25
			25		9	0 1 2	0.16 B	32
					10	0 1 2	0.25 B	27
					11	1 4 4	0.50 P	19
			30		12	2 2 2	0.25 B	23
			35		13	0 1 2	0.33 B	26
			40		14	1 2 2	0.33 B	27

GENERAL NOTES

Begin Drilling: **03-13-2014** Complete Drilling: **03-16-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 15', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 22-RWB-01

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 595.62 ft
North: 1897646.18 ft
East: 1171875.74 ft
Station: 1703+67.42
Offset: 31.6147 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	0 2 2	0.49 B	24
			50		16	1 3 4	0.25 P	25
			55		17	1 2 2	0.25 B	28
	538.9	Hard, gray SILTY CLAY LOAM, trace gravel	60		18	7 17 23	5.74 S	14
			65		19	10 16 20	8.69 B	12
			70		20	7 14 24	6.07 B	19
			75		21	6 8 12	4.35 B	18
	518.9	Medium dense, gray SILT; wet --possible groundwater bearing--	80		22	3 5 7	NP	27

GENERAL NOTES

Begin Drilling **03-13-2014** Complete Drilling **03-16-2014**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **R&N** Logger **F. Bozga** Checked by **C. Marin**
Drilling Method **2.25" SSA to 15', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **Rotary wash**
At Completion of Drilling ▼ **mud in the borehole**
Time After Drilling **NA**
Depth to Water ▼ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 22-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 595.62 ft
North: 1897646.18 ft
East: 1171875.74 ft
Station: 1703+67.42
Offset: 31.6147 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	513.9	Very dense, gray SILTY LOAM, trace gravel						
					23	13 25 30	NP	11
			85					
					24	30 45 50/3	NP	15
			90					
					25	23 50/4	NP	14
			95					
		--HARD DRILLING-- *--Possible Cobbles--*						
	498.9	Very dense, gray GRAVELLY SANDY LOAM to SILTY LOAM --possible groundwater bearing--						
					26	50 50/4	NP	8
			100					

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING-- *--Possible Cobbles--*						
	491.6	--WEATHERED BEDROCK--			27	60/5	NP	8
	490.6	Strong, light gray, fair rock mass quality, bedded fresh DOLOSTONE, up to 18-inch beds, 10-inch joints spacing, horizontal joints with none to more than 0.2-inch greenish gray argillaceous infilling, hard joint wall, with stylolitic surfaces, and moderately vuggy porosity	105			C O R E		
		--Run 1 - RECOVERY=96%-- --RQD=75%--	110		1			
	480.6	Boring terminated at 115.00 ft	115					
			120					

GENERAL NOTES

Begin Drilling: **03-13-2014** Complete Drilling: **03-16-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" SSA to 15', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 22-RWB-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 586.36 ft
North: 1898208.77 ft
East: 1171849.77 ft
Station: 1212+66.85
Offset: 28.4715 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	586.1	3-inch thick, brown SILTY LOAM --TOPSOIL--						
		Hard, brown SILTY CLAY LOAM, trace gravel --FILL--			1	3 4 6	4.10 B	21
	583.4	Stiff to very stiff, gray SILTY CLAY, trace gravel			2	3 4 5	2.87 B	20
			5		3	2 3 3	1.56 B	22
	578.4	Soft, gray CLAY, trace gravel			4	1 1 2	0.33 B	25
			10		5	1 1 2	0.33 B	25
	573.4	Medium stiff, gray SILTY CLAY LOAM, trace gravel			6	1 2 4	0.57 B	17
			15		7	1 2 3	0.41 B	25
	570.9	Soft, gray CLAY to SILTY CLAY, trace gravel			8	2 2 4	0.41 B	22
			20		9	1 1 2	0.41 B	26
			25		10	2 2 2	0.49 B	26
					11	2 1 2	0.41 B	27
			30		12	1 2 3	0.41 B	25
			35		13	1 2 3	0.41 B	25
			40		14	1 2 3	0.25 P	26

GENERAL NOTES

Begin Drilling: **08-05-2014** Complete Drilling: **08-05-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **M. de los Reyes** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 22-RWB-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 586.36 ft
North: 1898208.77 ft
East: 1171849.77 ft
Station: 1212+66.85
Offset: 28.4715 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--HARD DRILLING at 42.5 ft-- *--Possible Cobbles--*						
	543.9	Stiff to very stiff, gray SILTY CLAY LOAM, trace gravel						
			45		15	2 4 5	1.50 N/6	18
			50		16	5 9 12	2.87 B	18
			55		17	9 11 14	2.62 B	14
	529.6	Very stiff, gray SILTY LOAM to SILTY CLAY LOAM, trace gravel and sand seams						
			60		18	13 19 35	3.69 S	13

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	524.6	Very dense, gray SANDY LOAM, trace gravel --Moist--						
	521.4	Boring terminated at 65.00 ft	65		19	13 19 35	NP	11
			70					
			75					
			80					

GENERAL NOTES

Begin Drilling: **08-05-2014** Complete Drilling: **08-05-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **M. de los Reyes** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 22-RWB-05

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 594.37 ft
North: 1898339.83 ft
East: 1171837.02 ft
Station: 6332+29.43
Offset: 43.1182 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		14-inch thick, dark brown SILTY LOAM						
	593.2	--TOPSOIL--						
		Very loose to dense, brown GRAVELLY SAND --FILL--			1	5 7 3	0.50 P	20
					2	4 4 2	NP	9
			5					
		--Rubble--			3	8 1 2	NP	31
					4	4 14 33	NP	20
			10					
					5	7 5 3	NP	29
	581.4	Soft, gray CLAY, trace gravel						
					6	1 2 2	0.41 B	24
			15					
	578.9	Loose, brown, coarse SAND --MOIST--						
					7	4 4 3	NP	23
	576.4	Very soft to soft, gray CLAY to SILTY CLAY, trace gravel						
					8	1 3 3	< 0.25 P	24
			20					
	571.4	Stiff, gray, SILTY CLAY, trace gravel			9	1 1 2	0.41 B	26
			25		10	1 3 3	1.15 B	20
	568.9	Soft, gray CLAY, trace gravel						
					11	1 2 4	0.41 B	23
			30		12	1 2 3	0.25 P	24
			35		13	1 2 3	0.25 P	27
			40		14	1 2 3	0.41 B	25

GENERAL NOTES

Begin Drilling: **08-06-2014** Complete Drilling: **08-06-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **M. de los Reyes** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: ▽ **5.50 ft**
At Completion of Drilling: ▼ **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: ▼ **NA**

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BORING LOG 22-RWB-05

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 594.37 ft
North: 1898339.83 ft
East: 1171837.02 ft
Station: 6332+29.43
Offset: 43.1182 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	3 3 5	0.49 B	25
			50		16	2 4 5	0.25 P	27
			55		17	1 4 4	0.33 B	31
	537.6	Very stiff, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel	60		18	8 13 17	3.69 B	17
	529.4	Boring terminated at 65.00 ft	65		19	6 10 15	2.62 B	14
			70					
			75					
			80					

GENERAL NOTES

Begin Drilling **08-06-2014** Complete Drilling **08-06-2014**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **P&N** Logger **M. de los Reyes** Checked by **C. Marin**
Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **5.50 ft**
At Completion of Drilling ▼ **mud in the borehole**
Time After Drilling **NA**
Depth to Water ▼ **NA**

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BORING LOG 23-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.29 ft
North: 1898467.55 ft
East: 1171687.36 ft
Station: 6334+12.89
Offset: 30.5965 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		18-inch thick, ASPHALT --FILL--						
	573.8							
		Loose to medium dense, white CRUSHED STONE --BASE COURSE--			1	5 6 6	NP	6
					2	3 3 3	NP	8
			5					
	569.8							
		Stiff, brown and gray SILTY CLAY LOAM, trace gravel			3	2 3 4	1.17 N/6	19
	567.3							
		Very soft to soft, gray CLAY to SILTY CLAY, trace gravel			4	2 2 4	0.49 B	19
			10					
					5	1 1 3	0.41 B	23
					6	1 2 2	0.49 B	26
			15					
					7	3 4 4	0.41 B	25
					8	2 3 2	0.25 P	27
			20					
					9	2 2 3	0.25 B	26
			25		10	1 2 2	0.25 B	23
					11	1 2 3	0.25 B	25
			30		12	2 2 3	0.41 B	25
			35		13	2 3 2	0.83 N/6	
	538.5	Stiff to very stiff, gray SILTY CLAY, trace gravel						
			40		14	5 7 9	1.64 B	22

GENERAL NOTES

Begin Drilling: **07-27-2014** Complete Drilling: **07-27-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Happel** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 23-RWB-01

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.29 ft
North: 1898467.55 ft
East: 1171687.36 ft
Station: 6334+12.89
Offset: 30.5965 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	7 13 16	2.54 B	22
			50		16	28 25 32	3.00 P	24
	523.5	Medium stiff, gray CLAY						
			55		17	4 5 5	0.87 B	26
	518.5	Dense, gray SANDY LOAM, trace gravel --Wet--						
			60		18	16 14 16	NP	16
	513.5	Hard, gray SILTY CLAY LOAM, trace gravel						
			65		19	23 30 45	7.38 B	15
	510.3	Boring terminated at 65.00 ft						
			70					
			75					
			80					

GENERAL NOTES

Begin Drilling: **07-27-2014** Complete Drilling: **07-27-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Happel** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 23-RWB-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.96 ft
North: 1898537.05 ft
East: 1171661.69 ft
Station: 6334+85.38
Offset: 28.1222 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	575.7	3-inch thick ASPHALT --PAVEMENT--						
	575.1	7-inch thick CONCRETE --PAVEMENT--						
		Very dense, grayish white CRUSHED STONE						
	573.0	--FILL--						
		Very soft to soft, gray CLAY to SILTY CLAY, trace gravel			1	40 37 21	NP	2
			5		2	4 3 2	0.41 B	19
					3	1 2 3	0.49 B	20
			10		4	1 2 3	0.41 B	23
					5	1 2 2	0.41 B	25
			15		6	1 2 2	0.41 B	26
					7	1 2 2	< 0.25 P	27
			20		8	1 1 2	0.33 B	26
			25		9	1 1 2	0.25 B	25
					10	1 1 2	0.25 B	26
					11	2 3 4	0.41 B	25
			30		12	2 2 3	0.49 B	25
	539.2	Stiff to hard, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel	35		13	1 2 3	0.41 B	27
			40		14	2 4 6	1.31 B	22

GENERAL NOTES

Begin Drilling: **08-13-2014** Complete Drilling: **08-13-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 23-RWB-02

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 575.96 ft
North: 1898537.05 ft
East: 1171661.69 ft
Station: 6334+85.38
Offset: 28.1222 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--Occasional SILT interbeds--	45		15	6 9 13	2.13 B	13
			50		16	6 10 8	4.10 B	19
	524.2	Very stiff, gray CLAY , trace gravel						
			55		17	3 7 8	2.05 B	24
	519.2	Dense, gray SILTY LOAM, trace gravel --Moist--						
			60		18	7 14 17	NP	25
	514.2	Coarse, brown SAND --Saturated--						
	512.2	Dense, gray SILTY LOAM, trace gravel			19	10 15 19	NP	16
	511.0	Boring terminated at 65.00 ft	65					
			70					
			75					
			80					

GENERAL NOTES

Begin Drilling: **08-13-2014** Complete Drilling: **08-13-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **2.25" HSA, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 23-RWB-03

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 576.57 ft
North: 1898615.24 ft
East: 1171637.84 ft
Station: 6335+65.51
Offset: 25.2492 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	576.3	4-inch thick ASPHALT --PAVEMENT--						
	575.6	8-inch thick CONCRETE --PAVEMENT--						
		Medium dense, gray and white CRUSHED STONE						
	573.6	--FILL--						
		Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel						
					1	9 9 12	NP	7
					2	3 2 3	0.83 N/6	
			5					
					3	1 1 2	0.41 B	22
					4	1 2 3	0.33 B	23
			10					
					5	1 2 3	0.49 B	23
					6	1 2 3	0.49 B	24
			15					
					7	1 2 2	0.49 B	22
					8	1 2 2	0.25 B	25
			20					
			25		9	1 1 2	0.08 B	27
					10	1 2 2	0.16 B	26
					11	1 2 2	0.16 B	23
		--L_L(%)=36, P_L(%)=17-- --%Gravel=4.9-- --%Sand=12.1-- --%Silt=44.7-- --%Clay=38.4-- --A-6 (15)--	30		12	1 2 4	0.33 B	25
			35		13	1 2 3	0.33 B	26
	539.8	Stiff to very stiff, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel						
			40		14	3 4 8	1.56 B	23

GENERAL NOTES

Begin Drilling: **08-18-2014** Complete Drilling: **08-18-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **S. Woods** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 23-RWB-03

WEI Job No.: 1100-04-01

Client **AECOM**
Project **Circle Interchange Reconstruction**
Location **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 576.57 ft
North: 1898615.24 ft
East: 1171637.84 ft
Station: 6335+65.51
Offset: 25.2492 LT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--L_L(%)=25, P_L(%)=16--						
		--%Gravel=6.6--						
		--%Sand=25.6--						
		--%Silt=48.8--	45		15	5 8 13	3.94 B	13
		--%Clay=19.0--						
		--A-4 (4)--						
			50		16	7 38 19	2.30 B	19
			55		17	6 8 10	1.23 B	23
	517.6							
		Medium dense to dense, gray SILTY LOAM, trace to some	60		18	4 5 6	NP	22

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		gravel						
		--DRY--						
	511.6		65		19	9 17 28	NP	
		Boring terminated at 65.00 ft						
			70					
			75					
			80					

GENERAL NOTES

Begin Drilling **08-18-2014** Complete Drilling **08-18-2014**
Drilling Contractor **Wang Testing Services** Drill Rig
Driller **R&J** Logger **S. Woods** Checked by **C. Marin**
Drilling Method **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **Rotary wash**
At Completion of Drilling ▼ **mud in the borehole**
Time After Drilling **NA**
Depth to Water ⧩ **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 23-RWB-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 576.93 ft
North: 1898688.27 ft
East: 1171612.80 ft
Station: 6336+40.47
Offset: 16.6754 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	575.9	3-inch thick, ASPHALT over 9-inch thick, CONCRETE --PAVEMENT--						
		Medium dense, gray and white CRUSHED STONE --FILL--			1	13 9 9	NP	3
	573.2	Medium stiff to very stiff, gray SILTY CLAY LOAM, trace gravel	5		2	5 4 5	2.00 P	14
					3	3 4 4	0.74 B	16
	568.9	Very soft to medium stiff, gray CLAY, trace gravel	10		4	2 3 4	0.41 B	19
					5	1 2 3	0.57 B	23
			15		6	2 2 4	0.74 B	23
					7	0 2 2	0.41 B	25
			20		8	1 1 2	0.25 B	25
			25		9	1 2 3	0.25 B	26
					10	2 1 3	0.25 B	26
					11	1 4 3	0.25 B	26
			30		12	1 3 4	0.49 B	25
	545.2	Medium stiff to very stiff, gray SILTY CLAY LOAM, trace gravel	35		13	2 4 5	0.90 B	20
			40		14	5 7 11	1.00 P	22

GENERAL NOTES

Begin Drilling: **07-31-2014** Complete Drilling: **07-31-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Happel** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 23-RWB-04

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 576.93 ft
North: 1898688.27 ft
East: 1171612.80 ft
Station: 6336+40.47
Offset: 16.6754 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	5 7 11	1.56 B	19
			50		16	9 11 15	2.13 B	20
	525.2	Hard, gray SILTY CLAY, trace gravel						
			55		17	15 15 20	4.02 B	24
	520.2	Medium stiff, gray CLAY, trace gravel						
			60		18	3 4 5	0.66 B	40

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	515.2	Medium dense, gray SILTY LOAM						
	511.9	Boring terminated at 65.00 ft	65		19	7 9 7	NP	13
			70					
			75					
			80					

GENERAL NOTES

Begin Drilling: **07-31-2014** Complete Drilling: **07-31-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&J** Logger: **A. Happel** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG 23-RWB-05

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 592.28 ft
North: 1898793.23 ft
East: 1171675.68 ft
Station: 6337+31.20
Offset: 54.1130 RT

Depth (ft)	Elevation (ft)	Profile	SOIL AND ROCK DESCRIPTION	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
0	591.8		6-inch thick, dark brown SANDY LOAM --TOPSOIL--					
			Loose, brown GRAVELLY SANDY LOAM --FILL--		1	6 3 3	NP	13
	589.3		Loose to medium dense, brown and gray, fine SAND, trace gravel --FILL--		2	4 4 6	NP	10
5				▽	3	10 5 3	NP	19
	584.3		Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel		4	5 2 2	0.80 B	19
10					5	2 2 2	0.33 B	26
					6	1 1 2	0.16 B	27
15					7	0 2 1	0.33 B	25
					8	1 2 3	0.41 B	20
20					9	2 2 4	0.57 B	22
					10	2 2 3	0.41 B	24
25					11	2 2 3	0.41 B	24
					12	1 2 2	0.32 B	24
30					13	0 2 3	0.33 B	25
					14	3 3 3	0.41 B	24
40								

GENERAL NOTES

Begin Drilling: **08-18-2014** Complete Drilling: **08-18-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **H. Bista** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling ▽ **5.50 ft**
At Completion of Drilling ▼ **mud in the borehole**
Time After Drilling: **NA**
Depth to Water ▼ **NA**

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BORING LOG 23-RWB-05

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 592.28 ft
North: 1898793.23 ft
East: 1171675.68 ft
Station: 6337+31.20
Offset: 54.1130 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
			45		15	3 3 5	0.74 B	25
	545.5							
		Medium stiff to stiff, gray SILTY CLAY to SILTY CLAY LOAM, little to some gravel	50		16	4 10 11	0.82 B	25
			55		17	4 6 7	0.90 B	22
			60		18	10 16 14	1.39 B	19
	532.3	Boring terminated at 60.00 ft						

GENERAL NOTES

Begin Drilling: **08-18-2014** Complete Drilling: **08-18-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **H. Bista** Checked by: **C. Marin**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **5.50 ft**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG 23-RWB-05HA

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 583.84 ft
North: 1898780.96 ft
East: 1171640.86 ft
Station: 6337+25.29
Offset: 17.6471 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	582.8	Black SILTY LOAM --TOPSOIL--			1	PUSH	NP	16
		Very stiff, gray SILTY CLAY LOAM, trace gravel --FILL--			2	PUSH	2.00 P	16
	580.3	Very stiff, gray SILTY CLAY LOAM, trace gravel	5		3	PUSH	2.50 P	18
					4	PUSH	2.00 P	18
	575.8	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel	10		5	PUSH	0.50 P	19
					6	PUSH	0.75 P	19
					7	PUSH	0.25 P	21
			15		8	PUSH	0.25 P	22
	567.8	Boring terminated at 16.00 ft	20					

GENERAL NOTES

Begin Drilling: **07-28-2014** Complete Drilling: **07-28-2014**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **K&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **1" IDA Pneumatic Geoprobe LB Sampler**

WATER LEVEL DATA

While Drilling: **DRY**
At Completion of Drilling: **DRY**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG COMM-HUT-CCTV

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 589.57 ft
North: 1898191.07 ft
East: 1171393.69 ft
Station: 5218+68.15
Offset: 116.7249 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	589.2	5-inch thick dark brown SILTY LOAM --TOPSOIL-- Very stiff to hard, brown CLAY LOAM, trace gravel --FILL--			1	4 12 17	> 4.50 P	14
			5		2	5 7 7	3.94 B	14
					3	9 11 10	7.38 B	17
	581.6	Medium stiff, gray SILTY CLAY, trace gravel						
			10		4	3 4 4	0.82 B	19
	579.1	Very soft to medium stiff, gray CLAY to SILTY CLAY, trace gravel			5	1 2 3	0.49 B	21
			15		6	1 2 4	0.41 B	22
					7	2 3 5	0.74 B	25
			20		8	1 3 3	0.82 B	19
			25		9	1 2 2	0.33 B	26
					10	1 2 2	0.16 B	24
					11	1 1 1	0.16 B	26
			30		12	1 2 2	0.16 B	27
	552.8	Very stiff, gray SILTY CLAY LOAM, some gravel	35		13	1 2 3	0.83 N/6	
			40		14	4 6 8	2.00 P	14

GENERAL NOTES

Begin Drilling: **11-08-2013** Complete Drilling: **11-08-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **D. Kolpacki** Checked by:
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **DRY**
At Completion of Drilling: **DRY**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG COMM-HUT-CCTV

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 589.57 ft
North: 1898191.07 ft
East: 1171393.69 ft
Station: 5218+68.15
Offset: 116.7249 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
	547.8							
		Soft, gray CLAY, trace gravel						
			45		15	2 6 8	0.25 P	26
	542.8							
		Stiff to hard, gray SILTY CLAY to SILTY CLAY LOAM, trace to little gravel						
			50		16	4 5 7	1.23 B	24
			55		17	9 12 15	4.64 B	14
			60		18	7 11 19	5.00 N/6	23
	529.6							
		Boring terminated at 60.00 ft						

GENERAL NOTES

Begin Drilling: **11-08-2013** Complete Drilling: **11-08-2013**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **P&N** Logger: **D. Kolpacki** Checked by:
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **DRY**
At Completion of Drilling: **DRY**
Time After Drilling: **NA**
Depth to Water: **NA**

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BORING LOG VST-06

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 585.69 ft
North: 1898109.29 ft
East: 1171902.18 ft
Station: 1103+77.81
Offset: 27.3835 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		Hard, brown SILTY CLAY LOAM, trace gravel --FILL--						
			5		1	7 6 6	> 4.50 P	16
	580.2							
		Soft, gray SILTY CLAY LOAM			2	1 2 3	0.41 B	23
	576.7		10					
		--In-Situ Vane Shear, 10.5 feet-- --$S_{u\ undis}$ = 972.0 psf-- --$S_{u\ remold}$ = 611.6 psf-- --Sensitivity = 1.6--			1	VS	0.97	
		--In-Situ Vane Shear, 13.0 feet-- --$S_{u\ undis}$ = 982.9 psf-- --$S_{u\ remold}$ = 589.7 psf-- --Sensitivity = 1.7--	15		2	VS	0.98	
		--In-Situ Vane Shear, 15.5 feet-- --$S_{u\ undis}$ = 873.7 psf-- --$S_{u\ remold}$ = 513.3 psf-- --Sensitivity = 1.7--			3	VS	0.87	
		--In-Situ Vane Shear, 18.0 feet-- --$S_{u\ undis}$ = 928.3 psf-- --$S_{u\ remold}$ = 360.4 psf-- --Sensitivity = 2.6--	20		4	VS	0.93	
		--In-Situ Vane Shear, 20.5 feet-- --$S_{u\ undis}$ = 775.4 psf-- --$S_{u\ remold}$ = 360.4 psf-- --Sensitivity = 2.2--			5	VS	0.78	
		--In-Situ Vane Shear, 23.0 feet-- --$S_{u\ undis}$ = 600.6 psf-- --$S_{u\ remold}$ = 305.8 psf-- --Sensitivity = 2.0--	25		6	VS	0.60	
		--In-Situ Vane Shear, 25.5 feet-- --$S_{u\ undis}$ = 578.8 psf-- --$S_{u\ remold}$ = 316.7 psf-- --Sensitivity = 1.8--			7	VS	0.58	
		--In-Situ Vane Shear, 28.0 feet-- --$S_{u\ undis}$ = 611.6 psf-- --$S_{u\ remold}$ = 338.5 psf-- --Sensitivity = 1.8--	30		8	VS	0.61	
		--In-Situ Vane Shear, 30.5 feet-- --$S_{u\ undis}$ = 786.3 psf-- --$S_{u\ remold}$ = 382.2 psf-- --Sensitivity = 2.1--			9	VS	0.78	
		--In-Situ Vane Shear, 33.0 feet-- --$S_{u\ undis}$ = 698.9 psf-- --$S_{u\ remold}$ = 404.1 psf-- --Sensitivity = 1.7--	35		10	VS	0.70	
		--In-Situ Vane Shear, 35.5 feet-- --$S_{u\ undis}$ = 808.1 psf-- --$S_{u\ remold}$ = 502.4 psf-- --Sensitivity = 1.6--			11	VS	0.80	
		--In-Situ Vane Shear, 38.0 feet-- --$S_{u\ undis}$ = 982.9 psf-- --$S_{u\ remold}$ = 546.0 psf-- --Sensitivity = 1.8--	40		12	VS	0.98	

GENERAL NOTES

Begin Drilling: **12-09-2015** Complete Drilling: **12-14-2015**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **F. Bozga** Checked by: **A. Kurnia**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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BORING LOG VST-06

WEI Job No.: 1100-04-01

Client: **AECOM**
Project: **Circle Interchange Reconstruction**
Location: **Section 17, T39N, R14E of 3rd PM**

Datum: NAVD 88
Elevation: 585.69 ft
North: 1898109.29 ft
East: 1171902.18 ft
Station: 1103+77.81
Offset: 27.3835 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blw/6 in)	Qu (tsf)	Moisture Content (%)
		--In-Situ Vane Shear, 40.5 feet--			13	VS	0.91	
		--$S_{u\ undis}$ = 906.4 psf--						
		--$S_{u\ remold}$ = 524.2 psf--						
		--Sensitivity = 1.7--						
		--In-Situ Vane Shear, 43.0 feet--			14	VS	0.68	
	542.2	--$S_{u\ undis}$ = 677.1 psf--						
		--$S_{u\ remold}$ = 393.1 psf--						
		--Sensitivity = 1.7--						
		Boring terminated at 43.50 ft	45					
			50					
			55					
			60					

GENERAL NOTES

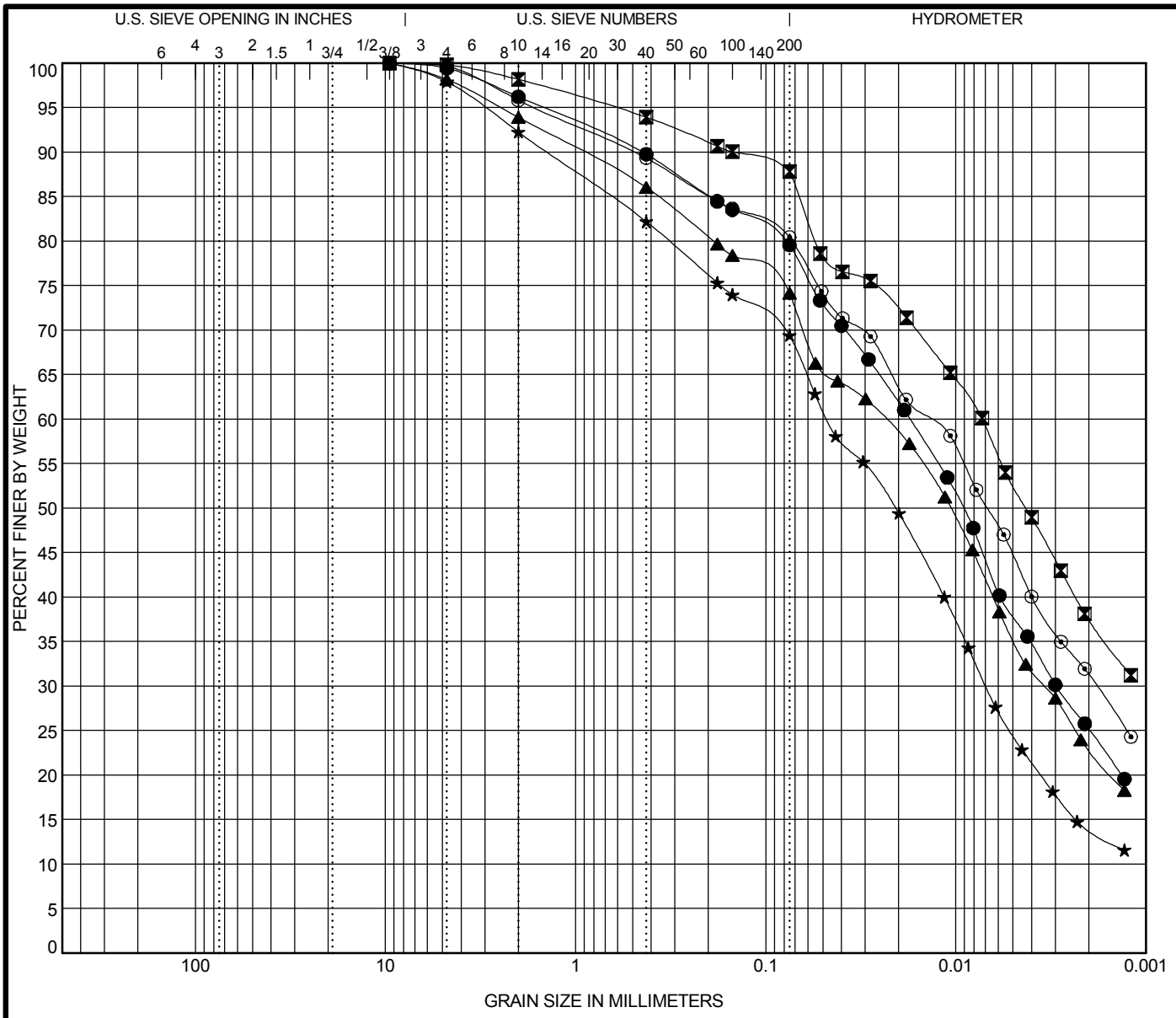
Begin Drilling: **12-09-2015** Complete Drilling: **12-14-2015**
Drilling Contractor: **Wang Testing Services** Drill Rig:
Driller: **R&N** Logger: **F. Bozga** Checked by: **A. Kurnia**
Drilling Method: **2.25" HSA to 10', mud rotary thereafter, boring backfilled upon completion**

WATER LEVEL DATA

While Drilling: **Rotary wash**
At Completion of Drilling: **mud in the borehole**
Time After Drilling: **NA**
Depth to Water: **NA**

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

APPENDIX B



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
● 1703-B-04#4	8.5 ft	**Silty Clay Loam**	**29**	**16**	**13**		
⊠ 1703-B-04#14	38.5 ft	**Silty Clay**	**36**	**18**	**18**		
▲ 1703-B-04#16	48.5 ft	**Silty Clay Loam**	**27**	**16**	**11**		
★ 1703-B-04#19	63.5 ft	**Silty Loam**	**23**	**16**	**7**		
⊙ 1706-B-02#8	18.5 ft	**Silty Clay**	**34**	**17**	**17**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 1703-B-04#4	8.5 ft	**9.5**	**0.017**	**0.003**		**3.8**	**16.9**	**54.2**	**25.1**
⊠ 1703-B-04#14	38.5 ft	**9.5**	**0.007**			**1.8**	**10.7**	**50.0**	**37.5**
▲ 1703-B-04#16	48.5 ft	**9.5**	**0.024**	**0.003**		**6.1**	**20.1**	**50.9**	**22.9**
★ 1703-B-04#19	63.5 ft	**9.5**	**0.047**	**0.007**		**7.7**	**23.1**	**55.2**	**14.0**
⊙ 1706-B-02#8	18.5 ft	**9.5**	**0.014**	**0.002**		**4.2**	**15.6**	**49.0**	**31.3**

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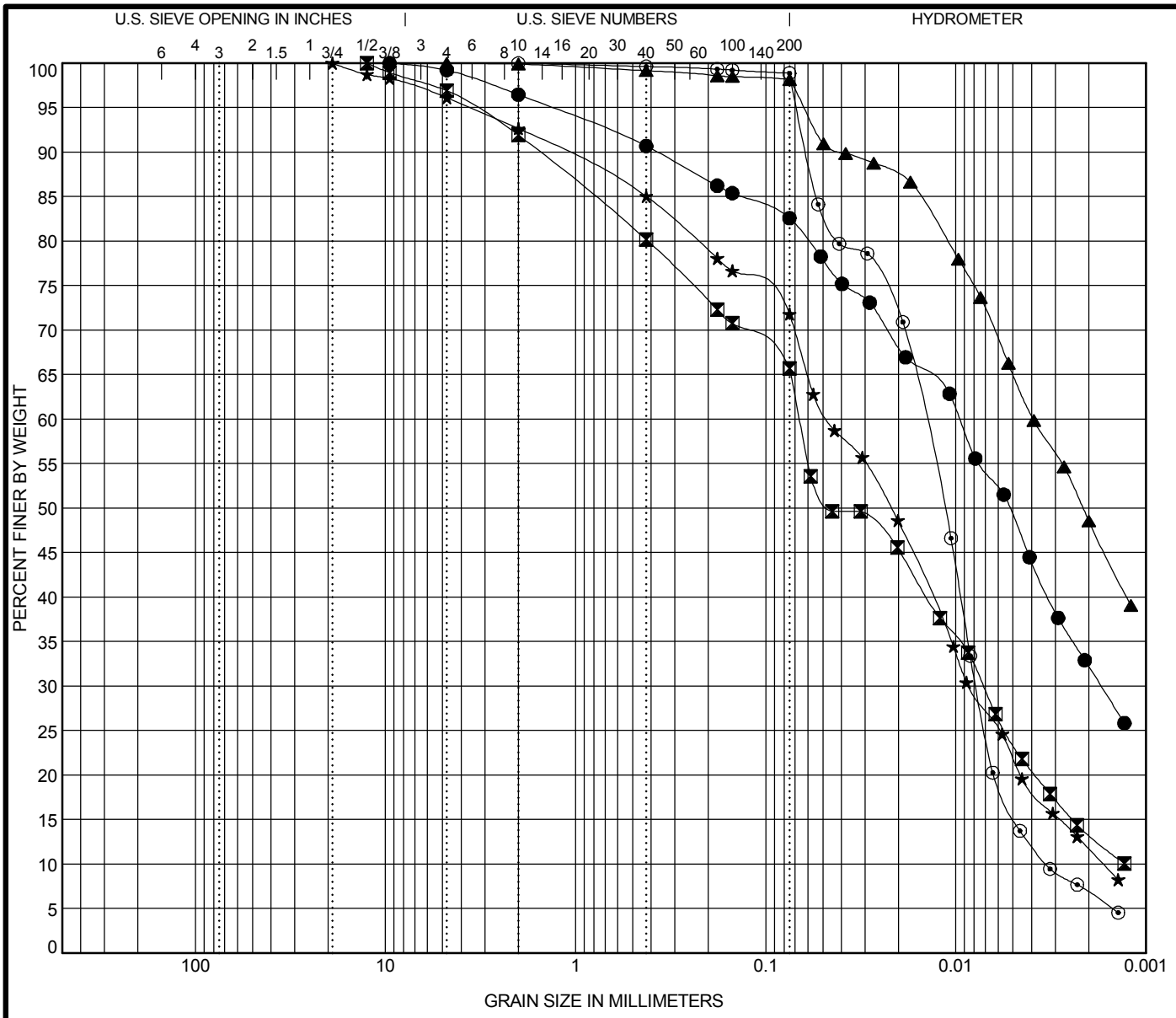
GRAIN SIZE DISTRIBUTION

Project: Circle Interchange Reconstruction

Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
● 1712-B-02#9	21.0 ft	**Silty Clay**	**35**	**18**	**17**		
⊠ 1712-B-02#15	43.5 ft	**Silty Loam**	**27**	**16**	**11**		
▲ 1712-B-02#17	53.5 ft	**Clay**	**36**	**19**	**17**		
★ 1712-B-02#20	68.5 ft	**Silty Loam**	**19**	**14**	**5**	**0.92**	**28.12**
⊙ 1712-B-02#23	83.5 ft	**Silt**	**NP**	**NP**	**NP**	**1.25**	**4.36**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 1712-B-02#9	21.0 ft	**9.5**	**0.01**	**0.002**		**3.5**	**14.0**	**50.3**	**32.2**
⊠ 1712-B-02#15	43.5 ft	**12.5**	**0.066**	**0.007**		**8.1**	**26.9**	**51.7**	**13.3**
▲ 1712-B-02#17	53.5 ft	**4.75**	**0.004**			**0.1**	**2.0**	**49.4**	**48.5**
★ 1712-B-02#20	68.5 ft	**19**	**0.047**	**0.009**	**0.002**	**7.4**	**21.3**	**59.7**	**11.7**
⊙ 1712-B-02#23	83.5 ft	**2**	**0.015**	**0.008**	**0.003**	**0.0**	**1.7**	**91.5**	**6.8**

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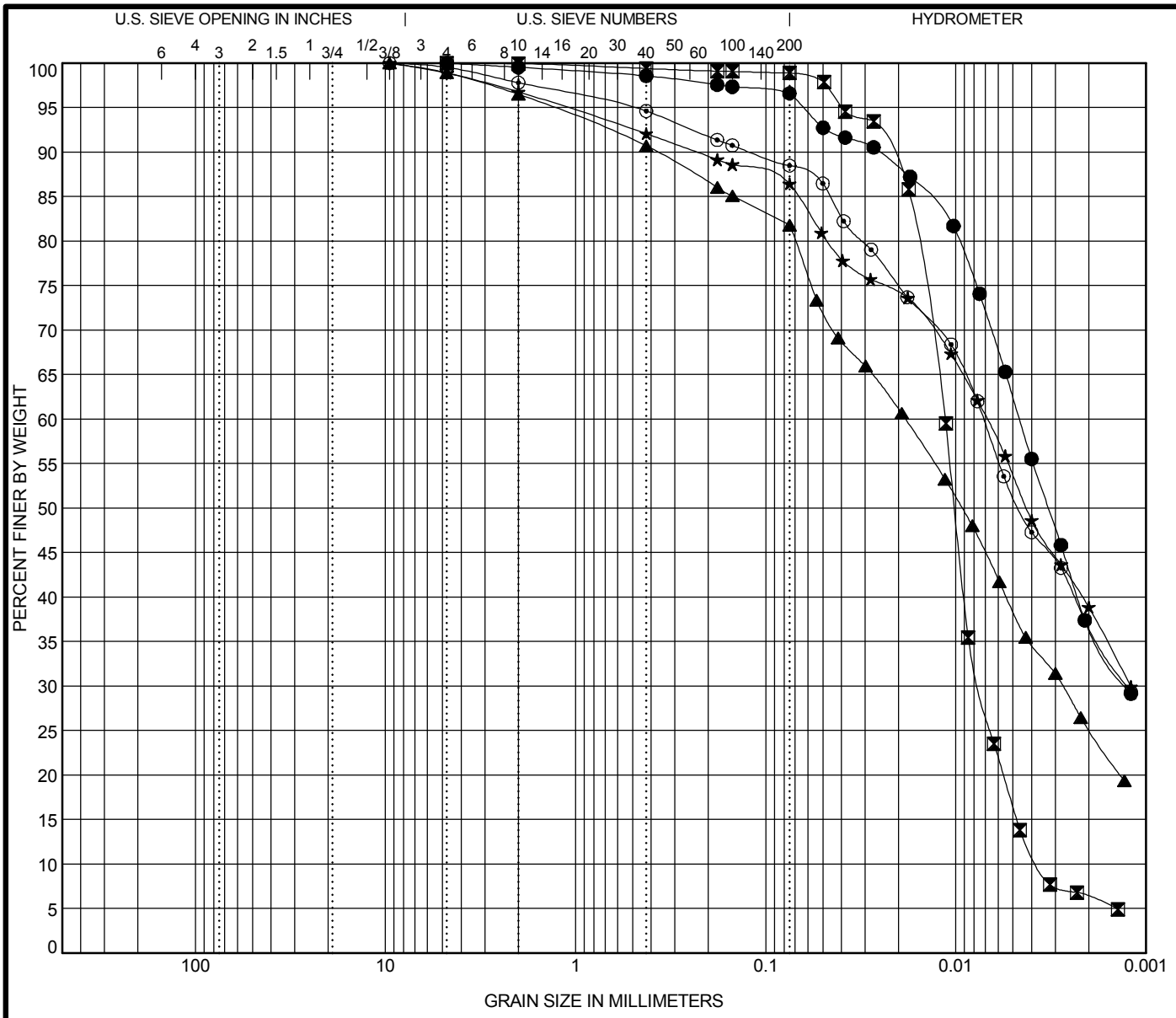
GRAIN SIZE DISTRIBUTION

Project: Circle Interchange Reconstruction

Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

Specimen Identification			IDH Classification	LL	PL	PI	Cc	Cu
●	1715-B-03#16	48.5 ft	**Silty Clay**	**36**	**18**	**18**		
⊠	1715-B-03#23	83.5 ft	**Silt**	**NP**	**NP**	**NP**	**1.33**	**3.11**
▲	18-RWB-02#3	6.0 ft	**Silty Clay Loam**	**30**	**16**	**14**		
★	18-RWB-02#12	28.5 ft	**Clay**	**37**	**18**	**19**		
⊙	18-RWB-02#15	43.5 ft	**Silty Clay**	**35**	**17**	**18**		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	1715-B-03#16	48.5 ft	**4.75**	**0.005**	**0.001**		**0.5**	**3.1**	**59.8**	**36.7**
⊠	1715-B-03#23	83.5 ft	**4.75**	**0.011**	**0.007**	**0.004**	**0.1**	**1.1**	**92.6**	**6.3**
▲	18-RWB-02#3	6.0 ft	**9.5**	**0.018**	**0.003**		**3.5**	**15.1**	**56.3**	**25.2**
★	18-RWB-02#12	28.5 ft	**9.5**	**0.007**	**0.001**		**3.2**	**10.5**	**47.4**	**38.9**
⊙	18-RWB-02#15	43.5 ft	**9.5**	**0.007**	**0.001**		**2.2**	**9.4**	**51.7**	**36.7**

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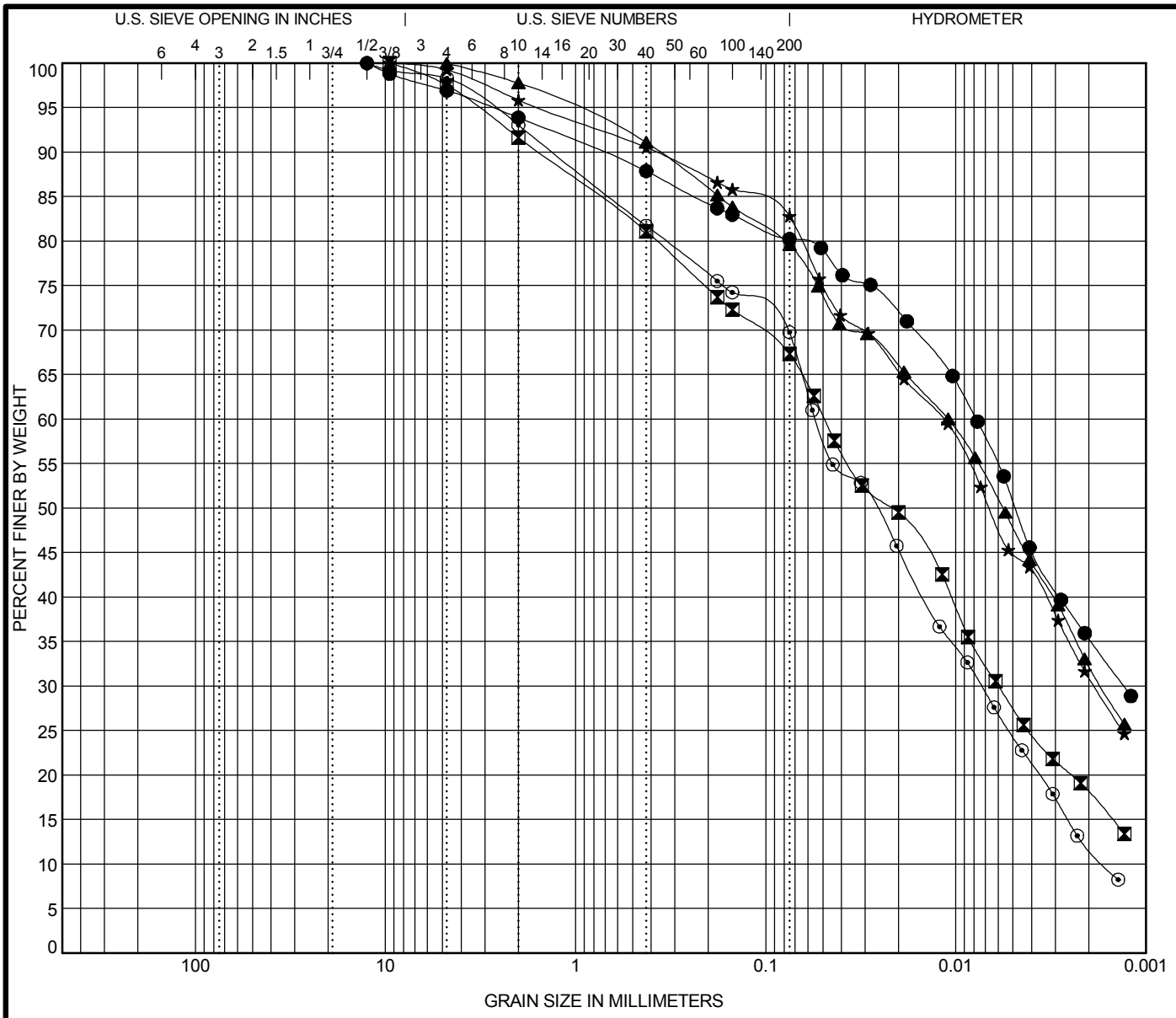
GRAIN SIZE DISTRIBUTION

Project: Circle Interchange Reconstruction

Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

	Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
●	18-RWB-03#6	13.5 ft	**Clay**	33	19	14		
⊠	18-RWB-03#14	38.5 ft	**Silty Loam**	24	15	9		
▲	19-RWB-01#3	6.0 ft	**Clay**	31	17	14		
★	19-RWB-01#6	13.5 ft	**Silty Clay**	31	18	13		
⊙	19-RWB-01#8	18.5 ft	**Silty Loam**	23	16	7	0.59	32.74

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	18-RWB-03#6	13.5 ft	12.5	0.008	0.001		6.1	13.7	44.9	35.3
⊠	18-RWB-03#14	38.5 ft	9.5	0.049	0.006		8.4	24.5	49.1	18.1
▲	19-RWB-01#3	6.0 ft	4.75	0.011	0.002		2.2	18.3	47.1	32.3
★	19-RWB-01#6	13.5 ft	9.5	0.012	0.002		4.1	13.3	51.6	31.0
⊙	19-RWB-01#8	18.5 ft	12.5	0.055	0.007	0.002	6.9	23.7	57.5	11.8

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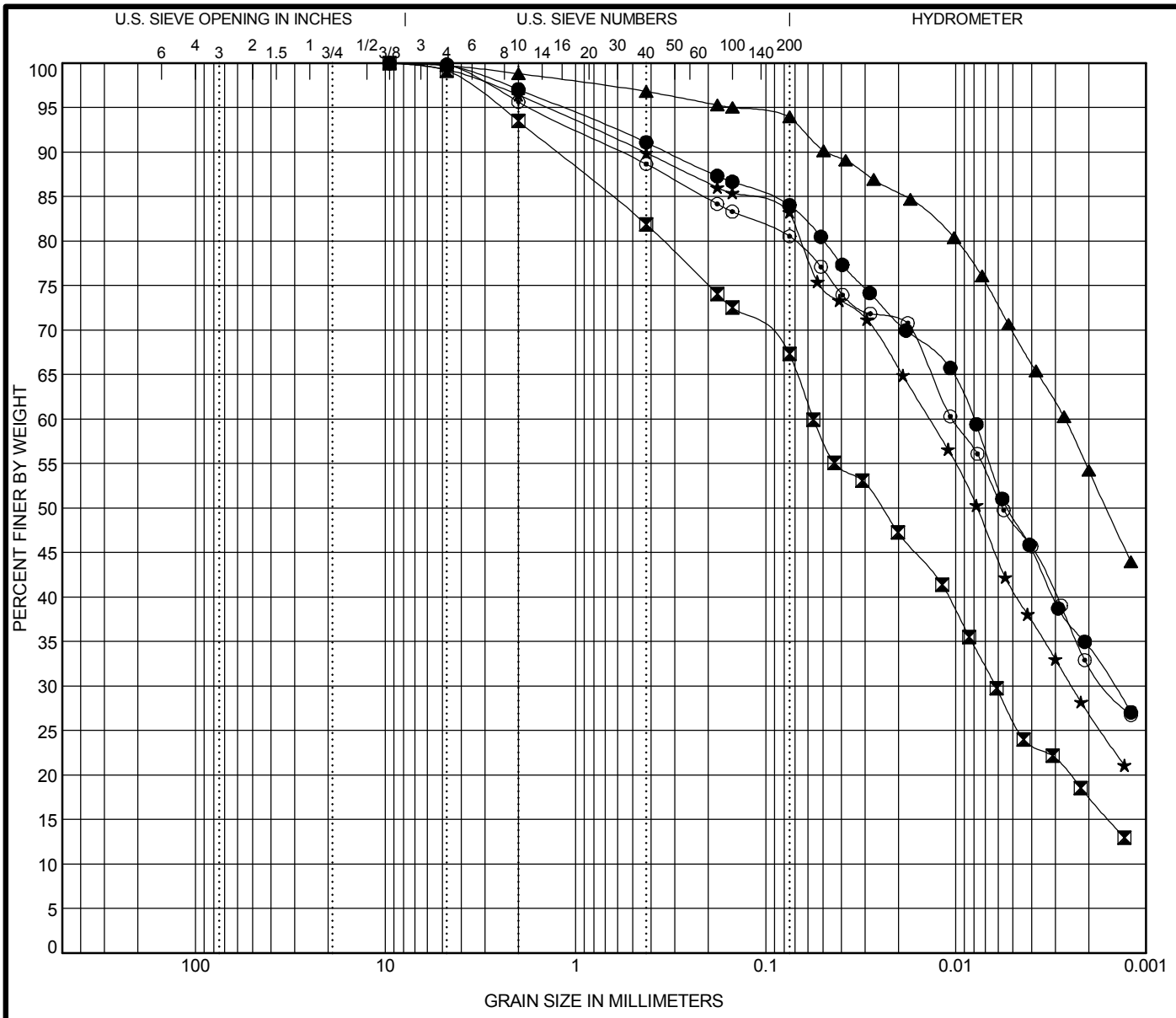
Wang Engineering, Inc.
1145 North Main Street
Lombard, IL 60148
Telephone: 630-953-9928
Fax: 630-953-9938

GRAIN SIZE DISTRIBUTION

Project: Circle Interchange Reconstruction

Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

	Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
●	19-RWB-01#14	38.5 ft	**Silty Clay**	**34**	**18**	**16**		
⊠	19-RWB-01#17	53.5 ft	**Silty Loam**	**25**	**16**	**9**		
▲	19-RWB-01#19	63.5 ft	**Clay**	**44**	**20**	**24**		
★	19-RWB-01#21	73.5 ft	**Silty Clay Loam**	**29**	**16**	**13**		
⊙	2055-B-04#7	16.0 ft	**Silty Clay**	**35**	**15**	**20**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	19-RWB-01#14	38.5 ft	**9.5**	**0.008**	**0.001**		**2.9**	**13.1**	**49.6**	**34.3**
⊠	19-RWB-01#17	53.5 ft	**9.5**	**0.056**	**0.006**		**6.5**	**26.5**	**49.4**	**17.6**
▲	19-RWB-01#19	63.5 ft	**9.5**	**0.003**			**1.2**	**5.0**	**39.6**	**54.2**
★	19-RWB-01#21	73.5 ft	**9.5**	**0.014**	**0.002**		**3.6**	**13.5**	**56.0**	**26.9**
⊙	2055-B-04#7	16.0 ft	**9.5**	**0.01**	**0.002**		**4.3**	**15.2**	**48.0**	**32.4**

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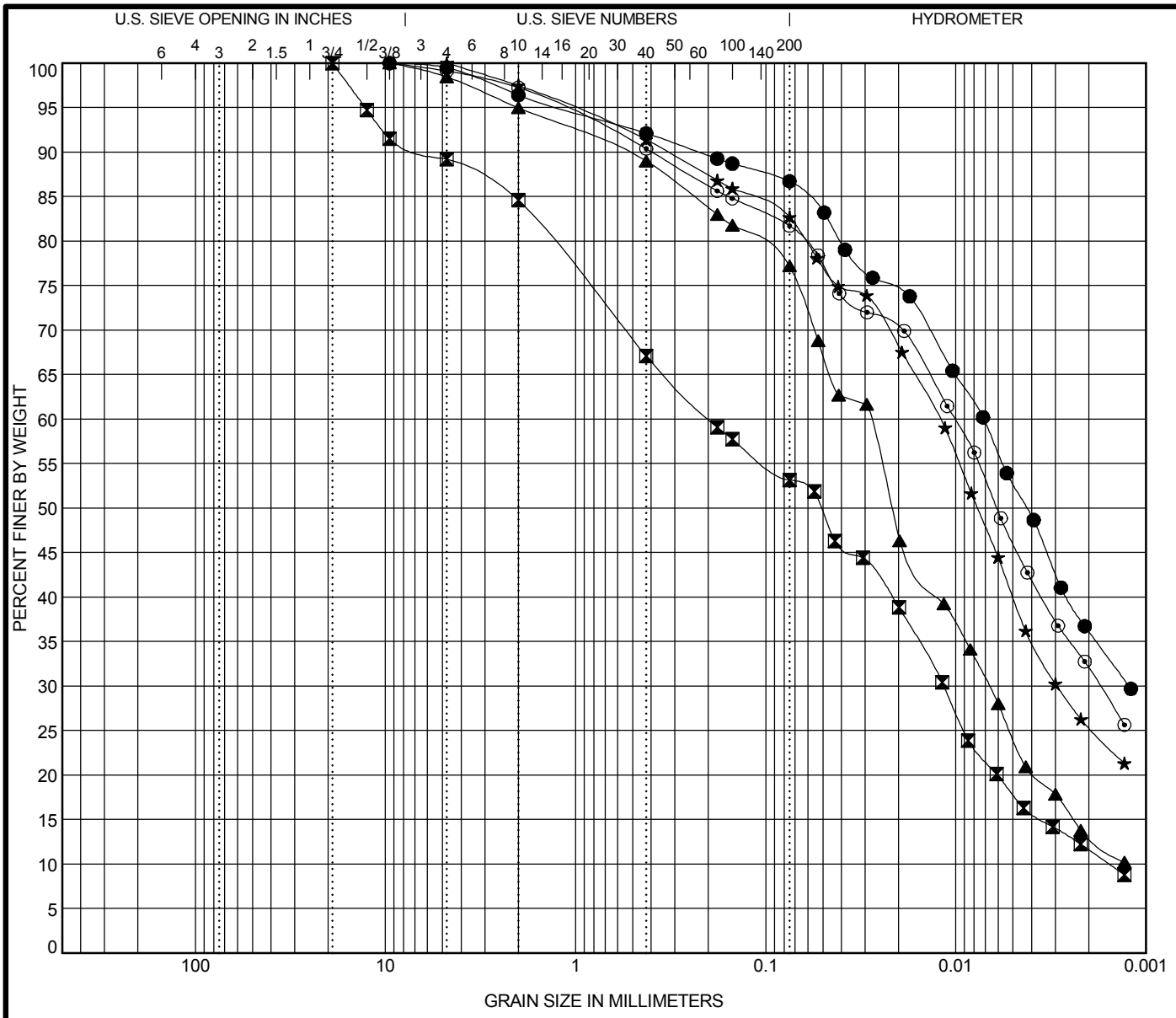
GRAIN SIZE DISTRIBUTION

Project: Circle Interchange Reconstruction

Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

	Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
●	2055-B-04#14	38.5 ft	**Silty Clay**	**35**	**15**	**20**		
⊠	2055-B-04#15	43.5 ft	**Gravelly Loam**	**22**	**13**	**9**	**0.43**	**127.28**
▲	21-RWB-02#24	89.0 ft	**Silty Loam**	**22**	**14**	**8**		
★	22-RWB-03#6	13.5 ft	**Silty Clay Loam**	**32**	**18**	**14**		
⊙	22-RWB-03#13	33.5 ft	**Silty Clay**	**33**	**18**	**15**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	2055-B-04#14	38.5 ft	**9.5**	**0.007**	**0.001**		**3.6**	**9.8**	**50.5**	**36.1**
⊠	2055-B-04#15	43.5 ft	**19**	**0.199**	**0.012**	**0.002**	**15.4**	**31.5**	**41.5**	**11.6**
▲	21-RWB-02#24	89.0 ft	**9.5**	**0.028**	**0.007**		**5.0**	**18.1**	**63.8**	**13.1**
★	22-RWB-03#6	13.5 ft	**4.75**	**0.012**	**0.003**		**2.5**	**15.0**	**57.1**	**25.4**
⊙	22-RWB-03#13	33.5 ft	**9.5**	**0.01**	**0.002**		**2.7**	**15.7**	**49.6**	**32.0**

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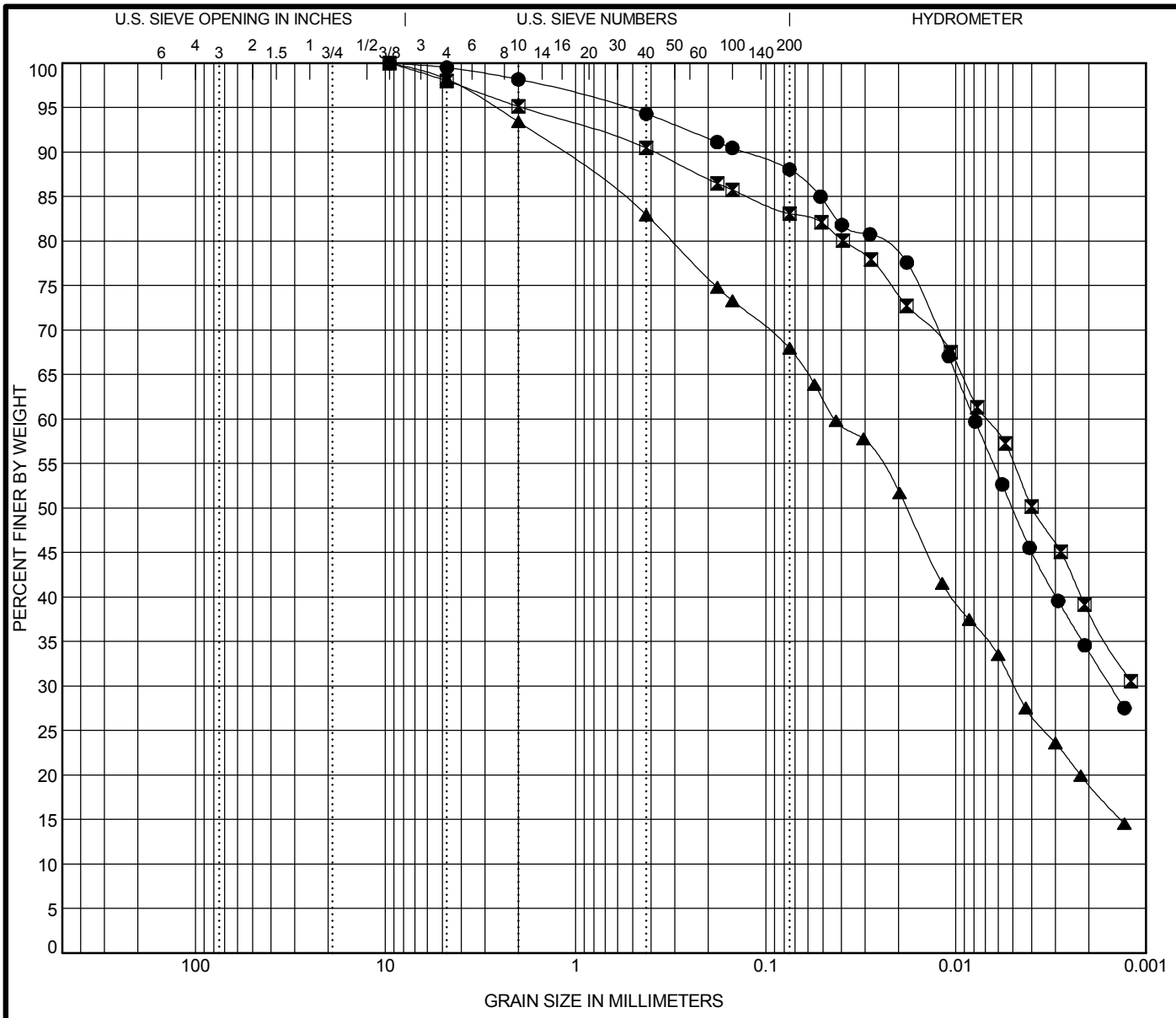
Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01



COBBLES	GRAVEL	SAND		SILT AND CLAY
		coarse	fine	

	Specimen Identification		IDH Classification	LL	PL	PI	Cc	Cu
●	22-RWB-03#18	58.5 ft	**Silty Clay**	**35**	**18**	**17**		
⊠	23-RWB-03#12	28.5 ft	**Clay**	**36**	**17**	**19**		
▲	23-RWB-03#15	43.5 ft	**Silty Clay Loam**	**25**	**16**	**9**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	22-RWB-03#18	58.5 ft	**9.5**	**0.008**	**0.002**		**1.8**	**10.2**	**54.1**	**33.9**
⊠	23-RWB-03#12	28.5 ft	**9.5**	**0.007**			**4.9**	**12.1**	**44.7**	**38.4**
▲	23-RWB-03#15	43.5 ft	**9.5**	**0.043**	**0.005**		**6.6**	**25.6**	**48.8**	**19.0**

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Location: Section 17, T39N, R14E of 3rd PM

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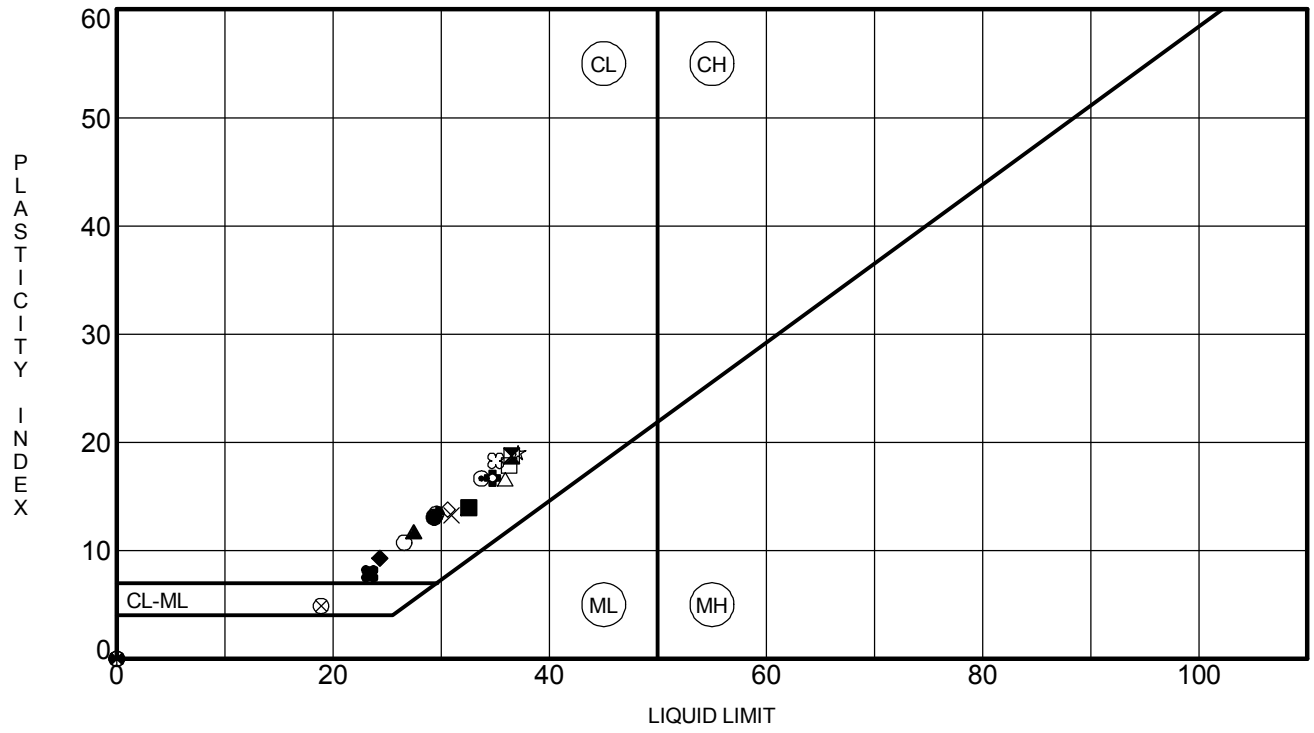

Specimen Identification			LL	PL	PI	Fines	IDH Classification
●	1703-B-04#4	8.5 ft	29	16	13	80	Silty Clay Loam
⊠	1703-B-04#14	38.5 ft	36	18	18	88	Silty Clay
▲	1703-B-04#16	48.5 ft	27	16	11	74	Silty Clay Loam
★	1703-B-04#19	63.5 ft	23	16	7	69	Silty Loam
⊙	1706-B-02#8	18.5 ft	34	17	17	80	Silty Clay
✿	1712-B-02#9	21.0 ft	35	18	17	83	Silty Clay
○	1712-B-02#15	43.5 ft	27	16	11	66	Silty Loam
△	1712-B-02#17	53.5 ft	36	19	17	98	Clay
⊗	1712-B-02#20	68.5 ft	19	14	5	72	Silty Loam
⊕	1712-B-02#23	83.5 ft	NP	NP	NP	99	Silt
□	1715-B-03#16	48.5 ft	36	18	18	97	Silty Clay
⊛	1715-B-03#23	83.5 ft	NP	NP	NP	99	Silt
◕	18-RWB-02#3	6.0 ft	30	16	14	82	Silty Clay Loam
☆	18-RWB-02#12	28.5 ft	37	18	19	86	Clay
⊠	18-RWB-02#15	43.5 ft	35	17	18	88	Silty Clay
■	18-RWB-03#6	13.5 ft	33	19	14	80	Clay
◆	18-RWB-03#14	38.5 ft	24	15	9	67	Silty Loam
◇	19-RWB-01#3	6.0 ft	31	17	14	80	Clay
╳	19-RWB-01#6	13.5 ft	31	18	13	83	Silty Clay
⊠	19-RWB-01#8	18.5 ft	23	16	7	70	Silty Loam

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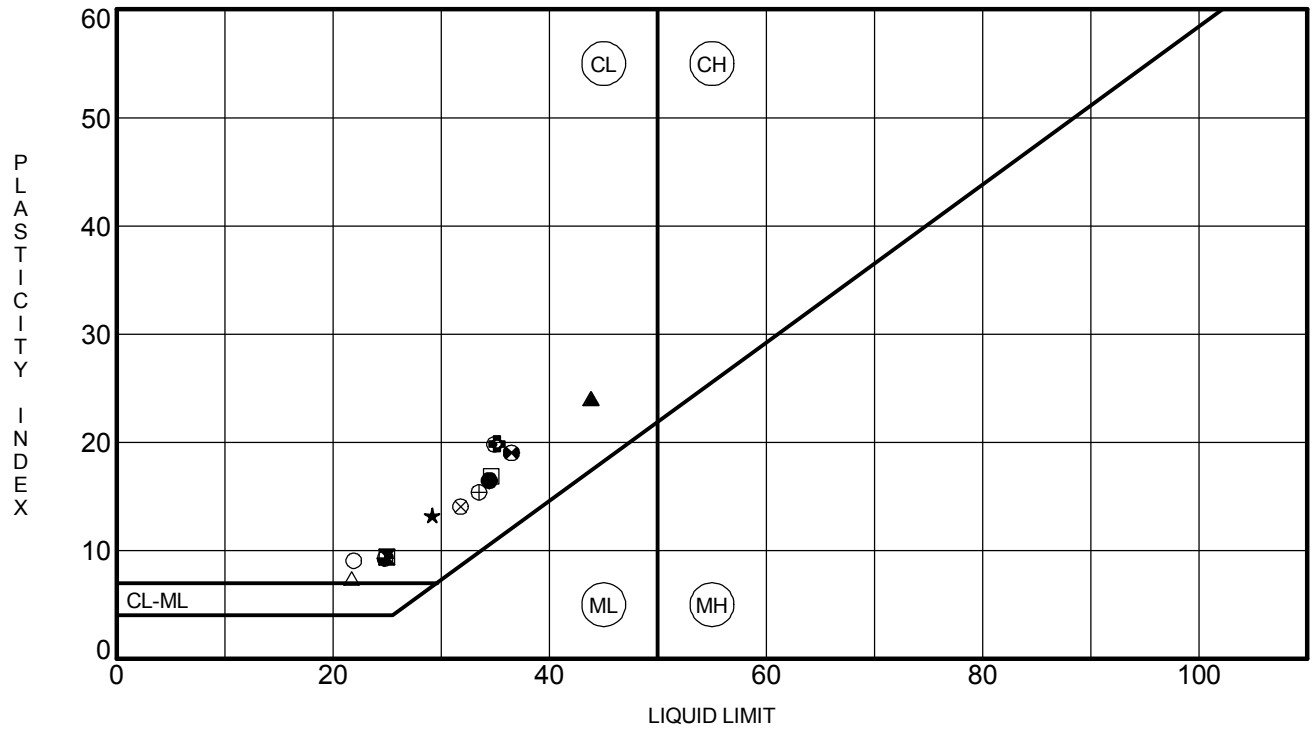
ATTERBERG LIMITS' RESULTS

Project: Circle Interchange Reconstruction

Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01



Specimen Identification			LL	PL	PI	Fines	IDH Classification
●	19-RWB-01#14	38.5 ft	34	18	16	84	Silty Clay
⊠	19-RWB-01#17	53.5 ft	25	16	9	67	Silty Loam
▲	19-RWB-01#19	63.5 ft	44	20	24	94	Clay
★	19-RWB-01#21	73.5 ft	29	16	13	83	Silty Clay Loam
⊙	2055-B-04#7	16.0 ft	35	15	20	81	Silty Clay
✿	2055-B-04#14	38.5 ft	35	15	20	87	Silty Clay
○	2055-B-04#15	43.5 ft	22	13	9	53	Gravelly Loam
△	21-RWB-02#24	89.0 ft	22	14	8	77	Silty Loam
⊗	22-RWB-03#6	13.5 ft	32	18	14	83	Silty Clay Loam
⊕	22-RWB-03#13	33.5 ft	33	18	15	82	Silty Clay
□	22-RWB-03#18	58.5 ft	35	18	17	88	Silty Clay
❁	23-RWB-03#12	28.5 ft	36	17	19	83	Clay
◕	23-RWB-03#15	43.5 ft	25	16	9	68	Silty Clay Loam

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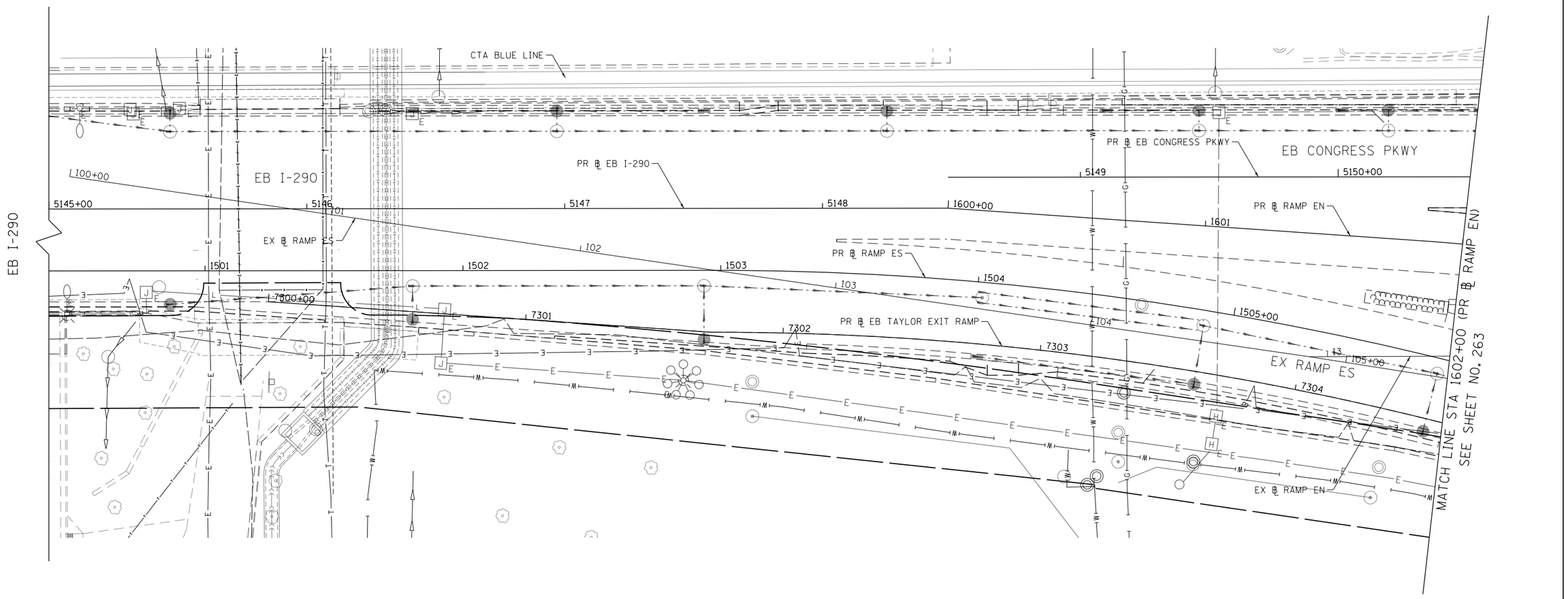
ATTERBERG LIMITS' RESULTS

Project: Circle Interchange Reconstruction

Location: Section 17, T39N, R14E of 3rd PM

Number: 1100-04-01

APPENDIX C



LEGEND

EXISTING MANHOLE	PROPOSED MANHOLE
EXISTING CATCH BASIN	PROPOSED CATCH BASIN
EXISTING INLET	PROPOSED INLET
BRIDGE SCUPPER (SEE STRUCTURAL PLANS)	
MANHOLE TO BE INSTALLED BY OTHERS	
CATCH BASIN TO BE INSTALLED BY OTHERS	
INLET TO BE INSTALLED BY OTHERS	
STORM SEWER TO BE INSTALLED BY OTHERS	
STORM SEWER TO BE INSTALLED BY OTHERS (60X93)	
PROPOSED STORM SEWER	

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

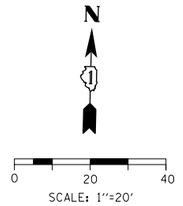
YELLOW - STRUCTUAL ELEMENT INSTALLED AFTER DRAINAGE

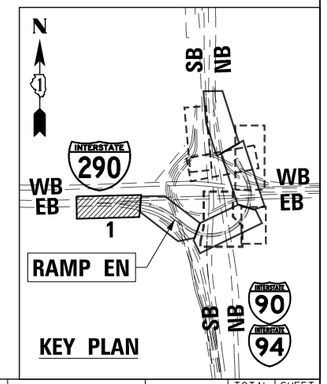
GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE





TranSystems

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PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 1 OF 10 SHEETS | STA. 1600+00 TO STA. 1602+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	262
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

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LEGEND

	EXISTING MANHOLE		PROPOSED MANHOLE
	EXISTING CATCH BASIN		PROPOSED CATCH BASIN
	EXISTING INLET		PROPOSED INLET
	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
	MANHOLE TO BE INSTALLED BY OTHERS		
	CATCH BASIN TO BE INSTALLED BY OTHERS		
	INLET TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
	PROPOSED STORM SEWER		

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

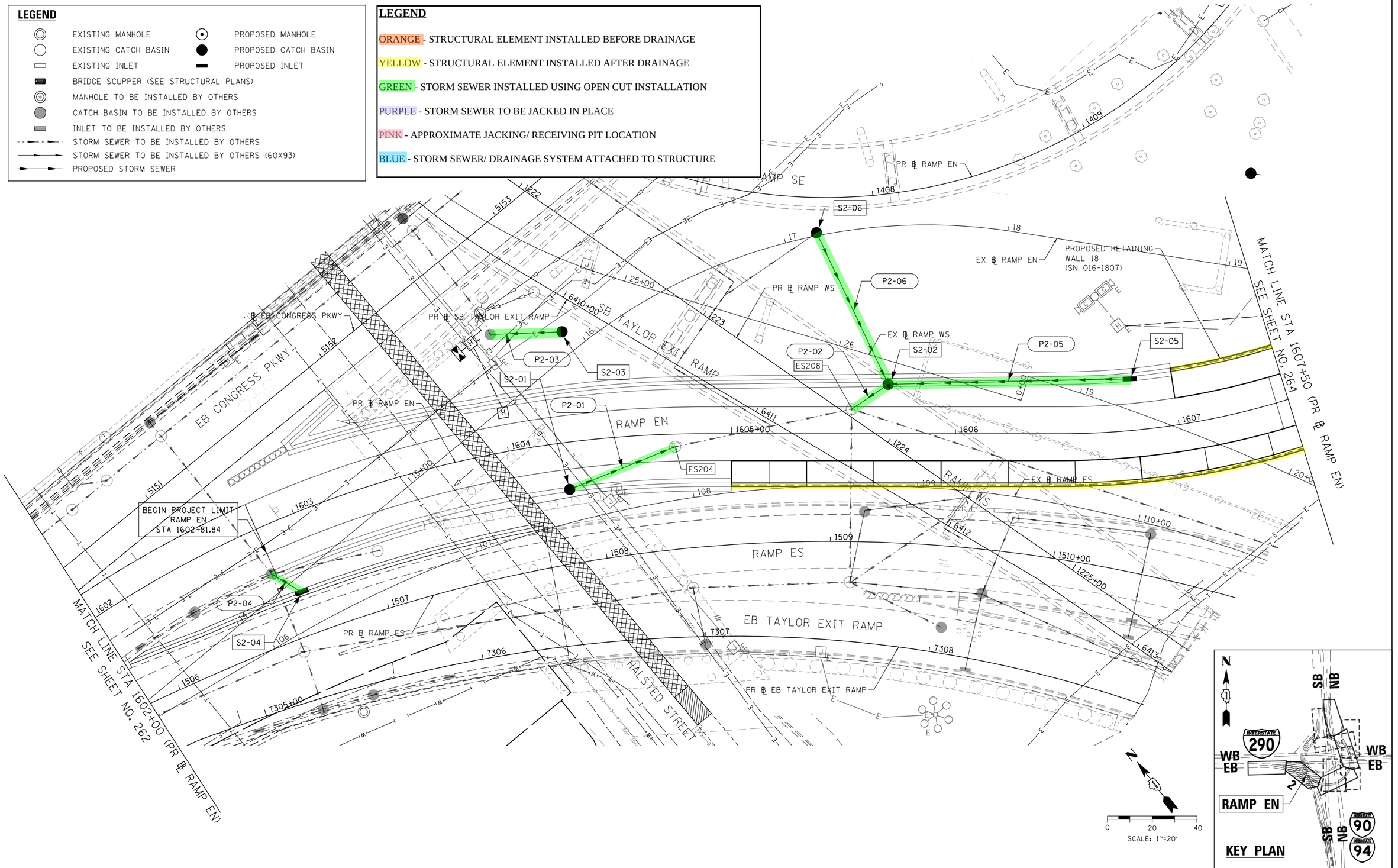
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE



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TranSystems

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PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 2 OF 10 SHEETS | STA. 1602+00 TO STA. 1607+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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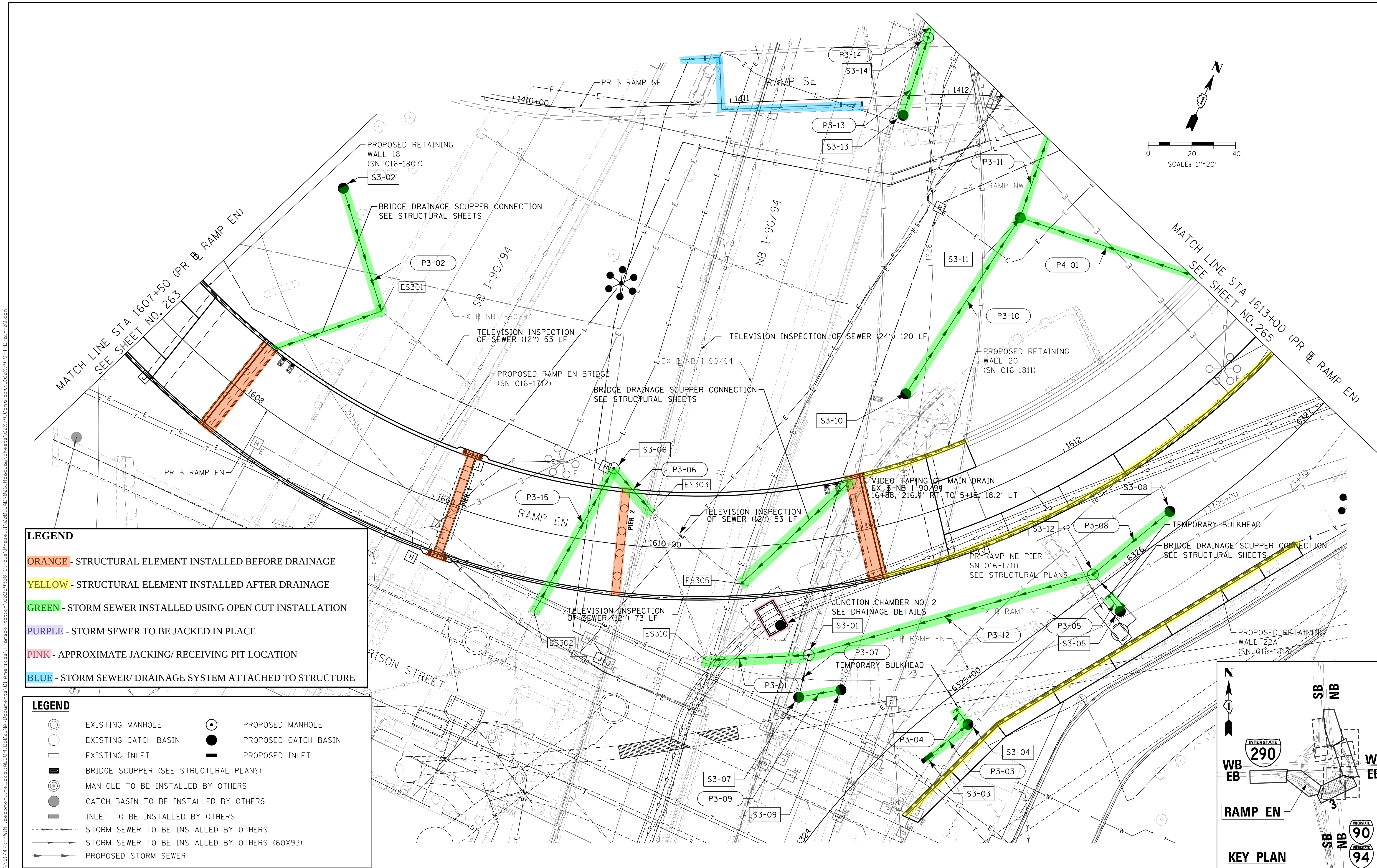
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

LEGEND

EXISTING MANHOLE	PROPOSED MANHOLE
EXISTING CATCH BASIN	PROPOSED CATCH BASIN
EXISTING INLET	PROPOSED INLET
BRIDGE SCUPPER (SEE STRUCTURAL PLANS)	
MANHOLE TO BE INSTALLED BY OTHERS	
CATCH BASIN TO BE INSTALLED BY OTHERS	
INLET TO BE INSTALLED BY OTHERS	
STORM SEWER TO BE INSTALLED BY OTHERS	
STORM SEWER TO BE INSTALLED BY OTHERS (60X93)	
PROPOSED STORM SEWER	

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	PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -		
	PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -		SCALE: 1"=20' SHEET 3 OF 10 SHEETS STA. 1607+50 TO STA. 1613+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	264
		CONTRACT NO. 60X79		
		ILLINOIS FED. AID PROJECT		

MATCH LINE STA 1613+00 (PR ℄ RAMP EN)
SEE SHEET NO.264

MATCH LINE STA 1618+50 (PR ℄ RAMP EN)
SEE SHEET NO.266

FOR MAIN DRAIN INFORMATION UNDER I-90/94 SEE SHEET NO.268

EX ℄ NB I-90/94

JACKING/RECEIVING PIT #3

JACKING/RECEIVING PIT #4

EX EB CONGRESS PKWY

EX WB CONGRESS PKWY

PR ℄ EB I-290

PR ℄ WB I-290

PR ℄ RAMP EN

PR ℄ RAMP SE

PR ℄ RAMP WN

PR ℄ RAMP WS

RAMP EN

RAMP WN

RAMP WS

EX ℄ RAMP WS

EX ℄ RAMP WN

BEGIN INTERIM RAMP WN
STA 2105+76.20
STATION EQUATION
2105 RAMP WN
STA 1105+76.20
INTERIM RAMP WN
STA 2105+76.20

END PROJECT LIMIT
RAMP EN
STA 1617+70.00
STATION EQUATION
RAMP EN
STA 0617+70.00
INTERIM RAMP EN
STA 3617+70.00

BRIDGE DRAINAGE SCUPPER CONNECTION FROM CONTRACT 60X93. CONTRACTOR COORDINATION REQUIRED.

BRIDGE DRAINAGE SCUPPER CONNECTION FROM CONTRACT 60X93. CONTRACTOR COORDINATION REQUIRED.

JUNCTION CHAMBER NO. 1
SEE DRAINAGE DETAILS

CONNECT TO EX CHAMBER
SEE DRAINAGE DETAILS

VIDEO TAPING OF MAIN DRAIN
EX ℄ NB I-90/94
16+88, 216.4' RT TO 5+15, 18.2' LT

PROPOSED RETAINING WALL 20
(SN 016-1811)

PROPOSED RETAINING WALL 22B
(SN 016-1839)

EX 4 1/2" W X 5' H MAIN DRAIN TO REMAIN

SEE SHEET NO.271 FOR PUMP STATION NO. 5 PARKING LOT DRAINAGE PLAN.

S4-24 P4-24 S4-20 P4-20 S4-19 P4-19 S4-18 P4-18 S4-17 P4-17 S4-23 P4-23 P4-14 S4-14 P4-22 S4-03 1703-B-04 S4-07 P4-07 S4-22 S4-02 1703-PZ-01 P4-02 S4-06 P4-06 P4-03 S4-10 P4-10 1715-B-02 P4-15 S4-15 P4-13 1712-B-03 S4-11 P4-11 P4-12 S4-12 S4-08 22-RWB-04 S4-05 P4-08 P4-05 P4-04 S4-04 S4-16 P4-16 P4-09 S4-09 22-RWB-03 22-RWB-05 P4-21 P4-01 S4-01 S4-21 ES408

LEGEND

- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING INLET
- BRIDGE SCUPPER (SEE STRUCTURAL PLANS)
- MANHOLE TO BE INSTALLED BY OTHERS
- CATCH BASIN TO BE INSTALLED BY OTHERS
- INLET TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS (60X93)
- PROPOSED STORM SEWER
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED INLET

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

0 20 40
SCALE: 1"=20'

N

INTERSTATE 290 WB EB SB NB

INTERSTATE 90 SB NB

INTERSTATE 94

RAMP EN

KEY PLAN

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TranSystems

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USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0017 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 4 OF 10 SHEETS | STA. 1613+00 | TO STA. 1618+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	265
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

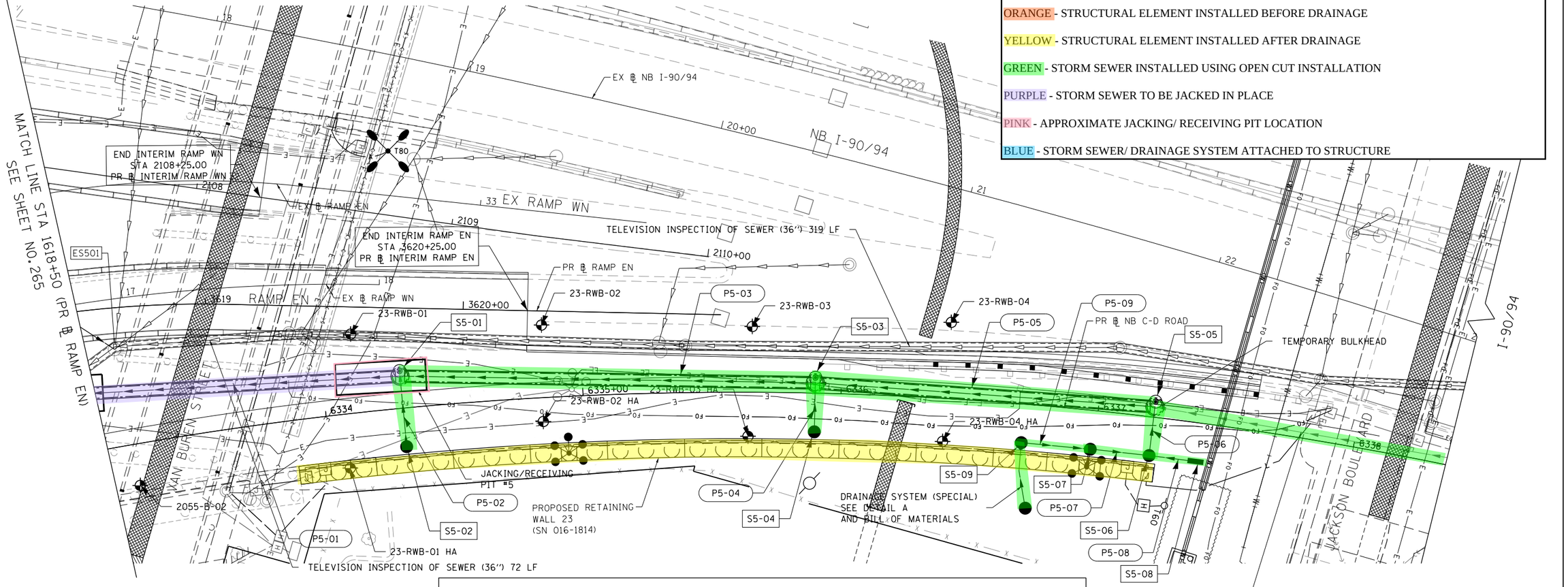
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

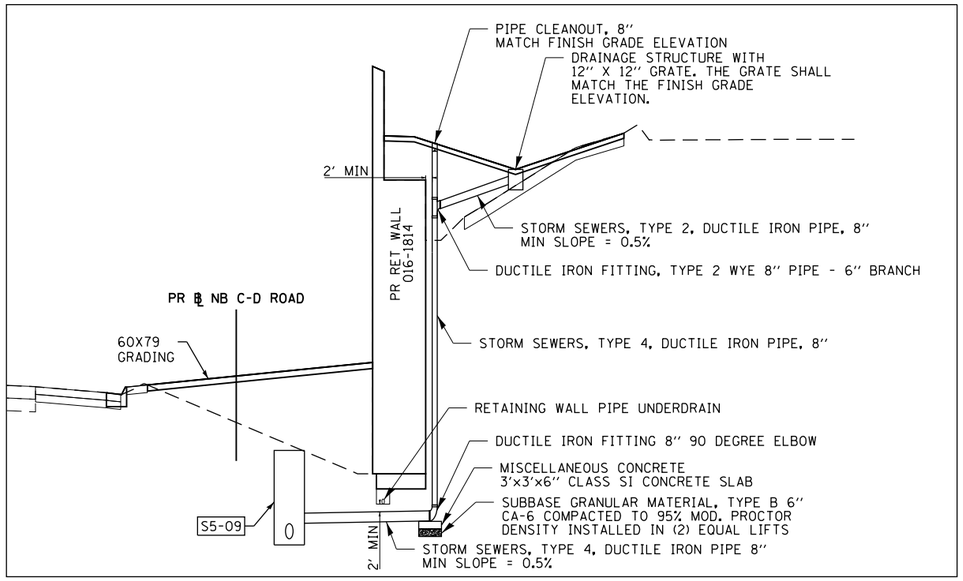


LEGEND

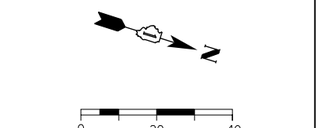
◎	EXISTING MANHOLE	⊙	PROPOSED MANHOLE
○	EXISTING CATCH BASIN	●	PROPOSED CATCH BASIN
▭	EXISTING INLET	▬	PROPOSED INLET
▭	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
◎	MANHOLE TO BE INSTALLED BY OTHERS		
●	CATCH BASIN TO BE INSTALLED BY OTHERS		
▭	INLET TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
	PROPOSED STORM SEWER		

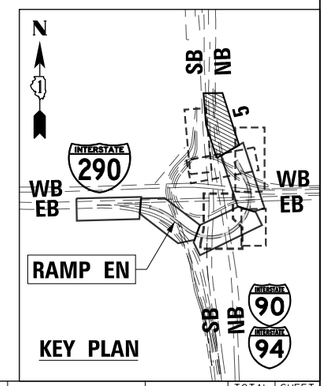
BILL OF MATERIAL		
ITEM	UNIT	QUANTITY
DUCTILE IRON FITTING, TYPE 2 WYE 8" PIPE - 6" BRANCH	EACH	1
DUCTILE IRON FITTING 8" 90 DEGREE ELBOW	EACH	1
PIPE CLEANOUT, 8"	EACH	1
STORM SEWERS, TYPE 4, DUCTILE IRON PIPE 8"	FOOT	50
DRAINAGE STRUCTURE	EACH	1
SUBBASE GRANULAR MATERIAL, TYPE B 6"	SQ YD	1
MISCELLANEOUS CONCRETE	CU YD	4.5

NOTE: ALL ITEMS INCLUDED IN THE COST OF DRAINAGE SYSTEM (SPECIAL)



DETAIL A





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TranSystems

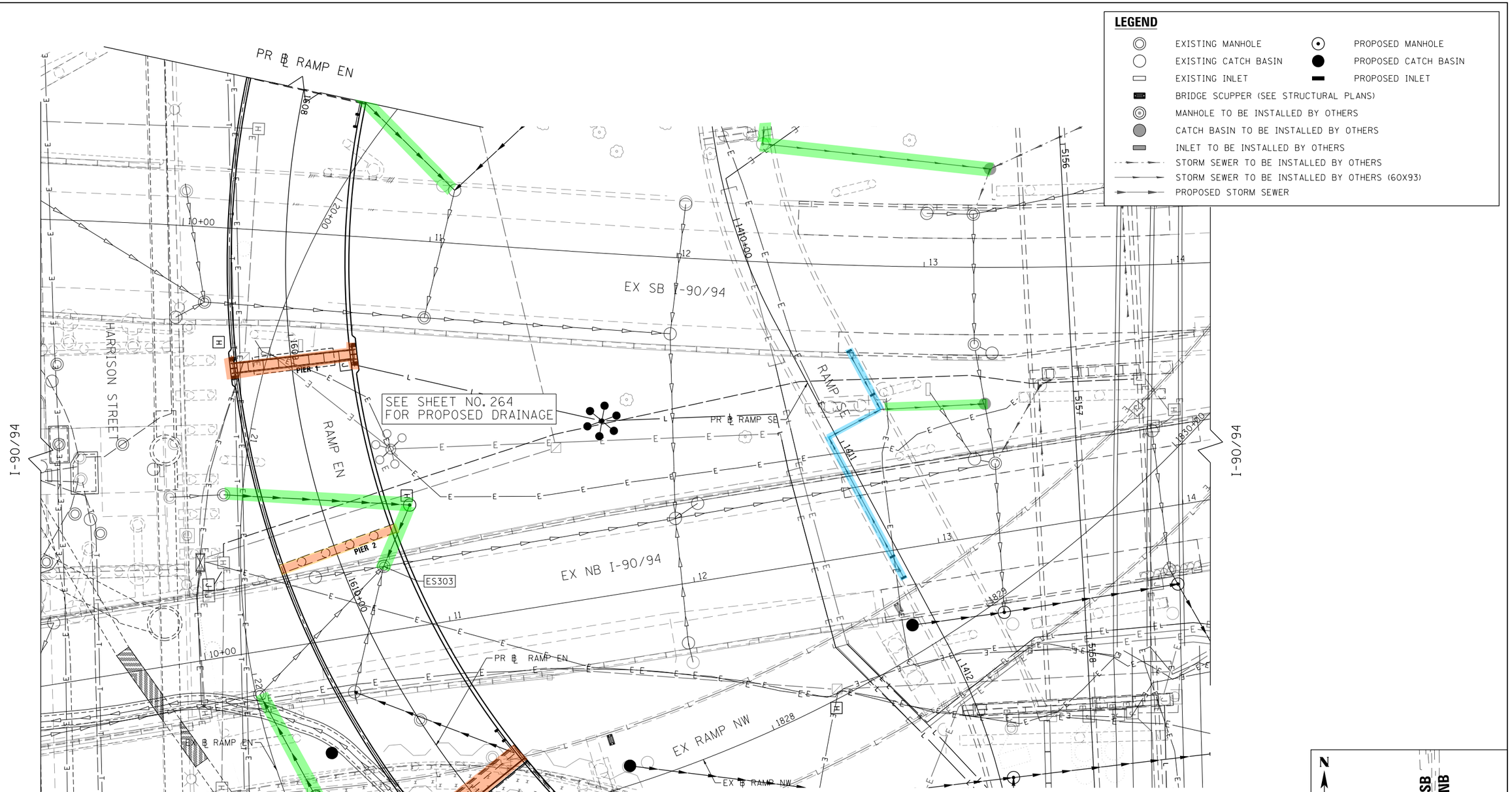
D160X79-SHT-Drain-05.dgn	DESIGNED - MRC	REVISED -	
USER NAME = mkwilson	DRAWN - MRC	REVISED -	
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -	
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 5 OF 10 SHEETS | STA. 1618+50 TO STA. 1624+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	266
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING INLET
- BRIDGE SCUPPER (SEE STRUCTURAL PLANS)
- MANHOLE TO BE INSTALLED BY OTHERS
- CATCH BASIN TO BE INSTALLED BY OTHERS
- INLET TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS
- STORM SEWER TO BE INSTALLED BY OTHERS (60X93)
- PROPOSED STORM SEWER
- PROPOSED MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED INLET

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

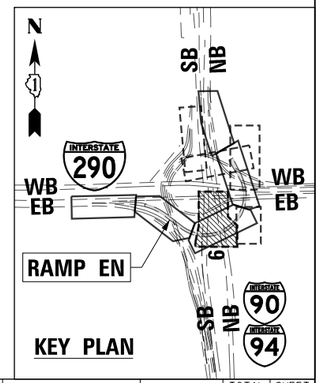
PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

N

0 20 40

SCALE: 1"=20'



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TranSystems

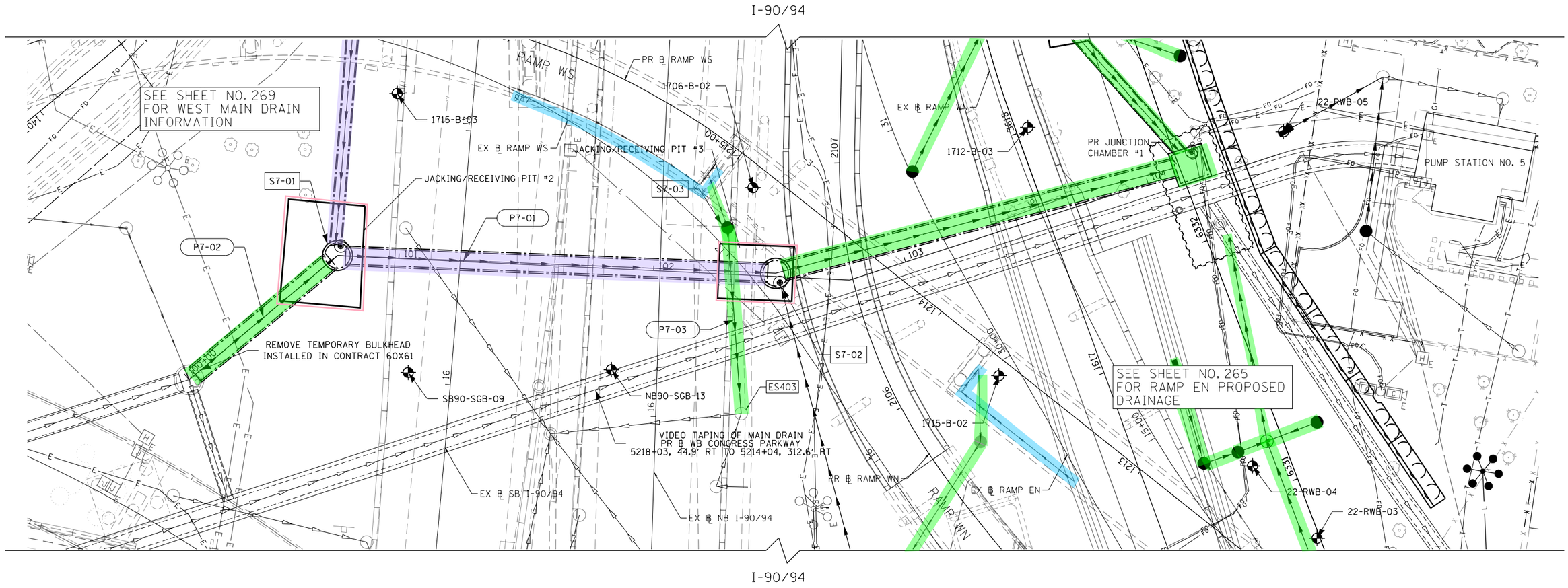
D160X79-SHT-DRAIN-06.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 6 OF 10 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	267
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

◎	EXISTING MANHOLE	⊙	PROPOSED MANHOLE
○	EXISTING CATCH BASIN	●	PROPOSED CATCH BASIN
▭	EXISTING INLET	▬	PROPOSED INLET
	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
◎	MANHOLE TO BE INSTALLED BY OTHERS		
●	CATCH BASIN TO BE INSTALLED BY OTHERS		
▭	INLET TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
	PROPOSED STORM SEWER		

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

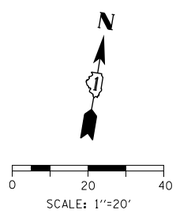
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

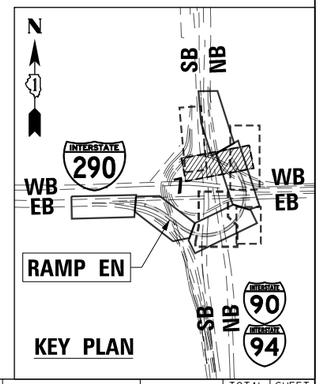
GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE





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TranSystems

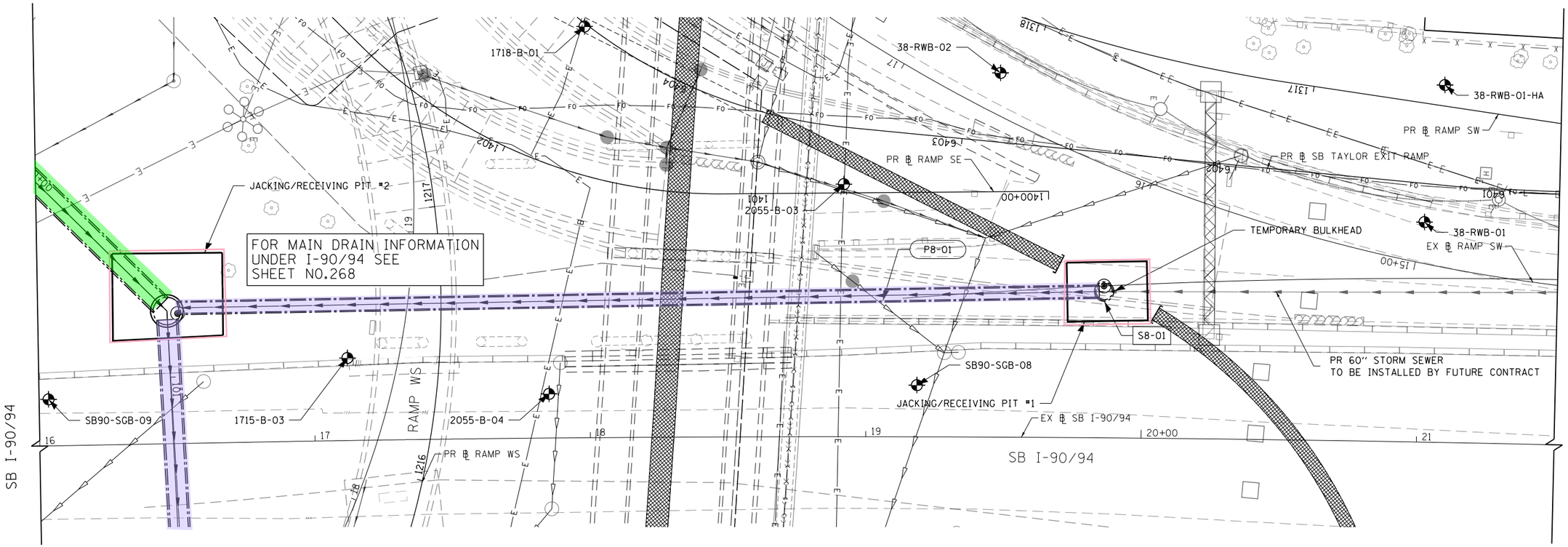
D160X79-SHT-Drain-07.dgn	DESIGNED - MRC	REVISED -	
USER NAME = mkwilson	DRAWN - MRC	REVISED -	
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -	
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 7 OF 10 SHEETS | STA. 100+00 TO STA. 104+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	268
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

	EXISTING MANHOLE		PROPOSED MANHOLE
	EXISTING CATCH BASIN		PROPOSED CATCH BASIN
	EXISTING INLET		PROPOSED INLET
	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
	MANHOLE TO BE INSTALLED BY OTHERS		
	CATCH BASIN TO BE INSTALLED BY OTHERS		
	INLET TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
	PROPOSED STORM SEWER		

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

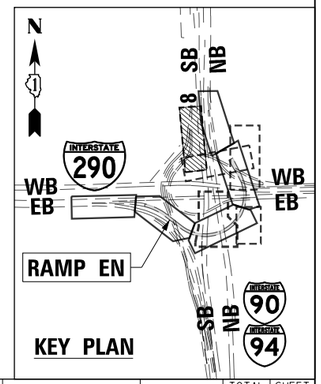
PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

N

0 20 40

SCALE: 1"=20'



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TranSystems

D160X79-SHT-Drain-08.dgn	DESIGNED - MRC	REVISED -	
USER NAME = mkwilson	DRAWN - MRC	REVISED -	
PLOT SCALE = 40.0000 '/ in.	CHECKED - JMG	REVISED -	
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 8 OF 10 SHEETS | STA. 16+00 TO STA. 21+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	269
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

PR ℄ NB
C-D ROAD

1703

6325+00

1704

PR RAMP NE PIER 1
SN 016-1710
SEE STRUCTURAL PLANS

6326

1705+00

1612

RAMP EN

SEE NOTE 1

PR ℄ RAMP EN

SCALE: 1"=10'

SEE SHEET NO. 264
FOR RAMP EN PROPOSED
DRAINAGE

HARRISON STREET

EX ℄ RAMP NE

EX ℄ RAMP EN

6327

25+00

PROPOSED RETAINING
WALL 22A
(SN 016-1813)

DES PLAINES STREET

NOTES:

1. SEE SHEET NO. 264 FOR RAMP EN PLAN DETAILS.

LEGEND

	EXISTING MANHOLE		PROPOSED MANHOLE
	EXISTING CATCH BASIN		PROPOSED CATCH BASIN
	EXISTING INLET		PROPOSED INLET
	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
	MANHOLE TO BE INSTALLED BY OTHERS		
	CATCH BASIN TO BE INSTALLED BY OTHERS		
	INLET TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
	PROPOSED STORM SEWER		

LEGEND

ORANGE -STRUCTURE ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURE ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

N

SB NB

INTERSTATE 290

WB EB

WB EB

RAMP EN

SB NB

INTERSTATE 90

INTERSTATE 94

KEY PLAN

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TranSystems

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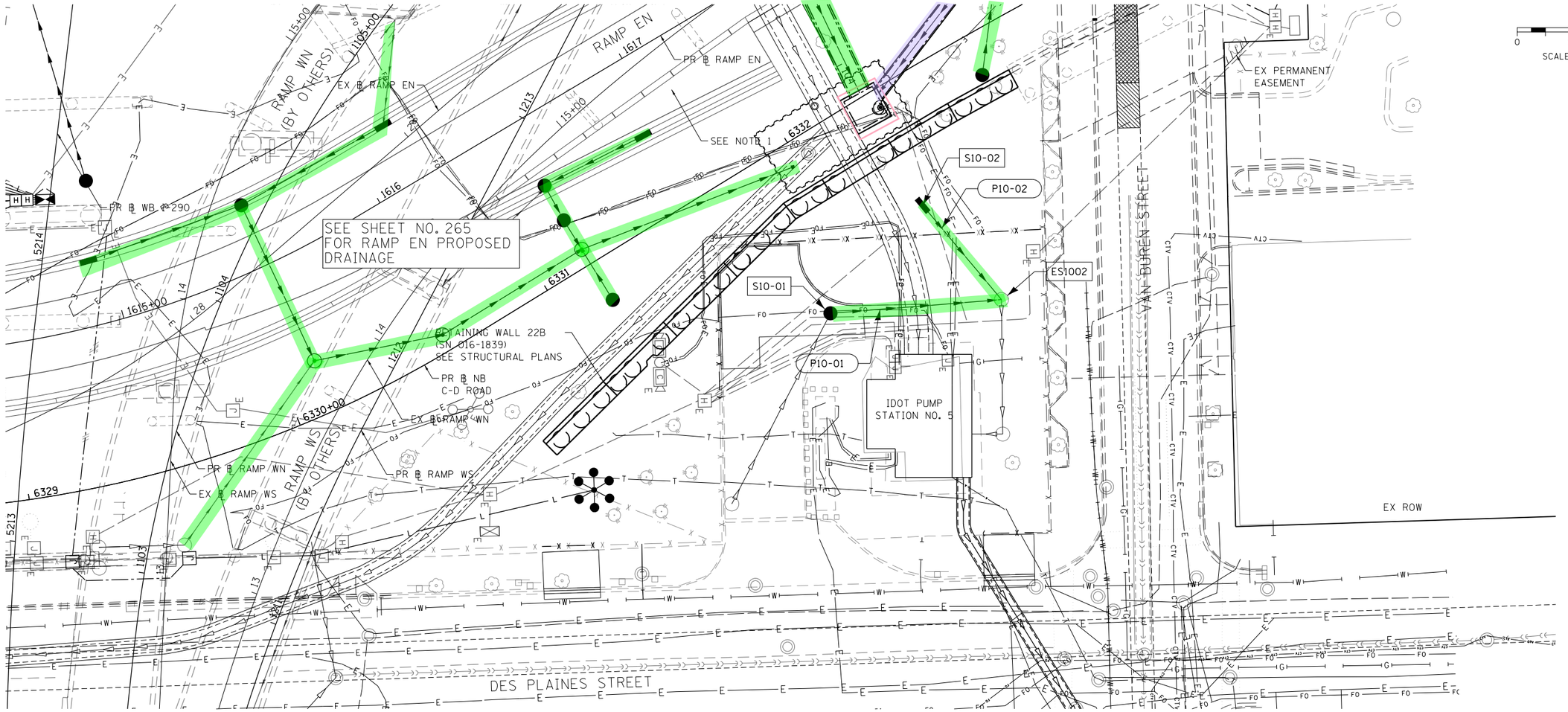
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=10' | SHEET 9 OF 10 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	270
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

◎	EXISTING MANHOLE	⊙	PROPOSED MANHOLE
○	EXISTING CATCH BASIN	●	PROPOSED CATCH BASIN
▭	EXISTING INLET	▬	PROPOSED INLET
	BRIDGE SCUPPER (SEE STRUCTURAL PLANS)		
◎	MANHOLE TO BE INSTALLED BY OTHERS		
●	CATCH BASIN TO BE INSTALLED BY OTHERS		
▭	INLET TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS		
	STORM SEWER TO BE INSTALLED BY OTHERS (60X93)		
	PROPOSED STORM SEWER		

NOTES:

1. SEE SHEET NO. 265 FOR RAMP EN PLAN DETAILS.

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

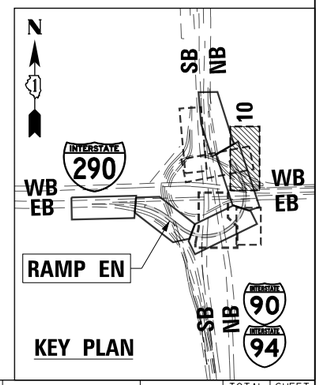
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE



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TranSystems

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PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PROPOSED DRAINAGE AND UTILITIES PLAN

SCALE: 1"=20' | SHEET 10 OF 10 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	271
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
CADD FILE NAME
NOTE BOOK
NO. ____
BY
DATE

PROFILE
SURVEYED
PLOTTED
CROSS CHECKED
BM. NOTED
STRUCTURE NOTATNS CHKD
NOTE BOOK
NO. ____
BY
DATE

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630
625
620
615
610
605
600
595
590
585
580
575
570
565
560
555
550
545

EX PGL EL
PR PGL EL

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

EB I-290

EX GROUND EL AT PR ℄

PR RAMP EN PGL

CDWM 16" WATER MAIN TO REMAIN

PR GROUND EL AT PR ℄

SEE SHEET 273 MATCH LINE STA 1602+00

576.50
576.29
575.99
575.64
575.44
575.72

1600+00
1600+50
1601+00
1601+50
1602+00

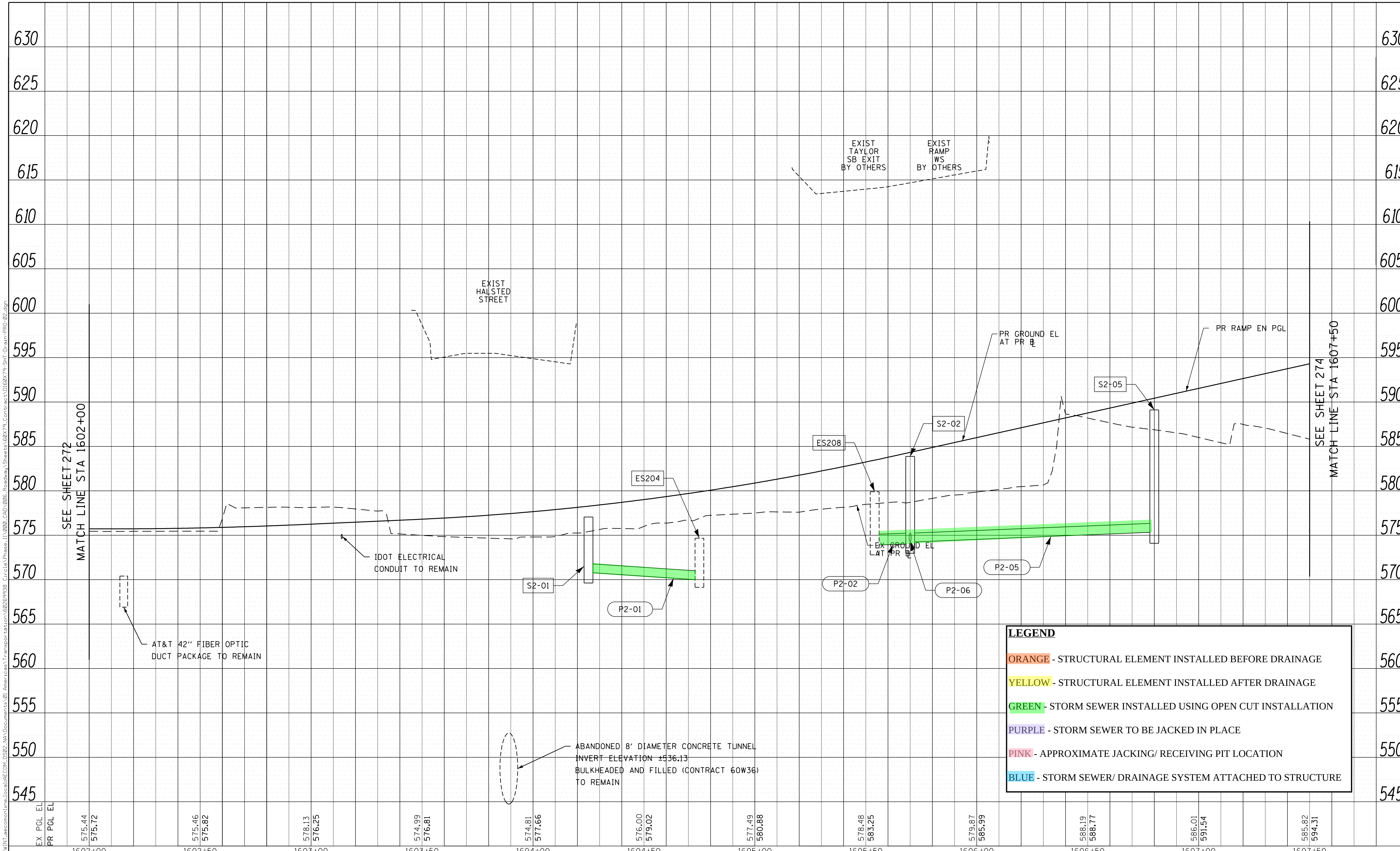
D160X79-SHT-Drain-PRO-01.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PROFILE
RAMP EN

SCALE: 1"=20' | SHEET 1 OF 11 SHEETS | STA.1600+00 | TO STA.1602+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	272
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

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PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

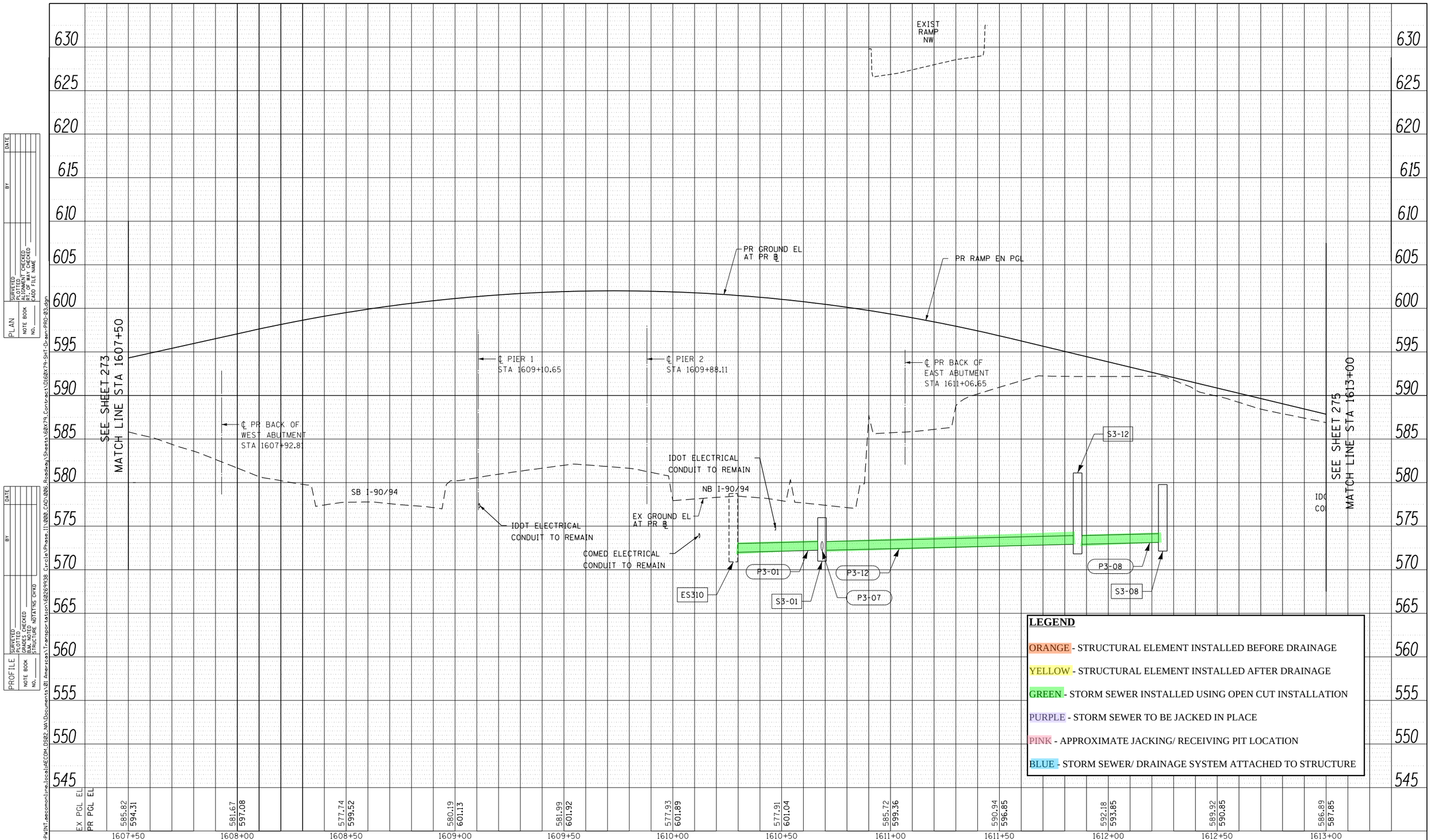
DRAINAGE AND UTILITIES PROFILE
RAMP EN

SCALE: 1"=20' | SHEET 2 OF 11 SHEETS | STA.1602+00 TO STA.1607+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	273

CONTRACT NO. 60X79

ILLINOIS FED. AID PROJECT



LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

PLAN: SURVEYED | PLOTTED | CROSS CHECKED | BAR. NOTED | STRUCTURE NOTATNS CHKD | RT. OF WAY CHECKED | CADD FILE NAME | NOTE BOOK | NO.____ | BY | DATE

PROFILE: SURVEYED | PLOTTED | CROSS CHECKED | BAR. NOTED | STRUCTURE NOTATNS CHKD | NOTE BOOK | NO.____ | BY | DATE

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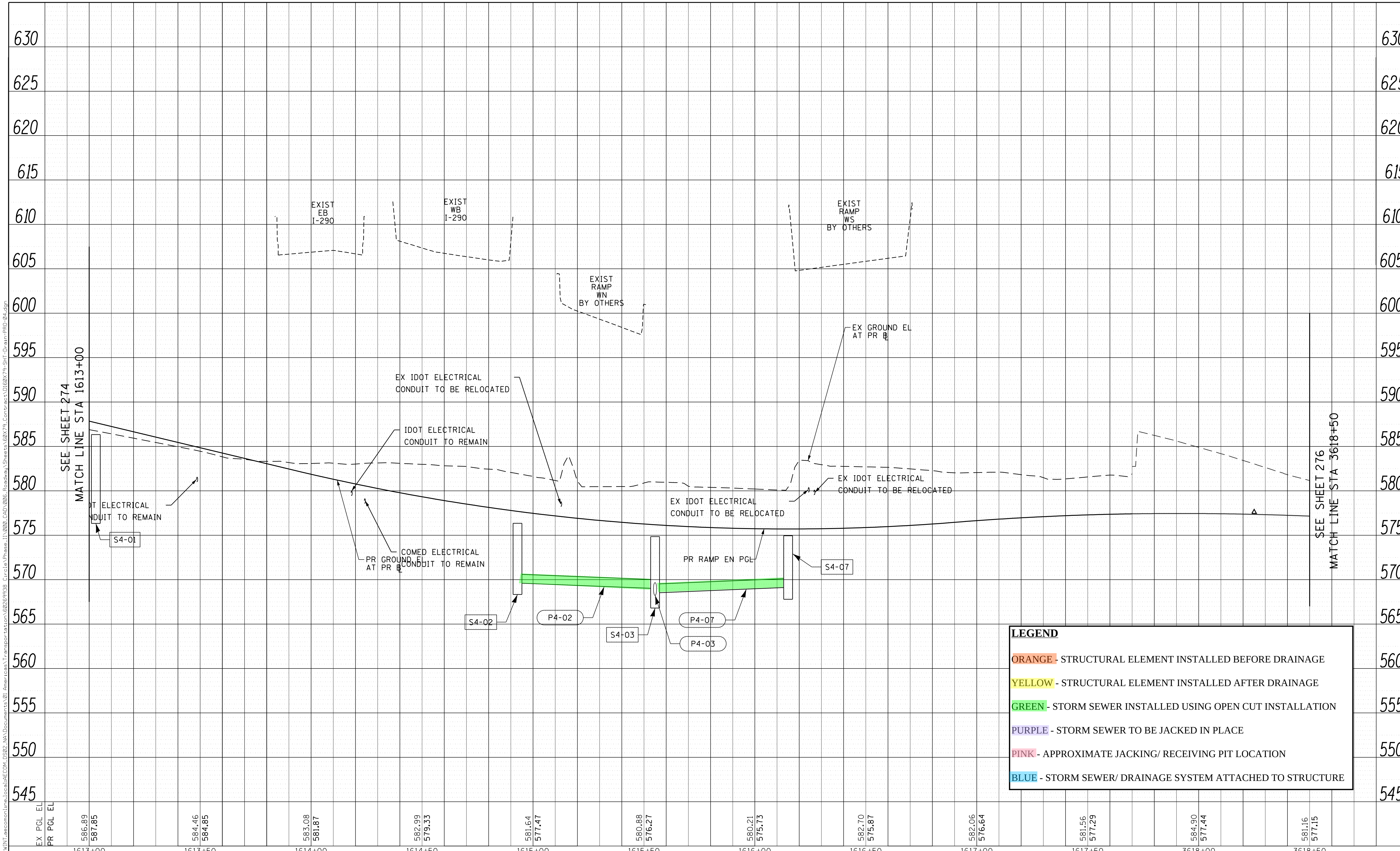
D160X79-SHT-Drain-PRO-03.dgn	DESIGNED - MRC	REVISED -	
USER NAME = mkwilson	DRAWN - MRC	REVISED -	
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -	
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PROFILE
RAMP EN

SCALE: 1"=20' | SHEET 3 OF 11 SHEETS | STA.1607+50 TO STA.1613+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	274
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			



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EXIST EB I-290
EXIST WB I-290
EXIST RAMP WN BY OTHERS
EXIST RAMP WS BY OTHERS
EX GROUND EL AT PR ℄
EX IDOT ELECTRICAL CONDUIT TO BE RELOCATED
IDOT ELECTRICAL CONDUIT TO REMAIN
SEE SHEET 274 MATCH LINE STA 1613+00
SEE SHEET 276 MATCH LINE STA 3618+50
DT ELECTRICAL NDUIT TO REMAIN
EX IDOT ELECTRICAL CONDUIT TO BE RELOCATED
COMED ELECTRICAL CONDUIT TO REMAIN
PR GROUND EL AT PR ℄
PR RAMP EN PGL
S4-01
S4-02
S4-03
S4-07
P4-02
P4-03
P4-07
LEGEND
ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE
GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION
PURPLE - STORM SEWER TO BE JACKED IN PLACE
PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION
BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE
EX PGL EL
PR PGL EL
586.89 587.85
584.46 584.85
583.08 581.87
582.99 579.33
581.64 577.47
580.88 576.27
580.21 575.73
582.70 575.87
582.06 576.64
581.56 577.29
584.90 577.44
581.16 577.15
1613+00
1613+50
1614+00
1614+50
1615+00
1615+50
1616+00
1616+50
1617+00
1617+50
3618+00
3618+50

DI60X79-SHT-Drain-PRO-04.dgn	DESIGNED - MRC	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
USER NAME = mkwilson	DRAWN - MRC	REVISED -	
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -	
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -	

DRAINAGE AND UTILITIES PROFILE
RAMP EN

SCALE: 1"=20' | SHEET 4 OF 11 SHEETS | STA.1613+00 TO STA.3618+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	275

CONTRACT NO. 60X79

ILLINOIS FED. AID PROJECT

PLAN
SURVEYED
PLOTTED
DESIGN CHECKED
NOTE BOOK
NO. ____
BY
DATE
ALIGNMENT CHECKED
RT. OF WAY CHECKED
CADD FILE NAME

PROFILE
SURVEYED
PLOTTED
DESIGN CHECKED
NOTE BOOK
NO. ____
BY
DATE
BLM. NOTED
STRUCTURE NOTATNS CHKD

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565
560
555
550
545

EXIST
VAN BUREN
STREET

EX GROUND EL
AT PR ℄

SEE SHEET 275
MATCH LINE STA 3618+50

RAMP EN

PR RAMP EN PGL

PR GROUND EL
AT PR ℄

COMED ELECTRICAL
CONDUIT TO REMAIN

EX SIPHON TO REMAIN

VACATED COMCAST
CABLE TV CONDUIT

ABANDONED 8' DIAMETER CONCRETE TUNNEL
INVERT ELEVATION ±530.94
BULKHEADED AND FILLED (CONTRACT 60W36)
TO REMAIN

	3618+50	3619+00	3619+50	3620+00	3620+50	3621+00
EX PGL EL	581.16	577.96	576.25	576.05	576.32	576.65
PR PGL EL	577.15	576.48	576.04	576.01		

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

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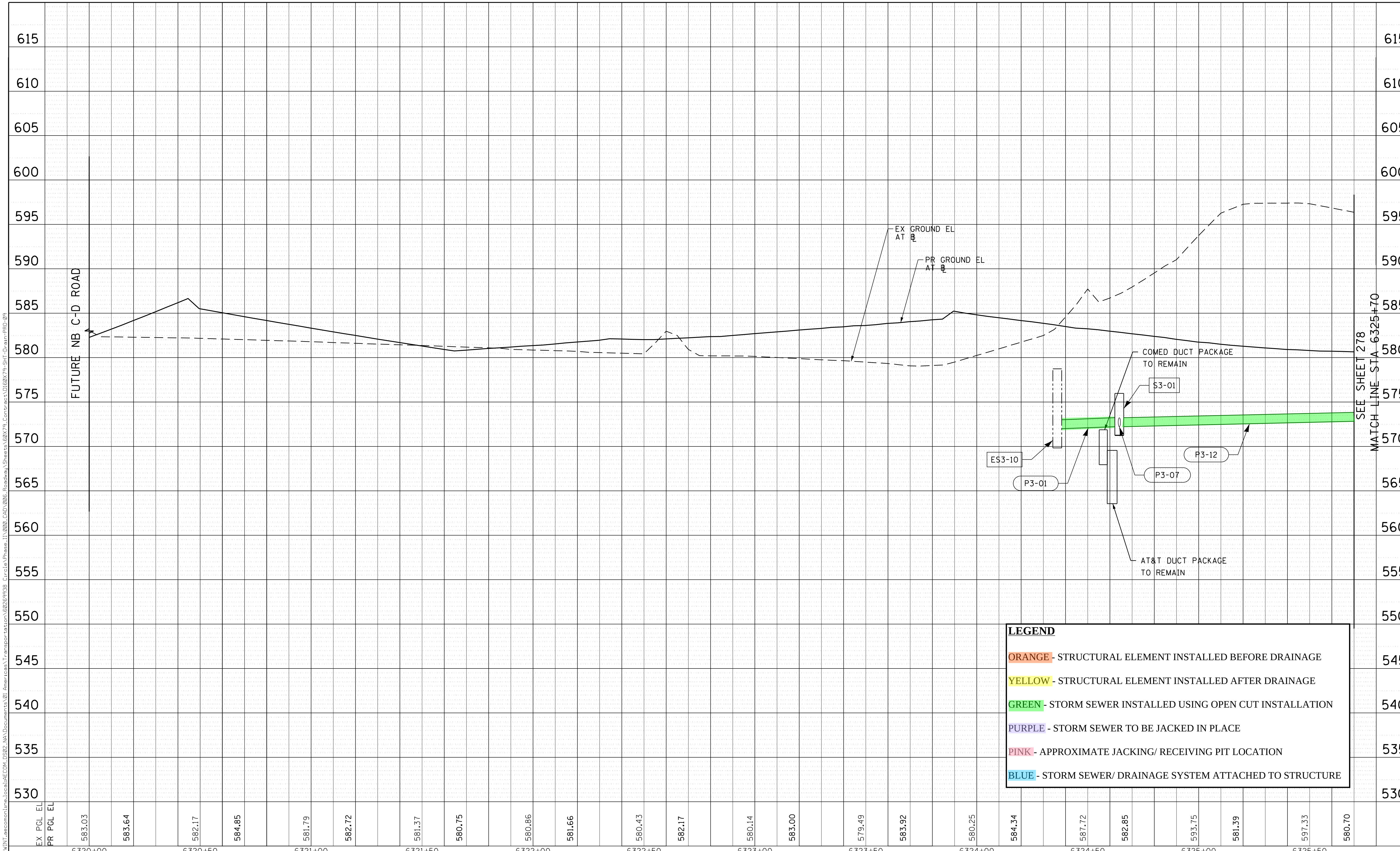
D160X79-SHT-Drain-PRO-05.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PROFILE
RAMP EN

SCALE: 1"=20' | SHEET 5 OF 11 SHEETS | STA.3618+50 TO STA.3621+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	276
		CONTRACT NO. 60X79		
		ILLINOIS FED. AID PROJECT		



615
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545
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535
530
FUTURE NB C-D ROAD
EX GROUND EL AT ℄
PR GROUND EL AT ℄
COMED DUCT PACKAGE TO REMAIN
S3-01
ES3-10
P3-01
P3-07
P3-12
AT&T DUCT PACKAGE TO REMAIN
SEE SHEET 278
MATCH LINE STA 6325+70
LEGEND
ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE
GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION
PURPLE - STORM SEWER TO BE JACKED IN PLACE
PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION
BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE
EX PGL EL
PR PGL EL
583.03
583.64
582.17
584.85
581.79
582.72
581.37
580.75
580.86
581.66
580.43
582.17
580.14
583.00
579.49
583.92
580.25
584.34
587.72
582.85
593.75
581.39
597.33
580.70
6320+00
6320+50
6321+00
6321+50
6322+00
6322+50
6323+00
6323+50
6324+00
6324+50
6325+00
6325+50

DI60X79-SHT-Drain-PRO-09	DESIGNED - MRC	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
USER NAME = mkwilson	DRAWN - MRC	REVISED -	
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -	
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -	

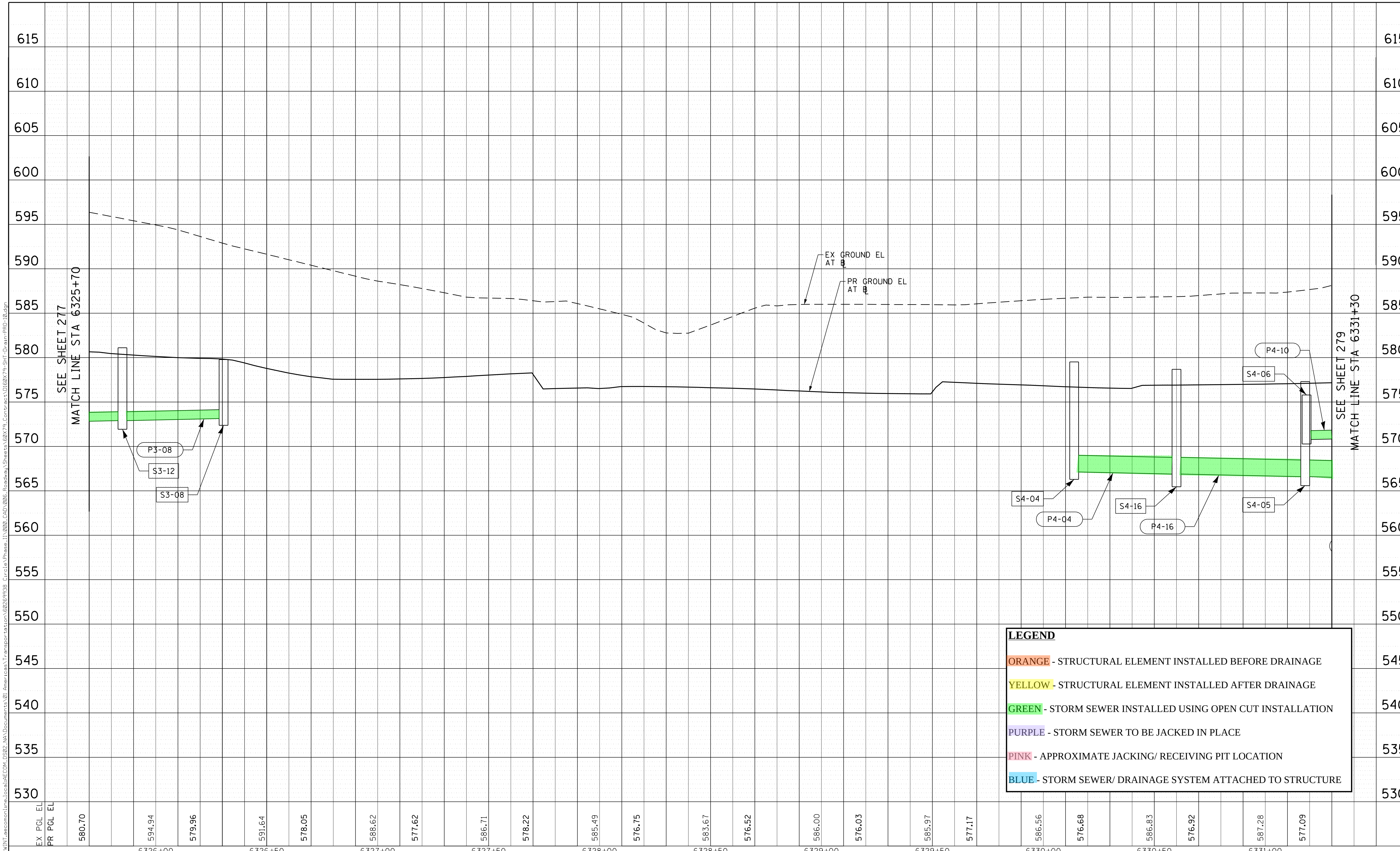
DRAINAGE AND UTILITIES PROFILE
FUTURE NB C–D ROAD

SCALE: 1"=20' | SHEET 6 OF 11 SHEETS | STA.6320+00 TO STA.6325+70

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	277

CONTRACT NO. 60X79

ILLINOIS FED. AID PROJECT



D160X79-SHT-Drain-PRO-10.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PROFILE
FUTURE NB C-D ROAD

SCALE: 1"=20' | SHEET 7 OF 11 SHEETS | STA.6325+70 TO STA.6331+30

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	278

CONTRACT NO. 60X79

ILLINOIS FED. AID PROJECT

PLAN: SURVEYED / PLOTTED / ALIGNMENT CHECKED / R/W OF WAY CHECKED / CADD FILE NAME — NOTE BOOK NO. — BY — DATE

PROFILE: SURVEYED / PLOTTED / GRADES CHECKED / STA. NOTED / STRUCTURE NOTATNS CHKD — NOTE BOOK NO. — BY — DATE

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SEE SHEET 278
MATCH LINE STA 6331+30

SEE SHEET 280
MATCH LINE STA 6336+90

VAN BUREN ST

IDOT ELECTRICAL CONDUIT TO REMAIN

IDOT ELECTRICAL CONDUIT TO REMAIN

PR GROUND EL AT ℄

EX GROUND EL AT ℄

VACATED COMCAST CABLE TV CONDUIT

IDOT ELECTRICAL CONDUIT TO REMAIN

IDOT ELECTRICAL CONDUIT TO REMAIN

IDOT ELECTRICAL CONDUIT TO REMAIN

ABANDONED 5' DIAMETER WATER TUNNEL INVERT ELEVATION ±566.69 TO REMAIN

IDOT ELECTRICAL CONDUIT TO REMAIN

S4-10

S5-0

EX 36" STORM SEWER

EX SIPHON TO REMAIN

P4-05

EXISTING ACCESS CHAMBER SEE DRAINAGE DETAILS

JUNCTION CHAMBER NO. 1 SEE DRAINAGE DETAILS

P4-11

S4-11

P5-01

S5-01

P5-03

S5-03

P5-05

ABANDONED 8' DIAMETER CONCRETE TUNNEL INVERT ELEVATION ±530.94 BULKHEADED AND FILLED (CONTRACT 60W36) TO REMAIN

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

	615	610	605	600	595	590	585	580	575	570	565	560	555	550	545	540	535	530
EX PGL EL																		
PR PGL EL																		
589.62																		
577.32																		
590.43																		
577.63																		
591.80																		
577.75																		
593.04																		
596.41																		
584.98																		
583.20																		
582.76																		
581.52																		
580.35																		
580.17																		
	6331+50	6332+00	6332+50	6333+00	6333+50	6334+00	6334+50	6335+00	6335+50	6336+00	6336+50							

PLAN
SURVEYED
PLOTTED
PROJECT CHECKED
R.O.W. CHECKED
NOTE BOOK
NO. ____

PROFILE
SURVEYED
PLOTTED
PROJECT CHECKED
BM. NOTED
NOTE BOOK
NO. ____
STRUCTURE NOTATNS CHKD

BY | DATE

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D160X79-SHT-Drain-PRO-11.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PROFILE
FUTURE NB C–D ROAD

SCALE: 1"=20' | SHEET 8 OF 11 SHEETS | STA.6325+70 TO STA.6336+90

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	279
		CONTRACT NO. 60X79		
	ILLINOIS FED. AID PROJECT			

SEE SHEET 279
MATCH LINE STA 6336+90

JACKSON BLVD

EX GROUND EL AT ℄

FUTURE NB C-D ROAD

EX 36" STORM SEWER

S5-07
P5-07
S5-08
P5-09
P5-08
S5-05

615 610 605 600 595 590 585 580 575 570 565 560 555 550 545 540 535 530

	6337+00	6337+50	6338+00	6338+50	6339+00	6339+50	6340+00
EX PGL EL	579.80	583.46	593.58	594.28	578.66	578.38	575.15
PR PGL EL							

LEGEND

ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE

YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE

GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION

PURPLE - STORM SEWER TO BE JACKED IN PLACE

PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION

BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE

PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
CADD FILE NAME
NOTE BOOK
NO. ____
BY
DATE

PROFILE
SURVEYED
PLOTTED
GRADE CHECKED
BM. NOTED
STRUCTURE NOTATNS CHKD
NOTE BOOK
NO. ____
BY
DATE

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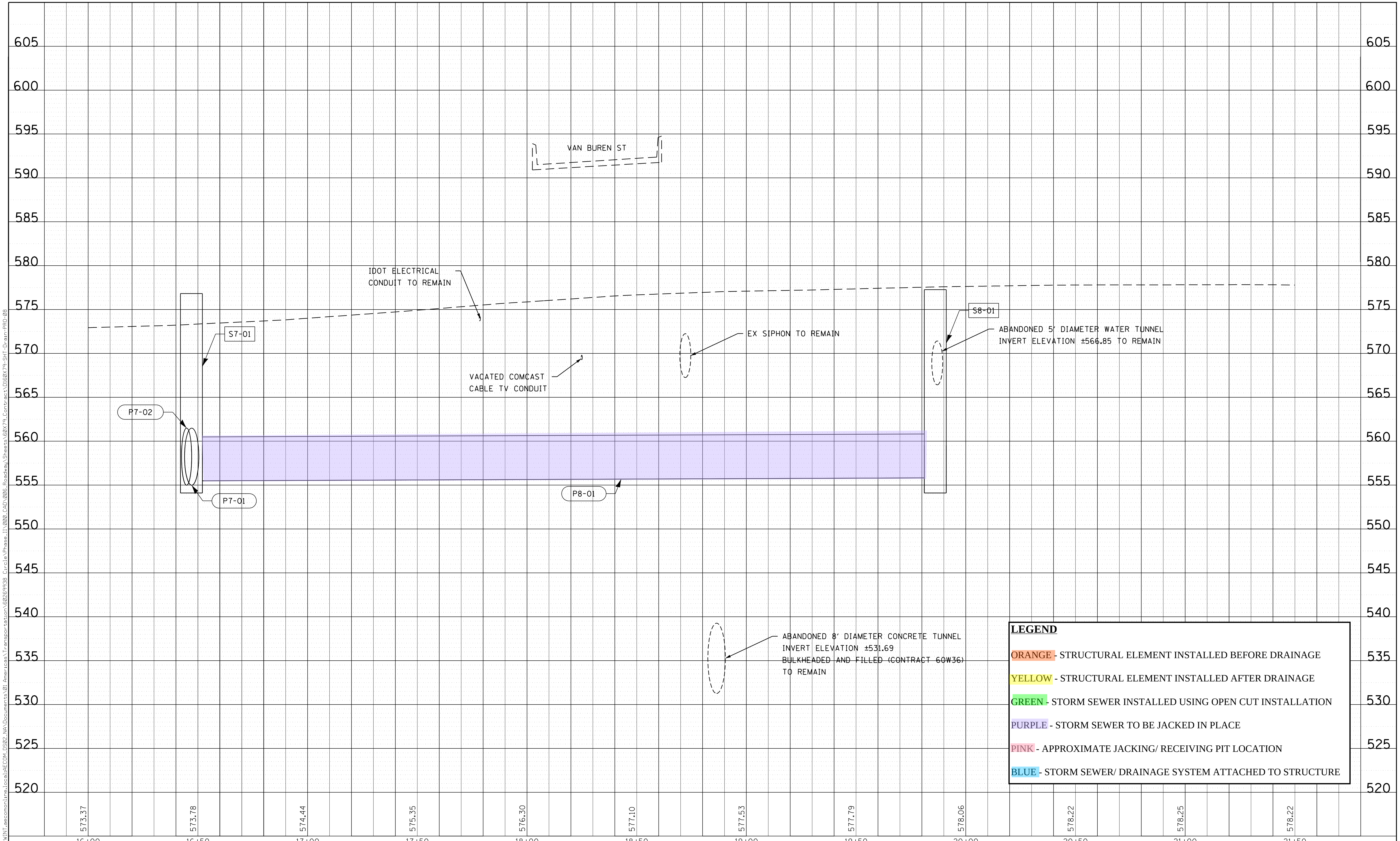
D160X79-SHT-Drain-PRO-12.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PROFILE
FUTURE NB C-D ROAD

SCALE: 1"=20' | SHEET 8 OF 11 SHEETS | STA.6336+90 TO STA.6340+00

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	280
		CONTRACT NO. 60X79		
	ILLINOIS	FED. AID PROJECT		



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520
VAN BUREN ST
IDOT ELECTRICAL
CONDUIT TO REMAIN
S7-01
S8-01
EX SIPHON TO REMAIN
ABANDONED 5' DIAMETER WATER TUNNEL
INVERT ELEVATION ±566.85 TO REMAIN
VACATED COMCAST
CABLE TV CONDUIT
P7-02
P7-01
P8-01
ABANDONED 8' DIAMETER CONCRETE TUNNEL
INVERT ELEVATION ±531.69
BULKHEADED AND FILLED (CONTRACT 60W36)
TO REMAIN
LEGEND
ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE
GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION
PURPLE - STORM SEWER TO BE JACKED IN PLACE
PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION
BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE
573.37
573.78
574.44
575.35
576.30
577.10
577.53
577.79
578.06
578.22
578.25
578.22
16+00
16+50
17+00
17+50
18+00
18+50
19+00
19+50
20+00
20+50
21+00
21+50

D160X79-SHT-Drain-PRO-08	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

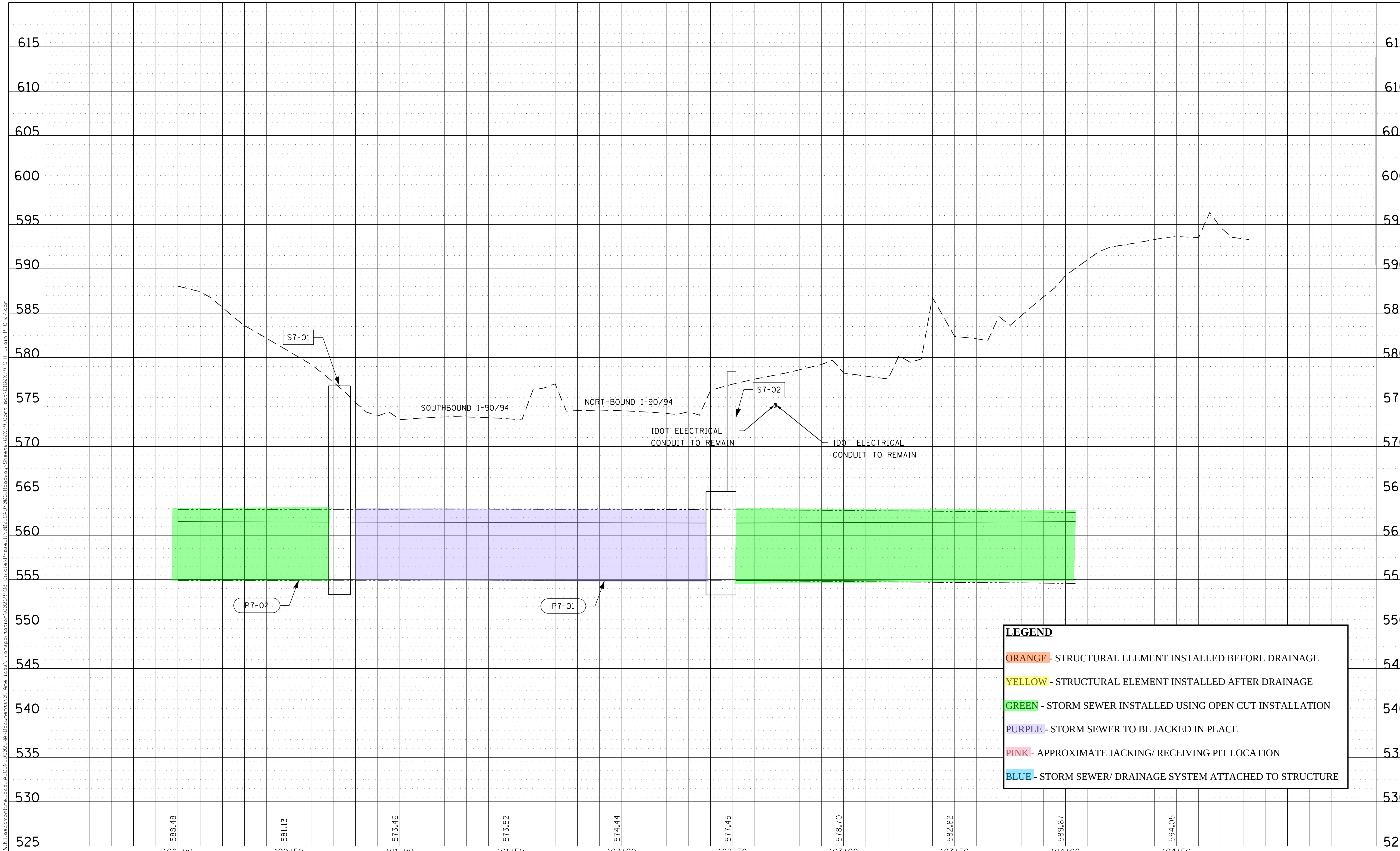
DRAINAGE AND UTILITIES PROFILE
SB I-90/94

SCALE: 1"=20' | SHEET 10 OF 11 SHEETS | STA. 16+00 TO STA. 21+50

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	281

CONTRACT NO. 60X79

ILLINOIS FED. AID PROJECT



615
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535
530
525
S7-01
S7-02
SOUTHBOUND I-90/94
NORTHBOUND I-90/94
IDOT ELECTRICAL CONDUIT TO REMAIN
IDOT ELECTRICAL CONDUIT TO REMAIN
P7-02
P7-01
LEGEND
ORANGE - STRUCTURAL ELEMENT INSTALLED BEFORE DRAINAGE
YELLOW - STRUCTURAL ELEMENT INSTALLED AFTER DRAINAGE
GREEN - STORM SEWER INSTALLED USING OPEN CUT INSTALLATION
PURPLE - STORM SEWER TO BE JACKED IN PLACE
PINK - APPROXIMATE JACKING/ RECEIVING PIT LOCATION
BLUE - STORM SEWER/ DRAINAGE SYSTEM ATTACHED TO STRUCTURE
588.48
581.13
573.46
573.52
574.44
577.45
578.70
582.82
589.67
594.05
100+00
100+50
101+00
101+50
102+00
102+50
103+00
103+50
104+00
104+50

TranSystems

D160X79-SHT-Drain-PRO-07.dgn	DESIGNED - MRC	REVISED -
USER NAME = mkwilson	DRAWN - MRC	REVISED -
PLOT SCALE = 40.0000 ' / in.	CHECKED - JMG	REVISED -
PLOT DATE = 7/30/2018	DATE - 7-30-2018	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES PROFILE
PR 78" MAIN DRAIN

SCALE: 1"=20' | SHEET 11 OF 11 SHEETS | STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
90/94/290	2014-005R&B	COOK	888	282

CONTRACT NO. 60X79

ILLINOIS FED. AID PROJECT