# Structural Geotechnical Report

## Overhead Sign and Traffic Signal Structures Report

I-55 at IL 59 Diverging Diamond Interchange
IDOT PTB 189-011
Will County, Illinois

Prepared for

Illinois Department of Transportation (IDOT)
Contract Number: D-91-368-18

Project Design Engineer Team
Alfred Benesch & Company

Geotechnical Consultant:
GSG Consultants, Inc.

February 12, 2020

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February 12, 2020

Mr. Kurt Naus, P.E., S.E.
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Structural Geotechnical Report
IL 59 northbound over IL-55
Overhead Sign and Traffic Signal Structures Report
Contract Number: 189-011

Dear Mr. Naus:

Attached is a copy of the Structural Geotechnical Report for the above referenced project. This report provides a brief description of the site investigation, site conditions and foundation recommendations for the overhead sign and traffic signal structures. The Phase II site investigation included advancing thirty (30) soil borings to depths ranging from 13.0 to 43.0 feet. Wang Engineering completed ten (10) soil borings in Phase I investigation.

Should you have any questions or require additional information, please call us at 630-994-2600.

Sincerely,

Suhaib Ibrahim
Project Engineer

Ala E Sassila, Ph.D., P.E.
Principal

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## 1.0 INTRODUCTION

GSG Consultants, Inc. (GSG) completed a geotechnical investigation for the design of fifteen (15) overhead sign structures and five (5) traffic signal structures that will be constructed as part of the IL 59 Improvements Project (IDOT PTB 189-011). The purpose of the investigation was to explore and characterize the subsurface soil and groundwater conditions to determine engineering properties of the subsurface soil and develop design and construction recommendations for the project. **Figure 1** shows the project location map and overall project limits.

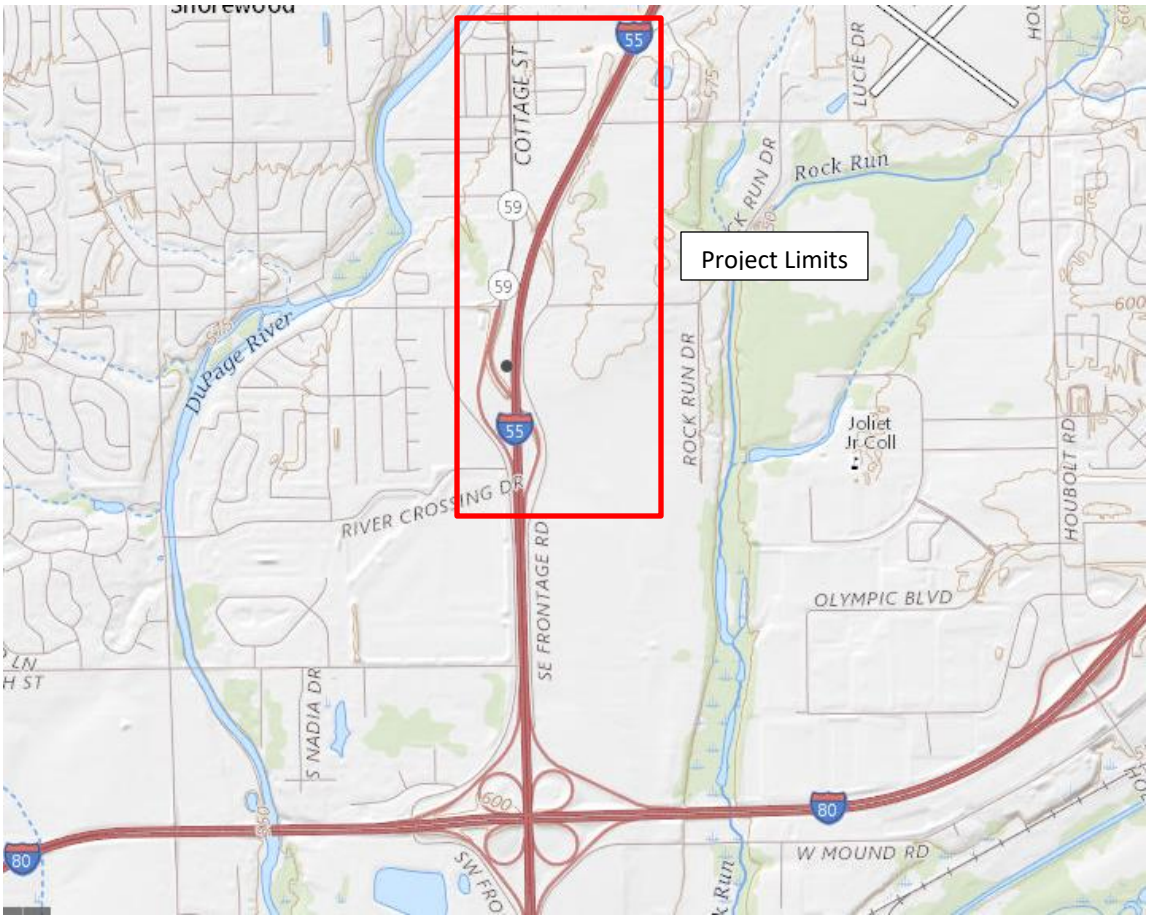



**Figure 1 - Project Location Map**

**(Source: USGS Topographic Maps, usgs.gov)**

## 1.1 Project Information

The general scope of the overall project is the conversion of a partial access interchange to a full access interchange at I-55 and IL 59. This will include the construction a Diverging Diamond Interchange (DDI) and associated auxiliary lanes at the intersection of I-55 and IL 59. Two new ramps are proposed for the new interchange; Ramp D to provide access from I-59 to I-55 southbound, and Ramp C to provide access from I-55 to IL-59. An auxiliary lane between IL 59 and US 52 along I-55 is also proposed in each direction along the mainline. In proximity to the DDI, the existing I-55 East Frontage Road will be realigned further east. This report pertains to overhead sign and traffic signal structures which will be located across the project area.

## 1.2 Regional Geology

GSG reviewed several published documents to determine the regional geological setting in the area of the site. The site is in western Will County, near Shorewood, Illinois. The surficial geologic deposits in this area are typically glacial drift deposited during the Wisconsin Glacial Age and river sediments deposited by the Des Plaines River. The subsurface profile in the area of the site consists of deposits of silty clay, sand, silt, and gravel extending to depths of approximately 20 to 60 feet below ground surface, at which point bedrock is generally encountered. Deposits in the area of the site are primarily from the Yorkville Member of the Lemont Formation of the Wedron Group deposited during the Wisconsin Period. The Lemont Formation typically consists of calcareous, gray, fine to coarse textured diamiction units (silty clay to sandy loam) that contain lenses of gravel, sand, silt, and clay. Underlying the surficial deposits, the bedrock consists of the Silurian System, Niagaran Series, which consist of dolomite that varies from extremely argillaceous, silty and cherty to exceptionally pure.

## 2.0 SITE SUBSURFACE EXPLORATION PROGRAM

This section describes the subsurface exploration program and laboratory testing program completed as part of this project during the Phase II investigation. The proposed locations and depths of the soil borings were selected in accordance with IDOT requirements and review with Benesch for available design information at the time of the field activities. The borings were completed in the field based on field conditions and accessibility. Overhead sign borings performed by Wang Engineering in Phase I investigation are also included and used in our analysis.

### 2.1 Subsurface Site Investigation

Wang Engineering completed ten (10) overhead sign borings during the Phase I investigation of this project. Phase II soil borings were completed by GSG between November 11, 2019 and December 10, 2020. The Phase II exploration program included advancing nineteen (19) standard penetration test (SPT) borings at the proposed overhead sign structure locations and three (3) borings at the proposed traffic signal structure locations. The as-drilled locations of the soil borings are shown on the Soil Boring Location Map and Subsurface Profile (**Appendix A**). **Table 1a** present the list of borings for overhead sign structures and **Table 1b** for the mast arm traffic signal structures. Borings drilled near the proposed traffic signal structures completed for nearby bridges, retaining walls, culverts and subgrade locations are also included for analysis.

**Table 1a – Summary of Subsurface Exploration for Sign Structures**

| Station | Structure Type | Boring ID | Location | Boring Depth (feet) | Existing Ground Elevation (feet) | Bedrock Depth (feet) |
|---|---|---|---|---|---|---|
| 219+00 | Overhead Sign Structure | OHS-01 | I-55 NB | 15.5 | 588.4 | 15.5 |
| | | OHS-02 | | 19.0 | 588.0 | 19.0 |
| 234+00 | Overhead Sign Structure | OHS-03 | I-55 NB | 13.0 | 588.2 | 11.0 |
| | | OHS-04 | | 16.0 | 589.0 | 13.5 |
| 8025+70 | Overhead Sign Structure | OHS-05 | IL-59 NB | 15.5 | 585.4 | 15.5 |
| | | OHS-06 | | 16.5 | 585.8 | 16.5 |
| 1201+85 | Cantilever Sign Structure | OHS-07 | I-55 Ramp B | 46.0 | 615.0 | 43.0 |
| 1002+20 | Overhead Sign Structure | OHS-08 | I-55 Ramp A | 23.5 | 596.0 | 23.5 |
| | | RWB-07 | | 23.5 | 595.3 | 23.0 |
| 8005+40 | Overhead Sign Structure | OHS-09 | IL-59 NB | 32.5 | 607.6 | 31.0 |
| | | OS-04** | | 31.5 | 607.1 | 31.5 |
| 7005+15 | Overhead Sign Structure | OHS-10 | IL-59 SB | 20.0 | 592.1 | 20.0 |
| | | OS-03** | | 16.5 | 590.7 | 16.5 |

| Station | Structure Type | Boring ID | Location | Boring Depth (feet) | Existing Ground Elevation (feet) | Bedrock Depth (feet) |
|---|---|---|---|---|---|---|
| 306+00 | Cantilever Sign Structure | OHS-11 | I-55 SB | 33.5 | 596.2 | 33.5 |
| 315+00 | Overhead Sign Structure | OHS-12 | I-55 SB | 40.0 | 601.0 | 39.0 |
| | | OHS-13 | | 40.0 | 599.7 | 40.0 |
| 367+00 | Overhead Sign Structure | OHS-14 | I-55 SB | 22.5 | 580.0 | 22.5 |
| | | OHS-15 | | 19.0 | 579.0 | 19.0 |
| 410+00 | Overhead Sign Structure | OHS-16 | I-55 SB | 24.0 | 584.0 | 20.0 |
| | | OHS-17 | | 18.5 | 582.0 | 18.0 |
| 291+00 | Overhead Sign Structure | OS-01** | I-55 SB | 27.5 | 592.0 | 27.5 |
| | | OS-01A** | | 41.0* | 597.2 | 31.0 |
| 8014+35 | Overhead Sign Structure | OS-08** | I-55 NB | 21.5 | 595.5 | 21.5 |
| | | OS-08A** | | 21.0 | 594.6 | 21.0 |
| 808+45 | Overhead Sign Structure | OS-10** | I-55 NB | 20.6 | 586.3 | 20.6 |
| | | OS-11** | | 24.0 | 588.6 | 24.0 |
| 250+65 | Overhead Sign Structure | OS-14** | I-55 NB | 34.0* | 590.9 | 25.0 |
| | | OS-15** | | 24.7 | 590.5 | 24.7 |
| 355+50 | Overhead Sign Structure | OHS-18 | I-55 SB | 24.0* | 579.4 | 9.0 |
| | | OHS-19 | | 8.5 | 574.9 | 7.0 |

*Boring depth includes bedrock core

**Phase I boring completed by Wang Engineering

**Table 1b – Summary of Subsurface Exploration for Mast Arm Traffic Signal Structures**

| Location | Structure No. | Boring ID | Depth (feet) | Existing Ground Elevation (feet) | Bedrock Depth (feet) |
|---|---|---|---|---|---|
| IL-59 & Seil Road | M10 | TSP-1 | 40.0 | 608.0 | na |
| | M11 | TSP-2 | 40.0 | 609.8 | na |
| | M9 | CB-01 | 40.0 | 588.0 | na |
| West DDI | M4 | TSP-3 | 20.5 | 600.0 | 20.5 |
| | M2 | SGB-125 | 25.0 | 614.0 | na |
| | M3 | SGB-127 | 25.0 | 619.0 | na |
| | M1 | SGB-171 | 23.5 | 595.0 | na |
| East DDI | M6 | SGB-83 | 15.0 | 605.7 | na |
| | M5 | SGB-85 | 15.0 | 609.9 | na |
| | M7 | BSB-01 | 20.5 | 591.5 | 20.5 |

The soil borings completed by GSG were drilled using truck and ATV mounted Diedrich D-50 drill rig using 3¼-inch I.D. hollow stem augers and an automatic hammer. Soil sampling was performed according to AASHTO T 206, "Penetration Test and Split Barrel Sampling of Soils." Soil samples were obtained at 2.5-foot intervals to the boring termination depths. Water level measurements were made in each boring when evidence of free groundwater was detected on the drill rods or in the samples. The boreholes were also checked for free water immediately after auger removal, and before filling the open boreholes with soil cuttings.

GSG's field representative inspected, visually classified and logged the soil samples during the subsurface exploration activities and performed unconfined compressive strength tests on cohesive soil samples using a calibrated Rimac compression tester and a calibrated hand penetrometer in accordance with IDOT procedures and requirements. Representative soil samples collected from each sample interval, were placed in jars and were returned to the laboratory for further testing and evaluation.

Bedrock coring was performed at Boring OHS-18 using rotary method drilling procedures with a 5-foot or 10-foot, diamond bit, NX split core barrel in accordance with ASTM D2113. The collected bedrock core was evaluated in the field for texture, physical condition, recovery percentage, Rock Quality Designation (RQD), and field hardness.

### 2.2 Laboratory Testing Program

All samples were inspected in the laboratory to verify the field classifications. A laboratory testing program was undertaken to characterize and determine engineering properties of the subsurface soils encountered in the area of the proposed sign and signal structures. The following laboratory tests were performed on representative soil samples:

- Moisture content ASTM D2216 / AASHTO T-265
- Atterberg Limits ASTM D4318 / AASHTO T-89 / AASHTO T-90
- Dry Unit Weight ASTM D7263
- Unconfined Compressive Strength on Rock ASTM D2938

The laboratory tests were performed in accordance with test procedures outlined in the IDOT Geotechnical Manual (2015), and per ASTM and AASHTO requirements. Based on the laboratory test results, the soils encountered were classified according to the AASHTO and the Illinois Division of Highways (IDH) classification systems. The results of the laboratory testing program

are shown along with the field test results in **Appendix B Soil Boring Logs** and **Appendix C Laboratory Test Results**.

The extracted bedrock cores were visually inspected, classified and the Rock Quality Designation (RQD) was determined according to ASTM D 6032, "Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core" and as per the IDOT geotechnical manual by totaling all sections with a length in excess of four inches (4") and dividing it by the total length of the core run. The RQD is given a classification based upon the numeric value as indicated in **Table 2**. Photographs of the rock cores are included with the soil boring in **Appendix B**.

**Table 2 - Rock Quality Designation**

| Rock Quality Designation | Descriptions |
|---|---|
| < 25% | Very Poor |
| 25 – 50% | Poor |
| 51 – 75% | Fair |
| 76 – 90% | Good |
| 91 – 100% | Excellent |

**Table 3** provides a summary of the RQD values and unconfined compressive strength values of the rock cores extracted during the site investigation. Photographs of the rock cores are included with the Soil Boring Logs (**Appendix C**).

**Table 3 – Rock Core Summary and Classification**

| Boring Number | Core Run | Core Depth (feet) | Type of Rock | RQD (%) | RQD Classification | Depth (ft)/ Unconfined Compression Strength (psi) |
|---|---|---|---|---|---|---|
| OHS-18 | 1 | 9.0-19.0 | Limestone | 41.7 | Poor | 17.0-17.5 / 17,661 |
| | 2 | 19.0-24.0 | Limestone | 35.0 | Poor | 23.0-23.5 / 10,691 |

## 2.3 Subsurface Soil Conditions

This section provides a brief description of the soils encountered in the borings performed in the vicinity of the proposed structures. Variations in the general subsurface soil profile were noted during the drilling activities. Detailed descriptions of the subsurface soils are provided in the Soil Boring Logs (**Appendix B**). The soil boring logs provide specific conditions encountered at each boring location, including soil descriptions, stratifications, penetration resistance, elevations, location of the samples, water levels (when encountered), and laboratory test data. Variations in the general subsurface soil profile were noted during the drilling activities. The stratifications

shown on the boring logs represent the conditions only at the actual boring locations and represent the approximate boundary between subsurface materials; however, the actual transition may be gradual.

### 2.3.1 Overhead Sign Structure, Sta. 219+00 I-55 NB (OHS-01 and OHS-02)

Boring OHS-01 was completed in the shoulder of I-55 northbound. The boring encountered 2 inches of topsoil underlain by silty clay fill to a depth of 11 feet. Below the topsoil layer and fill, the boring encountered stiff, gray silty clay to the boring termination depth at 15.5 feet upon auger refusal on apparent bedrock. The stiff silty clay had unconfined compressive strength values between 1.8 and 2.0 tsf. The soil color changed from brown and gray to gray at a depth of 11.0 feet.

Boring OHS-02 was completed in the median of I-55. The boring encountered 16 inches of asphalt, underlain by sand and gravel fill to a depth of 6 feet, followed by silty clay fill to a depth of 8.5 feet. Below the pavement and fill, the boring encountered very stiff to hard, silty clay to the boring termination depth at 19.0 feet upon auger refusal on apparent bedrock. The very stiff to hard silty clay had unconfined compressive strength value between 2.5 and 6.0 tsf. The soil color changed from brown and gray to gray at a depth of 11.0 feet.

### 2.3.2 Overhead Sign Structure, Sta. 234+00 I-55 NB (OHS-03 and OHS-04)

Boring OHS-03 was completed in the shoulder of I-55 northbound. The boring encountered 3 inches of topsoil underlain by silty clay fill to a depth of 1.5 feet. Below the topsoil layer and fill, the boring encountered very stiff silty clay to a depth of 11.0 feet with a layer of medium dense sand at depths between 6.0 and 8.0 feet. The boring then encountered highly weathered limestone at depths between 11.0 and 13.0 feet and the boring was terminated upon auger refusal within the bedrock. The very stiff silty clay had unconfined compressive strength values between 2.3 and 4.0 tsf, and the medium dense sand had an SPT N value of 11 blows per foot. The soil color changed from brown and gray to gray at a depth of 8.0 feet.

Boring OHS-04 was completed in the median of I-55. The boring encountered 17 inches of asphalt and 4 inches of aggregate base course underlain by sand and gravel fill to a depth of 3.5 feet followed by silty clay fill to a depth of 8.5 feet. Below the pavement and fill, the boring encountered very stiff to hard, silty clay to a depth of 13.0 feet. The boring then encountered highly weathered limestone at depths between 13.0 and 16.0 feet where the boring was terminated upon refusal within the bedrock. The very stiff to hard silty clay had unconfined

compressive strength values between 3.1 and 4.2 tsf. The soil color changed from brown and gray to gray at a depth of 11.0 feet.

### 2.3.4 Overhead Sign Structure at IL 59 (DDI NB), Sta. 8025 +70 (OHS-05 and OSH-06)

Boring OHS-05 was completed in the shoulder of Ramp B. The boring encountered 8 inches of topsoil underlain by medium stiff to very stiff silty clay to the boring termination depth at 15.5 feet upon auger refusal on apparent bedrock. The medium stiff to very stiff silty clay had unconfined compressive strength values between 0.8 and 2.9 tsf. The soil color changed from brown and gray to gray at a depth of 9.5 feet.

Boring OHS-06 was completed in the shoulder of Ramp B. The boring encountered 7 inches of topsoil underlain by very stiff to hard silty clay to the boring termination depth at 16.5 feet upon auger refusal on apparent bedrock. The very stiff to hard silty clay had unconfined compressive strength values between 3.3 and 6.0 tsf. The soil color changed from brown and gray to gray at a depth of 8.5 feet.

### 2.3.5 Cantilever Sign Structure Sign Structure at I-55 Entrance Ramp B from SB DDI, Sta. 1201+85 (OHS-07)

Boring OHS-07 was completed in the shoulder of IL 59 southbound. The boring encountered 9 inches of asphalt underlain by silty clay fill to depth of 6.5 feet. Silty clay loam was encountered at depths between 6.5 and 19.0 feet. The boring then noted medium stiff to hard silty clay at depths between 19.0 and 43.0 feet, followed by highly weathered limestone at depths between 43.0 and 46.0 where the boring was terminated upon auger refusal on bedrock. The medium stiff to hard silty clay had unconfined compressive strength values between 0.8 and 4.5 tsf. The soil color changed from brown and gray to gray at a depth of 33.0 feet.

### 2.3.6 Overhead Sign Structure at I-55 SB Exit Ramp A to DDI, Sta. 1002+20 (OHS-08 and RWB-07)

Boring OHS-08 was completed in the shoulder of IL 59 southbound. The boring encountered 6 inches of topsoil underlain by silty clay fill to a depth of 16.0 feet and very stiff silty clay to the termination depth of 23.5 feet upon auger refusal on apparent bedrock. The very stiff silty clay had unconfined compressive strength values between 2.9 and 3.3 tsf. The soil color changed from brown and gray to gray at a depth of 16.0 feet.

Boring RWB-07 was completed east of the shoulder of IL 59 southbound. The boring encountered 6 inches of topsoil underlain by silty clay fill to depth of 3.5 feet. Soft to hard silty clay was encountered at depths between 3.5 and 18.5 feet. The boring then noted medium dense silty loam at depths between 18.5 and 21.0 feet, followed by dense sand and gravel to the boring termination depth of 23.5 feet upon auger refusal on apparent bedrock. The soft to hard silty clay had unconfined compressive strength values between 0.8 and 6.7 tsf, with most values between 3.5 and 6.7 tsf. The soil color changed from brown and gray to gray at a depth of 11.0 feet.

### 2.3.7 Overhead Sign Structure at IL 59 (DDI NB), Sta. 8005+40 (OHS-09 and OS-04)

Boring OHS-09 was completed in the east shoulder of IL 59 northbound. The boring encountered 6 inches of asphalt underlain by sand and gravel fill to a depth of 4.0 feet, followed by silty clay fill to a depth of 14.5 feet. Very stiff silty clay was encountered at depths between 14.5 and 31.0 feet. Highly weathered limestone was encountered at depths between 31.0 and 32.5 feet. The boring was terminated at 32.5 feet upon auger refusal on bedrock. The very stiff silty clay had unconfined compressive strength values between 2.1 and 4.0 tsf. The soil color changed from brown and gray to gray at a depth of 26.0 feet.

Boring OS-04 was completed in the west shoulder of IL 59 northbound. The boring encountered around 2 inches of topsoil underlain by silty clay loam fill to a depth of 3.5 feet. Stiff to hard silty clay and clay were encountered at depths between 3.5 and 21.5 feet, followed by a layer of loose to medium dense sandy gravel at depths between 21.5 and 25.5 feet. Hard silty clay was encountered at depths between 25.5 and 31.2 feet. The boring was terminated at 31.2 feet upon auger refusal on apparent bedrock. The stiff to hard silty clay and clay had unconfined compressive strength values between 1.7 and 5.7 tsf, with most values between 2.5 and 4.5 tsf. The loose to medium dense sandy gravel had SPT N values between 7 and 16 blows per foot. The soil color changed from brown and gray to gray at a depth of 25.5 feet.

### 2.3.8 Overhead Sign Structure at IL 59 (DDI SB), Sta. 7005+15 (OHS-10 and OS-03)

Boring OHS-10 was completed off the west shoulder of IL 59 southbound. The boring encountered 6 inches of topsoil underlain by silty clay fill to a depth of 11.0 feet. Very stiff silty clay was encountered at depths between 11.0 and 16.0 feet. Silty clay with limestone fragments was encountered at depths between 16.0 and 20.0 feet. The boring was terminated at 20.0 feet upon auger refusal on apparent bedrock. The very stiff silty clay had unconfined compressive

strength values between 3.0 and 3.5 tsf. The soil color changed from brown and gray to gray at a depth of 11.0 feet.

Boring OS-03 was completed off the west shoulder of IL 59 southbound. The boring encountered around 6 inches of topsoil underlain by silty clay fill to a depth of 3.0 feet. Very stiff to hard silty clay, clay, and silty clay loam were encountered at depths between 3.0 and 16.0 feet, followed by a layer of very dense dolostone fragments at depths between 16.0 and 16.5 feet. The boring was terminated at 16.0 feet upon auger refusal on apparent bedrock. The very stiff to hard silty clay, clay, and silty clay loam had unconfined compressive strength values between 2.5 and 4.0 tsf. The soil color changed from brown and gray to gray at a depth of 16.0 feet.

### 2.3.9 Cantilever Sign Structure Sign Structure at I-55 SB, Sta. 306+00 (OHS-11)

Boring OHS-11 was completed in the shoulder of I-55 northbound. The boring encountered 3 inches of topsoil underlain by silty clay fill to a depth of 7.0 feet. Soft to hard silty clay was encountered at depths between 7.0 and 18.5 feet, followed by dense silty loam at depths between 18.5 and 23.5 feet. Stiff to very stiff silty clay was encountered at depths between 23.5 and 33.5 feet. The boring was terminated at 33.5 feet upon auger refusal on apparent bedrock. The soft to hard silty clay had unconfined compressive strength values between 0.4 and 4.5 tsf, with most values between 1.7 and 4.5 tsf. The dense silty loam had SPT N values between 34 and 35 blows per foot. The stiff to very stiff silty clay had unconfined compressive strength values between 1.0 and 2.5 tsf. The soil color changed from brown and gray to gray at a depth of 6.0 feet.

### 2.3.10 Overhead Sign Structure at I-55 SB, Sta. 315+00 (OHS-12 and OHS-13)

Boring OHS-12 was completed in median of I-55 southbound. The boring encountered 14 inches of asphalt underlain by sand and gravel fill to a depth of 3.5 feet, followed by silty clay fill to a depth of 6.0 feet. Very stiff to hard silty clay was encountered at depths between 6.0 and 21.5 feet. Dense to very dense silty loam was encountered at depths between 21.5 and 28.5 feet, followed by stiff to hard silty clay at depths between 28.5 and 39.0 feet. Weathered limestone was encountered between 39.0 and 40.0 feet and the boring was terminated at 40 feet. The very stiff to hard silty clay had unconfined compressive strength values between 3.8 and 5.5 tsf. The dense to very dense silty clay loam gravel had SPT N values between 44 and 68 blows per foot. The stiff to hard silty clay had unconfined compressive strength values between 1.9 and 6.5 tsf. The soil color changed from brown and gray to gray at a depth of 11.0 feet.

Boring OHS-13 was completed at the shoulder of I-55 southbound. The boring encountered 6 inches of topsoil underlain by silty clay fill to a depth of 16 feet. Very stiff silty clay was encountered at depths between 16.0 and 21.0 feet, followed by medium dense to extremely dense silty loam at depths between 21.0 and 40.0 feet. The boring was terminated at 40 feet. The very stiff to hard silty clay had unconfined compressive strength values between 3.1 and 3.3 tsf. The medium dense to extremely dense silty clay loam gravel had SPT N values between 20 and 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 16.0 feet.

### 2.3.11 Overhead Sign Structure at I-55 SB, Sta. 367+00 (OHS-14 and OHS-15)

Boring OHS-14 was completed in median of I-55 southbound. The boring encountered 14 inches of asphalt underlain by sand and gravel fill to a depth of 4.0 feet, followed by silty clay fill to a depth of 8.5 feet and sandy loam fill to a depth of 13.5 feet. Very stiff to hard silty clay and silty clay loam were encountered at depths between 13.5 and 22.5 feet. The boring was terminated at 22.5 feet upon auger refusal on apparent bedrock. The very stiff to hard silty clay and silty clay loam had unconfined compressive strength values between 3.0 and 5.5 tsf. The soil color changed from brown and gray to gray at a depth of 13.5 feet.

Boring OHS-15 was completed in the shoulder of I-55 southbound. The boring encountered 10 inches of asphalt and 5 inches of aggregate base course underlain by sand and gravel fill to a depth of 11.0 feet. Very stiff to hard silty clay was encountered at depths between 11.0 and 16.0 feet, followed by extremely dense sandy loam at depths between 16.0 and 19.0 feet. The boring was terminated at 19.0 feet upon auger refusal on apparent bedrock. The very stiff to hard silty clay had unconfined compressive strength values between 3.0 and 5.0 tsf. The extremely dense sandy loam had SPT N value of 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 11.0 feet.

### 2.3.12 Overhead Sign Structure at I-55 SB, Sta. 410+00 (OHS-16 and OHS-17)

Boring OHS-16 was completed in median of I-55 southbound. The boring encountered 14 inches of asphalt underlain by sand and gravel fill to a depth of 9.0 feet. Stiff to very stiff silty clay was encountered at depths between 9.0 and 20.0 feet, followed by highly weathered limestone at depths between 20.0 and 24.0 feet. The boring was terminated at 24.0 feet upon auger refusal. The stiff to very stiff silty clay had unconfined compressive strength values between 1.0 and 2.0 tsf. The soil color changed from brown and gray to gray at a depth of 13.5 feet.

Boring OHS-17 was completed at the shoulder of I-55 southbound. The boring encountered 10 inches of asphalt and 4 inches of aggregate base course underline by silty clay fill to a depth of 4.0 feet, followed by sand with gravel fill to a depth of 8.5 feet. Medium stiff to stiff silty clay was encountered at depths between 8.5 and 12.0 feet, followed by loose to medium dense sand with gravel at depths between 12.0 and 18.0 feet. Highly weathered limestone was encountered at depths between 18.0 and 18.5 feet. The boring was terminated at 18.5 feet upon auger refusal. The medium stiff to stiff silty clay had unconfined compressive strength values between 0.8 and 1.9 tsf. The loose to medium dense sand with gravel had SPT N values between 9 and 27 blows per foot.

### 2.3.13 Overhead Sign Structure at I-55 SB, Sta. 291+00 (OS-01 and OS-01A)

Boring OS-01 was completed in the shoulder of I-55 southbound. The boring encountered 5 inches of topsoil underlain by very stiff black clay to a depth of 5.0 feet. Very stiff to hard silty clay was encountered at depths between 5.0 and 24.5 feet with a layer of medium dense sandy gravel between depths of 9.0 and 11.5 feet, and layer of medium dense silt between depths of 15.5 and 19.0 feet. Dense gravel was encountered at depths between 24.5 and 27.0 feet. The boring was terminated at 27.0 feet upon auger refusal. The very stiff to hard silty clay had unconfined compressive strength values between 1.0 and 4.9 tsf. The medium dense sandy gravel had SPT N value of 18 blows per foot, and the medium dense silt had SPT N value of 20 blows per foot. The dense gravel had SPT N value of 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 15.5 feet.

Boring OS-01A was completed at the median of I-55 southbound. The boring encountered 14 inches of asphalt and 4 inches of aggregate base course underline by dense sandy gravel to a depth of 3.5 feet, followed by medium stiff to hard silty clay and silty clay loam to a depth of 18.0 feet. Medium dense silt and silty loam was encountered at depths between 18.0 and 31.0 feet, with a layer of very stiff silty clay between depths of 23.0 and 25.5 feet. The boring was terminated at 25.5 feet upon auger refusal on apparent bedrock. The dense sandy gravel had SPT N value of 36 blows per foot. The medium stiff to hard silty clay and silty clay loam had unconfined compressive strength values between 0.75 and 4.9 tsf. The loose to medium dense silt and silty loam had SPT N values between 18 and 32 blows per foot. The soil color changed from brown and gray to gray at a depth of 10.5 feet.

**2.3.14 Overhead Sign Structure at IL 59 DDI & I-55 NB Entrance Ramp from SB DDI, Sta. 8014+35 (OS-08 and OS-08A)**

Boring OS-08 was completed west of the I-55 southbound shoulder. The boring encountered 8 inches of topsoil. Very stiff to hard silty clay was then encountered to a depth of 20.0 feet, with a layer of medium dense silt at depths between 16.5 and 19.0 feet. Very dense sandy gravel was encountered at depths between 20.0 and 21.5 feet. The boring was terminated at 21.5 feet upon auger refusal on apparent bedrock. The very stiff to hard silty clay had unconfined compressive strength values between 1.6 and 4.5 tsf. The medium dense silt had SPT N value of 25 blows per foot. The very dense sandy gravel had SPT N value of 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 16.0 feet.

Boring OS-08A was completed west of the I-55 southbound shoulder. The boring encountered 10 inches of topsoil. Stiff to hard silty clay was then encountered to a depth of 16.5 feet. Medium dense sandy gravel was encountered at depths between 17.5 and 21.0 feet. The boring was terminated at 21.5 feet upon auger refusal. The stiff to hard silty clay had unconfined compressive strength values between 1.6 and 6.6 tsf. The medium dense sandy gravel had SPT N values between 29 and 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 17.0 feet.

**2.3.15 Overhead Sign Structure at I-55 NB and SB DDI, Sta. 808+45 (OS-10 and OS-11)**

Boring OS-10 was completed west of the existing I-55 northbound ramp to IL-59 southbound. The boring encountered 6 inches of topsoil, followed by very stiff to hard silty clay to a depth of 5.5 feet; medium dense to very dense sandy gravel, silt, and silty loam to a depth of 13 feet; very stiff clay to silty clay to a depth of 16.5 feet; and medium dense to very dense silty loam to the termination depth at 20.5 feet upon auger refusal. The very stiff to hard silty clay had unconfined compressive strength values between 2.2 and 5.3 tsf. The medium dense to very dense sandy gravel, silt, and silty loam had SPT N values between 17 and 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 16.0 feet.

Boring OS-11 was completed east of the shoulder of the existing I-55 northbound ramp to IL-59 southbound. The boring encountered 12 inches of topsoil underlain by medium dense to very dense sandy gravel, silty clay loam, and silty loam to a depth of 23.0 feet. Layers of very stiff silty clay were interbedded in the granular soils at depths between 3.5 and 5.0 feet and 14.0 and 18.5 feet. The boring was terminated at 18.5 feet upon auger refusal on apparent bedrock. The medium dense to very dense sandy gravel, silty clay loam, and silty loam had SPT N values

between 14 and 74 blows per foot. The very stiff silty clay layers had unconfined compressive strength values between 1.23 and 3.1 tsf. The soil color changed from brown and gray to gray at a depth of 14.0 feet.

### 2.3.16 Overhead Sign Structure at I-55 NB, Sta. 250+65 (OS-14 and OS-15)

Boring OS-14 was completed at the median of I-55 northbound. The boring encountered 14 inches of asphalt. Medium dense to very dense sandy gravel, sand, and silty loam were then encountered to a depth of 25.0 feet. The boring was terminated at 25.0 feet upon auger refusal on bedrock. The rock consisted of gray dolostone that was observed to be slightly weathered. One rock core was collected between depths of 25 and 34 feet with a RQD value of 50%. The medium dense to very dense sandy gravel, sand, and silty loam had SPT N values between 10 and 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 15.5 feet.

Boring OS-15 was completed at the shoulder of I-55 northbound. The boring encountered 6 inches of asphalt and 6 inches of concrete. Medium dense to very dense sandy gravel, sand, and silty loam were then encountered to a depth of 25.0 feet. The boring was terminated at 25.0 feet upon auger refusal on apparent bedrock. The medium dense to very dense sandy gravel, sand, and silty loam had SPT N values between 10 and 100 blows per foot. The soil color changed from brown and gray to gray at a depth of 20.5 feet.

### 2.3.17 Overhead Sign Structure at I-55 SB, Sta. 355+50 (OHS-18 and OHS-19)

Boring OHS-18 was completed at the median of I-55 northbound. The boring encountered 15 inches of asphalt. Under the pavement section, the boring encountered sand fill to a depth of 3.5 feet and silty clay fill to a depth of 9 feet and terminated upon encountering auger refusal on bedrock. The rock consisted of gray limestone that was observed to be moderately weathered. Rock cores were collected between depths of 9 and 19 feet and 19 and 24 feet, with RQD values of 41.7% and 35.0%, respectively. The sand fill had SPT N value of 41 bpf. The silty clay fill had unconfined compressive strength values between 1.5 and 3.0 tsf. The soil/rock color changed from brown and gray to gray at a depth of 9.0 feet.

Boring OHS-19 was completed at the grass area off the shoulder of I-55 southbound. The boring encountered 5 inches of topsoil, followed by silty clay fill to a depth of 3.5 feet, medium dense to dense sand to a depth of 7.0 feet, and highly weathered limestone to a depth of 8.5 feet. The boring was terminated in the weathered limestone upon encountering auger refusal. The silty clay fill had an unconfined compressive strength value of 1.0 tsf. The medium dense to dense

sand had SPT N values between 14 and 30 blows per foot. The soil/rock color changed from brown and gray to gray at a depth of 7.0 feet.

### 2.3.18 IL 59 at Seil Road Traffic Signal Structures

There are three proposed mast arm traffic signal posts at this intersection: M9 through M11 (**Appendix A**). Boring TSP-1 was drilled at the proposed M10 location and Boring TSP-2 at M11 location. No boring was drilled at M9 location and CB-01 adjacent to M9 will be used for the design consideration for M9.

The borings encountered 6 to 10 inches of topsoil, followed by silty clay fill to depths between 26.0 and 29.0 feet. Very stiff to hard silty clay was encountered at depths between 26.0 and 40.0 with isolated layers of medium dense silt. The borings were terminated at a depth of 40 feet; elevation 568 feet for TSP-01 and TSP-02, and 548 feet for CB-01. The very stiff to hard silty clay had unconfined compressive strength values between 2.3 and 5.2 tsf. The medium dense silt had SPT N values between 17 and 28 blows per foot. The soil color changed from brown and gray to gray at depths between 31.0 and 34.0 feet.

### 2.3.19 West DDI Traffic Signal Structures

There are four proposed mast arm traffic signal posts at this intersection: M1 through M4 (**Appendix A**). Boring TSP-3 was drilled at the proposed M4 location. The adjacent borings include SGB-171 for M1, SGB-125 for M2, and SGB-127 for M3. Borings SGB-125 and SGB-127 were drilled on the shoulder of IL 59 DDI southbound. Borings SGB-171 and TSP-3 were drilled in the grass area off the IL 59 DDI southbound.

Borings SGB-125 and SGB-127 encountered 4 to 6 inches of asphalt, followed by silty clay to silty clay loam fill to the boring termination depth at 25 feet. Borings SGB-171 and TSP-3 encountered 6 inches of topsoil, followed by silty clay fill to a depth of 8.5 to 11 feet and stiff to hard silty clay to a depth of 20.5 to 23.5 feet upon auger refusal on apparent bedrock. The stiff to hard silty clay had unconfined compressive strength values between 2.1 and 5.4 tsf. The soil color changed from brown and gray to gray at a depth around 11.0 feet at borings SGB-171 and TSP-3.

### 2.3.20 East DDI Traffic Signal Structures

There are four proposed mast arm traffic signal posts at this intersection: M5 through M8 (**Appendix A**). The adjacent borings include SGB-85 for M5, SGB-83 for M6 post, BSB-01 for M7 and OHS-05 for M8. Borings SGB-83 and 85 were drilled on the shoulder of the IL59 southbound

ramp to I-55. Borings BSB-87 and SGB-87 were drilled in the grass area off the shoulder of I-55 northbound. Boring OHS-05 was drilled in the grass area east of the Frontage Road.

Borings SGB-83 and SGB-85 encountered 6 inches of asphalt and 6 inches of aggregate base course, followed by sand and silty clay fill to the boring termination depth at 15.0 feet. Boring BSB-01 encountered 4 inches of topsoil, followed by silty clay fill to a depth at 11.0 feet, very stiff silty clay to a depth of 14 feet and medium dense to dense silty to a depth of 20.5 feet upon auger refusal on apparent bedrock. Boring OHS-05 encountered 8 inches of topsoil, followed by medium stiff to very stiff silty clay to a depth of 15.5 feet upon auger refusal on apparent bedrock. The silty clay had unconfined compressive strength values ranging from 0.8 tsf to 2.9 tsf. The soil color changed from brown and gray to gray at a depth around 8.5 to 11.0 feet (BSB-01 and OHS-05).

### 2.4 Groundwater Conditions

Water levels were checked in each boring to determine the general groundwater conditions present at the site and were measured while drilling and after each boring was completed. Groundwater was encountered while drilling in all borings at depths between 3.0 to 38.5 feet below grade.

Based on the color change from brown and gray to gray, it is anticipated that the long-term groundwater level could range between elevations 568.0 and 597.0 feet across the overall project limits. Water level readings were made in the boreholes at times and under conditions shown on the boring logs and stated in the text of this report. However, it should be noted that fluctuations in groundwater level may occur due to variations in rainfall, other climatic conditions, or other factors not evident at the time measurements were made and reported herein.

# 3.0 GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

This section provides GSG's geotechnical analysis and recommendations for the design of the proposed structures based on the results of the field exploration and laboratory testing. It is anticipated that the sign structures will be designed in accordance with the IDOT Sign Structures Manual, and the traffic signal mast arm foundations will be designed in accordance with the Highway Standard 878001.

## 3.1 Derivation of Soil Parameters for Design

GSG determined the geotechnical parameters to be used for the project design based on the results of field and laboratory test data on individual boring logs as well as our experience. Unit weights, friction angles and shear strength parameters were estimated using corrected standard penetration test (SPT) using published correlations for N values results for the fill and cohesionless soils and in-situ and laboratory test results for cohesive soils. The SPT N values were corrected for hammer efficiency. The hammer efficiency correction factor considers the use of a safety hammer/rope/cat-head system, generally estimated to be 60% efficient. Thus, correlations should be based upon what is currently termed as $N_{60}$ data. The efficiencies of the automatic hammers used for this exploration were estimated to be approximately 98% for the ATV mounted Diedrich D-50 and 88% for the truck mounted Diedrich D-50 and based on recent efficiency testing of the drill rigs. The correction for hammer efficiency is a direct ratio of relative efficiencies as follows:

$$N_{60} = N_{Field} * (98/60)\text{: Diedrich D-50 ATV}$$
$$N_{60} = N_{Field} * (88/60)\text{: Diedrich D-50 TM}$$

* Where the $N_{Field}$ value is the blow counts recorded during the subsurface investigation.

Recommended geotechnical parameters for the subsurface soils to be used for design are presented in the **Recommended Geotechnical Design Parameters (Appendix D)**.

## 3.2 Seismic Parameters

The seismic hazard for the site was analyzed per the IDOT Geotechnical Manual, IDOT Bridge Design Manual, and AASHTO LRFD Bridge Design Specifications.

The Seismic Soil Site Class was determined per the requirements of "All Geotechnical Manual Users" (AGMU) Memo 9.1, Design Guide for Seismic Site Class Determination, and the "Seismic

Site Class Determination" Excel spreadsheet provided by IDOT. A global Site Class Definition was determined for this project, and was found to be Soil Site Class D. The Seismic Performance Zone (SPZ) was determined using Figure 2.3.10-3 in the IDOT Bridge Manual and was found to be Seismic Performance Zone 1.

The AASHTO Seismic Design Parameters program was used to determine the peak ground acceleration coefficient (PGA), and the short ($S_{DS}$) and long ($S_{D1}$) period design spectral acceleration coefficients for each of the proposed structures. For this section of the project, the $S_{DS}$ and the $S_{D1}$ were determined using 2017 AASHTO Guide Specifications as shown in **Table 2**. Given the site location and materials encountered, the potential for liquefaction is minimal.

**Table 2 – Seismic Parameters**

| Building Code Reference | PGA | $S_{DS}$ | $S_{D1}$ |
|---|---|---|---|
| 2017 AASHTO Guide for LRFD Seismic Bridge Design | 0.049g | 0.169g | 0.096g |

### 3.3 Overhead Sign Structure Foundations

According to the IDOT Sign Structures Manual, span type sign structures, cantilever sign structures and monotube sign structures shall be selected and detailed in accordance with the latest Illinois Department of Transportation (IDOT) Standards.

It is recommended that the proposed overhead signs be supported on deep foundations that consist of drilled shafts with no bell (straight shaft) meeting the requirements of the details in the IDOT Sign Structures Manual. The drilled shafts should have a minimum diameter of 3 feet, and the depth should be determined based on the span length, sign type, and soil consistency. The top 5 feet of the shaft length and the bottom one-diameter length should not be included in the calculated shaft resistance.

Drilled shafts for the proposed sign structures are normally loaded laterally by wind forces. The ability of the shaft to resist the wind loads is dependent on the size of the shaft diameter and the passive pressures that develop in the soils along the shaft. Lateral loads on the drilled shafts should be analyzed for the maximum moments and lateral deflections. Software such as L-Pile and COM624 are normally used to determine the required shaft depth to resist the lateral loads, and the actual maximum moment and the anticipated shaft deflection. If the shaft deflection is excessive or if the embedment is inadequate to provide "fixity", the shaft embedment could be

increased to help address these issues. The shaft diameter should be increased if the deflection or the maximum moment is higher than the shaft designed resistance.

### 3.3.1 Overhead Sign Structure, Sta. 219+00 I-55 NB (OHS-01 and OHS-02)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 3.1** and **3.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 3.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 572-575 | Stiff to Very Stiff Silty Clay | 28.8 | 0.40 |
| 569-572 | Limestone | 172.0 | 0.50 |

**Table 3.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 569-583 | Fill Silty Clay, and Very Stiff Silty Clay | 1.9 | 0.45 |

### 3.3.2 Overhead Sign Structure, Sta. 234+00 I-55 NB (OHS-03 and OHS-04)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 4.1 and 4.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the

granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 4.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 575-578 | Very Stiff Silty Clay | 28.0 | 0.40 |
| 573-575 | Limestone | 172.0 | 0.50 |

**Table 4.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 576-583 | Very Stiff Silty Clay | 1.8 | 0.45 |

### 3.3.3 Overhead Sign Structure at IL 59 (DDI NB), Sta. 8025 +70 (OHS-05 and OSH-06)

The soils encountered in the borings for this structure consisted of layers of cohesive soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense in consistency. Given that bedrock was encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 5.1 and 5.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 5.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 569-572 | Very Stiff to Hard Silty Clay | 19.2 | 0.40 |
| 566-569 | Limestone | 172.0 | 0.50 |

**Table 5.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 569-580 | Silty Clay Fill and Very Stiff to Hard Silty Clay | 2.0 | 0.45 |

### 3.3.4 Cantilever Sign Structure at I-55 Entrance Ramp B from SB DDI, Sta. 1201+85 (OHS-07)

The soils encountered in the borings for this structure generally consisted of cohesive soils, with unconfined compressive strength values exceeding 1.25 tsf. The standard foundation design parameters included on IDOT Standard Drawing should be suitable for use in the design of the median foundation for the proposed sign structure. The design of the shaft foundation, including the diameter and minimum length, should be in accordance with the requirements of the sign structures manual. Geotechnical soil parameters for the foundation design are provided in **Table C-4** of **Appendix D**.

### 3.3.5 Overhead Sign Structure at I-55 SB Exit Ramp A to DDI, Sta. 1002+20 (OHS-08 and RWB-07)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 6.1 and 6.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 6.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 572-575 | Stiff to Hard Silty Clay | 17.4 | 0.40 |
| 569-572 | Limestone | 172.0 | 0.50 |

**Table 6.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 572-590 | Stiff to Hard Silty Clay | 1.6 | 0.45 |

### 3.3.6 Overhead Sign Structure at IL 59 (DDI NB), Sta. 8005+40 (OHS-09 and OS-04)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 7.1 and 7.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 7.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 575-578 | Very Stiff to Hard Silty Clay | 20.4 | 0.40 |
| 572-575 | Limestone | 172.0 | 0.50 |

**Table 7.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 575-602 | Fill Silty Clay and Very Stiff to Hard Silty Clay | 1.8 | 0.45 |

### 3.3.7 Overhead Sign Structure at IL 59 (DDI SB), Sta. 7005+15 (OHS-10 and OS-03)

The soils encountered in the borings for this structure consisted of layers of cohesive soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense in consistency. Given that bedrock was encountered in the borings, the standard foundation

design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 8.1 and 8.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 8.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 572-575 | Very Stiff to Hard Silty Clay | 27.9 | 0.40 |
| 569-572 | Limestone | 172.0 | 0.50 |

**Table 8.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 572-582 | Very Stiff to Hard Silty Clay | 1.7 | 0.45 |

### 3.3.8 Cantilever Sign Structure Sign Structure at I-55 SB, Sta. 306+00 (OHS-11)

The soils encountered in the boring for this structure consisted of layers of cohesive and granular soils to the termination depth. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 9.1 and 9.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 9.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 562-565 | Stiff to Very Stiff Silty Clay | 10.2 | 0.40 |
| 559-562 | Limestone | 172.0 | 0.50 |

**Table 9.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 577-590<br>562-572 | Stiff to Very Stiff Silty Clay | 1.2 | 0.45 |
| 572-577 | Dense Silty Loam | 1.3 | 0.55 |

### 3.3.9 Overhead Sign Structure at I-55 SB, Sta. 315+00 (OHS-12 and OHS-13)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense to extremely dense in consistency. Given the granular conditions encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 10.1 and 10.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 10.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 572-580<br>(OHS-12) | Dense to Very Dense Silty Loam | 51.0 | 0.40 |
| 562-572<br>(OHS-12) | Stiff to Hard Silty Clay Loam | 31.0 | 0.50 |
| 578-584<br>(OHS-13) | Very Stiff Silty Clay | 23.0 | 0.50 |
| 560-578<br>(OHS-13) | Medium Dense to Extremely Dense Silty Loam | 39.0 | 0,40 |
| 560-562 | Limestone | 172.0 | 0.50 |

**Table 10.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 562-596 (OHS-12) | Stiff to Hard Silty Clay | 1.9 | 0.45 |
| 578-595 (OHS-13) | Very Stiff Silty Clay | 2.0 | 0.45 |
| 569-578 (OHS-13) | Medium Dense to Extremely Dense Silty Loam | 2.6 | 0.55 |

### 3.3.10 Overhead Sign Structure at I-55 SB, Sta. 367+00 (OHS-14 and OHS-15)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally extremely dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 11.1 and 11.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 11.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 560-563 | Very Stiff to Hard Silty Clay | 31.0 | 0.50 |
| 560-563 (OHS-15) | Extremely Dense Loam | 39.0 | 0.40 |
| 557-560 | Limestone | 172.0 | 0.50 |

**Table 11.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 563-575 (OHS-12) | Stiff to Hard Silty Clay | 2.0 | 0.45 |

### 3.3.11 Overhead Sign Structure at I-55 SB, Sta. 410+00 (OHS-16 and OHS-17)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally extremely dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 12.1 and 12.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 12.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 564-567 OHS-16 | Stiff to Very Stiff Silty Clay | 11.0 | 0.50 |
| 564-567 OHS-17 | Loose to Medium Dense Sand | 29.0 | 0.40 |
| 560-563 | Limestone | 172.0 | 0.50 |

**Table 12.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 564-579 (OHS-16) | Stiff to Very Stiff Silty Clay | 1.0 | 0.45 |
| 570-564 (OHS-17) | Loose to Medium Dense Sand | 1.9 | 0.55 |

### 3.3.12 Overhead Sign Structure at I-55 SB, Sta. 291+00 (OS-01 and OS-01A)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally extremely dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 13.1 and 13.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the

granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 13.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 567-570 OS-01 | Medium Stiff to Hard Silty Clay | 24.0 | 0.50 |
| 566-569 OS-01A | Medium Dense Silt and Silty Loam | 39.0 | 0.40 |
| 563-566 | Limestone | 172.0 | 0.50 |

**Table 13.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 570-590 | Stiff to Hard Silty Clay | 1.5 | 0.45 |
| 566-570 | Medium Dense Silt and Silty Loam | 2.2 | 0.55 |

### 3.3.13 Overhead Sign Structure at IL 59 DDI & I-55 NB Entrance Ramp from SB DDI, Sta. 8014+35 (OS-08 and OS-08A)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally extremely dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 14.1 and 14.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 14.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 575-578 | Stiff to Hard Silty Clay | 27.0 | 0.50 |
| 572-575 | Limestone | 172.0 | 0.50 |

**Table 14.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 575-590 | Stiff to Hard Silty Clay | 1.6 | 0.45 |

### 3.3.14 Overhead Sign Structure at I-55 NB and SB DDI, Sta. 808+45 (OS-10 and OS-11)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally extremely dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Table 15.1 and 15.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 15.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 565-582 | Medium Dense to Dense Sand | 34.0 | 0.40 |
| 564-566 | Limestone | 172.0 | 0.50 |

**Table 15.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 565-580 | Medium Dense to Dense Sand | 1.9 | 0.55 |

### 3.3.15 Overhead Sign Structure at I-55 NB, Sta. 250+65 (OS-14 and OS-15)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally extremely dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 16.1 and**

**16.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 16.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 565-568 | Dense Silty Loam | 35.0 | 0.40 |
| 565-566 | Limestone | 172.0 | 0.50 |

**Table 16.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 565-585 | Medium Dense to Dense Sand | 2.0 | 0.55 |

### 3.3.16 Overhead Sign Structure at I-55 SB, Sta. 355+50 (OHS-18 and OHS-19)

The soils encountered in the borings for this structure consisted of layers of cohesive and granular soils to the termination depths. The cohesive soils generally had unconfined compressive strength values greater than 1.25 tons per square foot (tsf) and the granular soils were generally medium dense to dense in consistency. Given the granular conditions and bedrock encountered in the borings, the standard foundation design parameters may require modification for design of the foundations for the proposed structure. The drilled shaft parameters provided in **Tables 17.1 and 17.2** as well as the geotechnical soil parameters included in **Appendix D** should be used in the design of the proposed foundations at this location. It should be noted that the presence of the granular layers may create the need for wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b).

**Table 17.1 – End Bearing Resistance**

| Bearing Elevation (feet) | Anticipated Soil Type | Nominal Bearing Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 571-568<br>OHS-19 | Medium Dense to Dense Sand | 43.0 | 0.50 |
| 570-566 | Limestone | 172.0 | 0.50 |

**Table 17.2 – Side Resistance**

| Elevation Range (feet) | Anticipated Soil Type | Nominal Unit Shaft Resistance (ksf) | Resistance Factor |
|---|---|---|---|
| 574-570<br>OHS-18 | Silty Clay Fill | 1.0 | 0.45 |
| 571-568<br>OHS-19 | Medium Dense to Dense Sand | 0.8 | 0.55 |

### 3.4 Mast Arm Traffic Signal Structure Foundations

According to the IDOT Geotechnical Manual, foundations for traffic signal mast arms can be designed according to Highway Standard 878001.

It is recommended that the proposed mast arm structures be supported on deep foundations that consist of drilled shafts with no bell (straight shaft) meeting the requirements of the details in the Highway Standard 878001 for concrete foundation. The drilled shafts should have a minimum diameter of 2.5 feet, and the depth should be determined based on the mast arm length and soil consistency. The top 5 feet of the shaft length and the bottom one-diameter length should not be included in the calculated shaft resistance.

The soils encountered in the borings for the traffic signal structures at the three intersections generally consisted of cohesive soils within the standard drilled shaft length (**Appendix E**), with average unconfined compressive strength values exceeding 1.25 tsf. The standard foundation design parameters included on Concrete Foundation Details from the Highway Standard 878001 should be suitable for use in the design of the foundation for the proposed traffic signal. The design of the shaft foundation, including the diameter and minimum length, should be in accordance with the requirements of the Highway Standard 878001. Geotechnical soil parameters for the foundation design are provided in **Appendix D**.

# 4.0 CONSTRUCTION CONSIDERATIONS

All work performed for the proposed project should conform to the requirements in the Illinois Department of Transportation Sign Structures Manual and Highway Standards. Any deviation from the requirements in the manuals above should be approved by the design engineer.

## 4.1 Drilled Shafts Construction

The drilled shaft construction should be completed in accordance with Section 516, Drilled Shafts, in the IDOT Standard Specification for Road and Bridge Construction. The dry construction method should be applied where shallow groundwater is not present within the proposed shaft depth. Where shallow groundwater exists within the proposed drilled shaft depth, or significant granular layers were encountered in the borings, a temporary casing will likely be required to prevent caving or excessive deformation of the hole.

Construction of the sign foundation should anticipate the use of a temporary casing due to sand layers observed in the borings. Drilled shaft construction with the use of a temporary casing should be completed in accordance with Article 516.06 (c) in the IDOT Standard Specification for Road and Bridge Construction. If wet conditions and water are present at the bottom of the drilled shaft, wet method construction (IDOT Standard Specifications for Road and Bridge Construction Section 516.06.b) may need to be considered.

When using the dry or temporary casing method, free water should be removed from the base of the drilled shaft base prior to placing any concrete. The placement method of concrete for the drilled shaft foundation should be based on the amount of water present at the base of the shaft just prior to placing the concrete. Concrete may be placed using the free fall method, provided less than 2 inches of water is present at the base of the shaft at the time the concrete is being placed. If more than 2 inches of water is present, a tremie should be used to displace the water to the surface for removal.

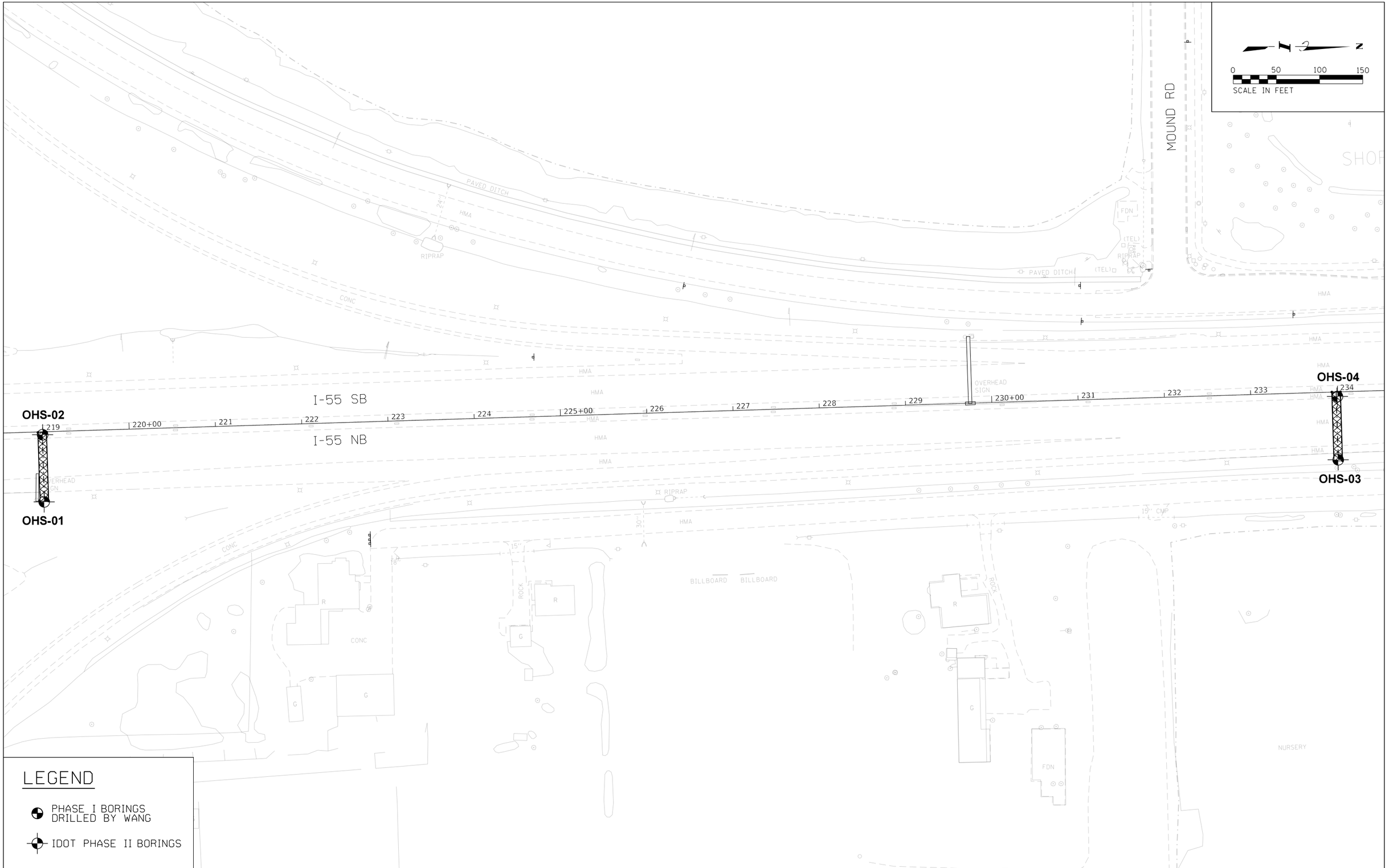
GSG recommends that the caisson concrete be ready on site as the drilled shaft excavation is completed, so that the concrete can be placed immediately after completing the excavation. This will reduce the potential of water accumulation in the bottom of the shaft. Bottom cleanliness of the drilled shaft excavation should be observed from the ground surface with the use of flood light or down-hole camera. Workers should not enter the shaft to manually clean the base of the shaft due to safety reasons.

## 5.0 LIMITATIONS

This report has been prepared for the exclusive use of Illinois Department of Transportation and its Design Section Engineer. The recommendations provided in the report are specific to the project described herein and are based on the information obtained from the soil borings located within the project limits. The analyses performed, and the recommendations provided in this report are based on subsurface conditions determined at the location of the borings. This report does not reflect all variations that may occur between boring locations or at some other time, the nature and extent of which may not become evident until during the time of construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and review the recommendations presented herein.

# APPENDIX A

# SOIL BORING LOCATION PLAN




## LEGEND

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**DEPARTMENT OF TRANSPORTATION**

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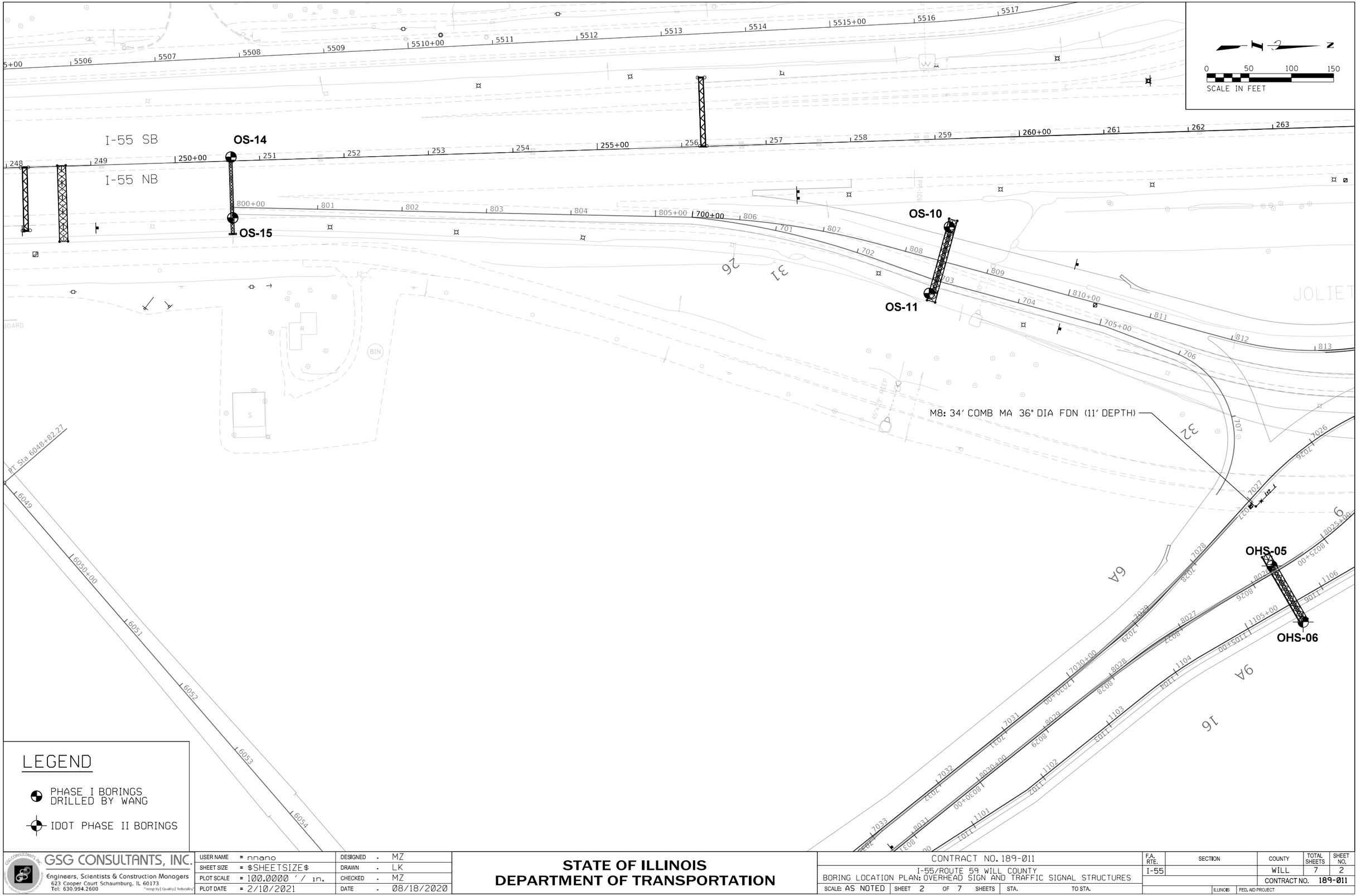


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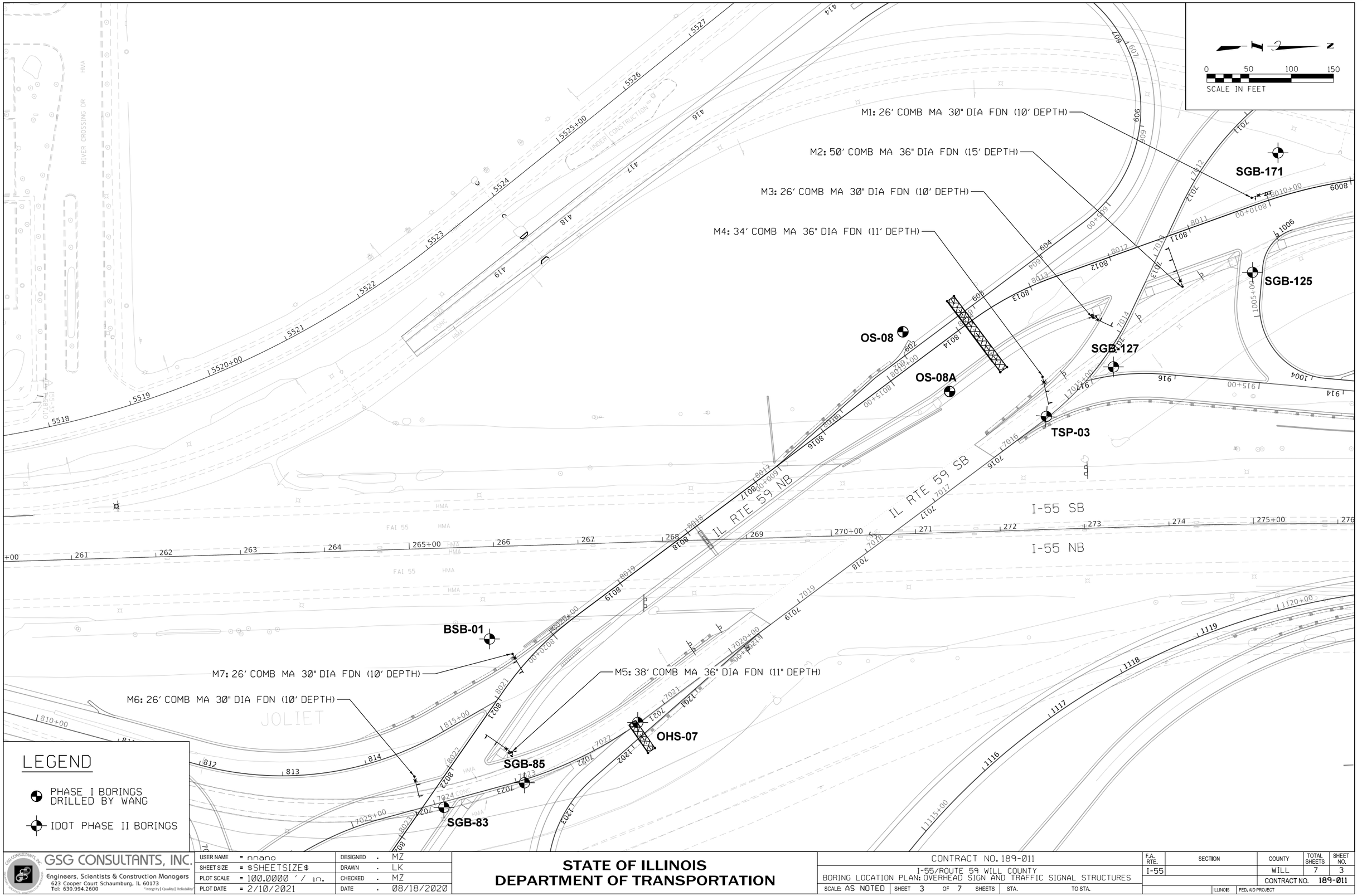


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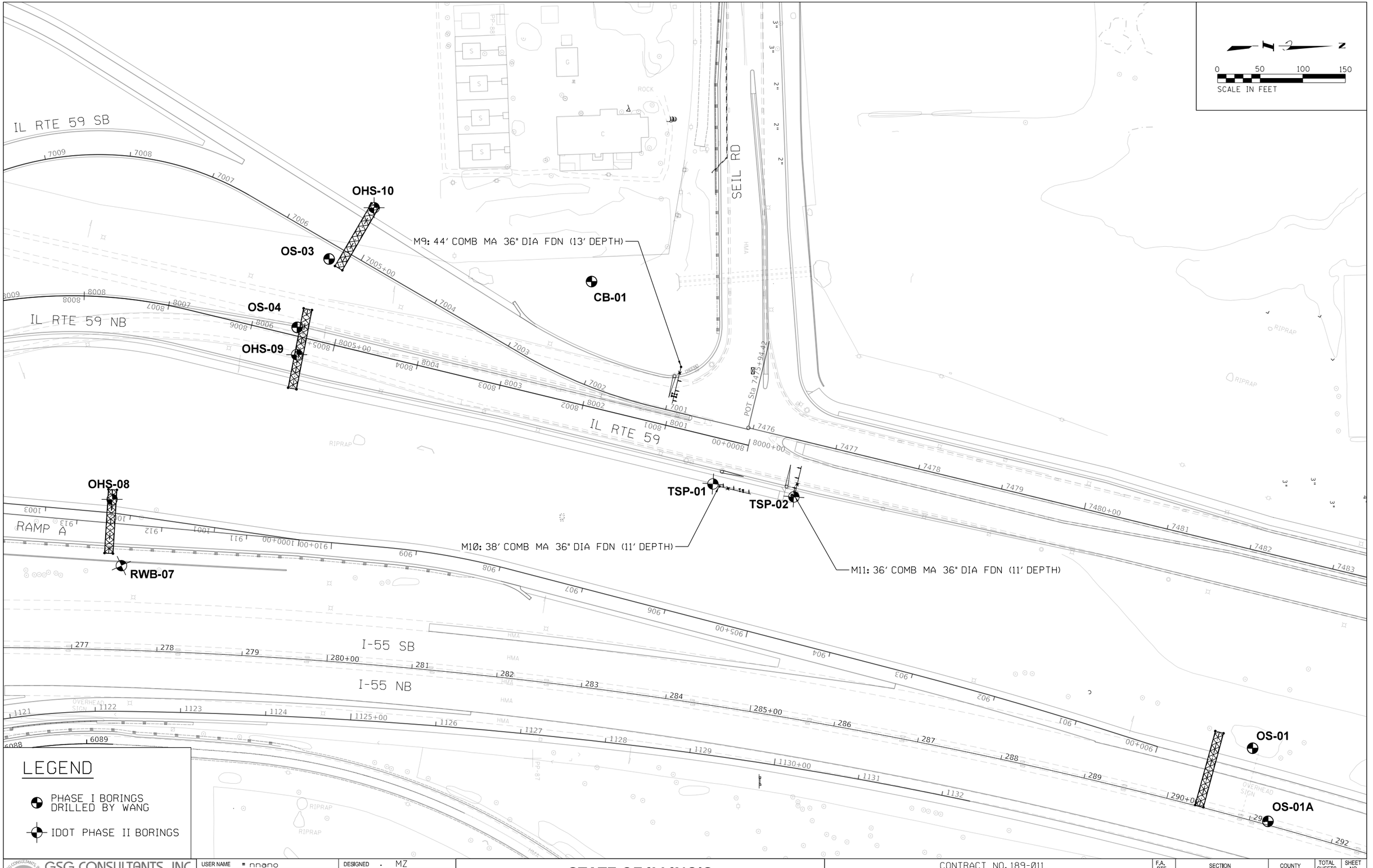


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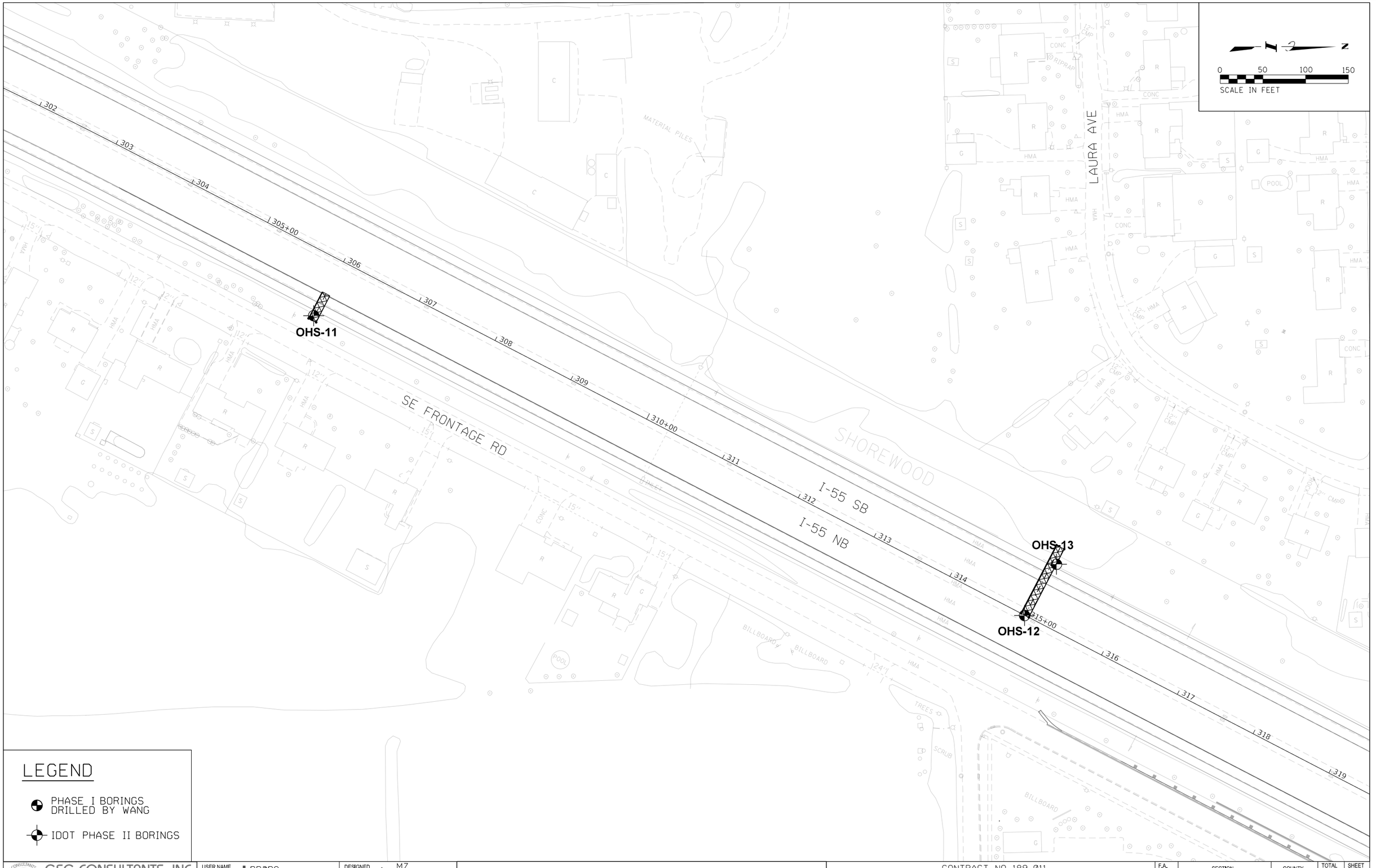


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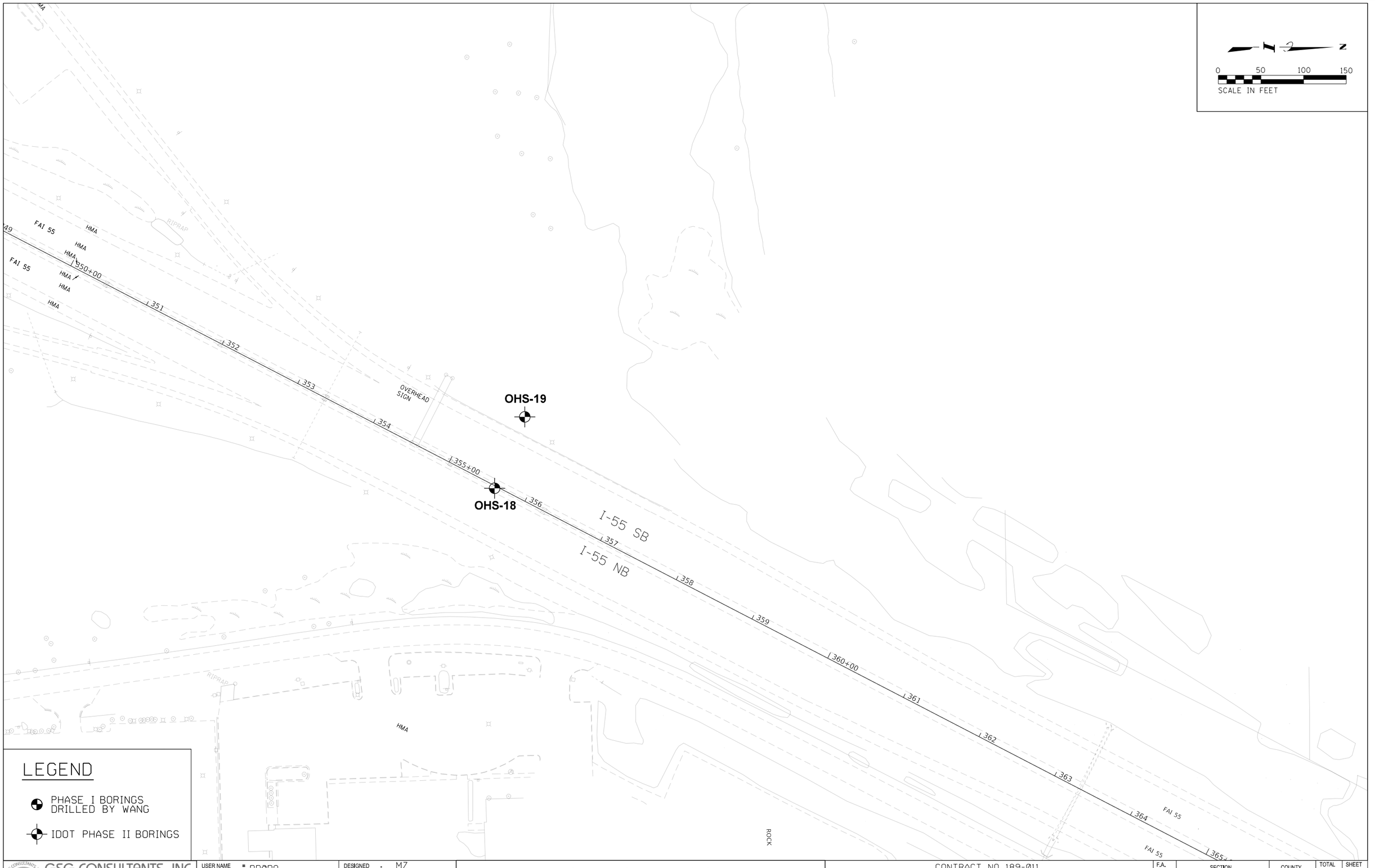


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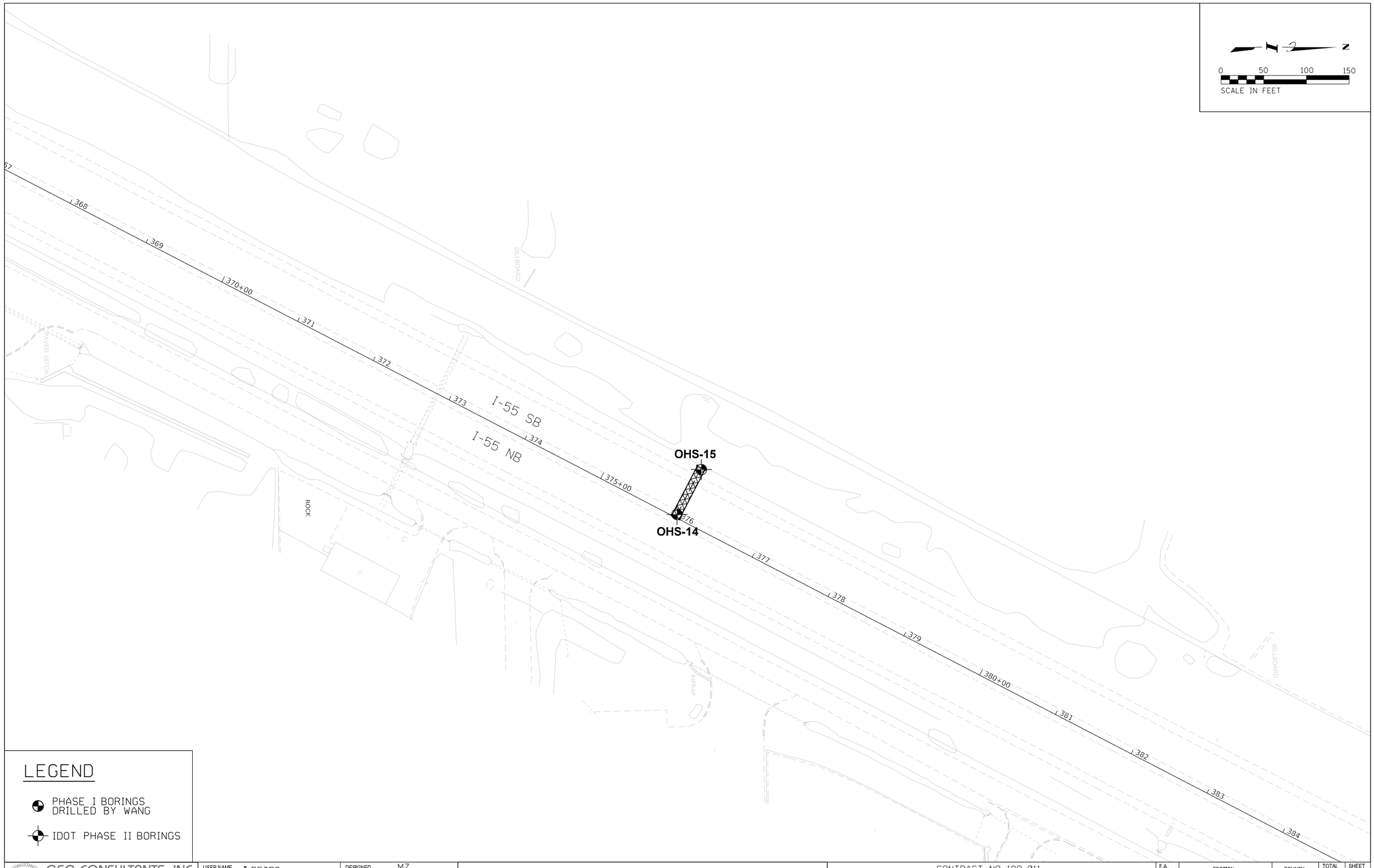


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# STATE OF ILLINOIS
# DEPARTMENT OF TRANSPORTATION

CONTRACT NO. 189-011

I-55/ROUTE 59 WILL COUNTY
BORING LOCATION PLAN: OVERHEAD SIGN AND TRAFFIC SIGNAL STRUCTURES

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| | | CONTRACT NO. | 189-011 | |
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# APPENDIX B

# SOIL BORING LOGS

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/27/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 NB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 NB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-01
**Station** 218+99.00
**Offset** 81.30ft RT
**Ground Surface Elev.** 588.43 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 577.4 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 2 inches of Topsoil 588.26 | | | | |
| Black, Brown and Gray, Moist FILL: SILTY CLAY, trace sand and gravel | | 4 | | |
| Sand seam at 1.5 feet | | 9<br>4 | 2.0<br>P | 20 |
| 584.93 | | 3 | | |
| Brown and Gray, Moist FILL: SILTY CLAY, trace gravel | -5 | 6<br>9 | 6.0<br>P | 19 |
| | | 3 | | |
| | | 6<br>10 | 5.5<br>P | 20 |
| | | 4 | | |
| | -10 | 7<br>10 | 5.5<br>P | 15 |
| Sand seam from 10 to 11 feet | | | | |
| 577.43 ▼ | | 3 | | |
| Stiff Gray, Moist SILTY CLAY, with sand, trace gravel (CL/ML) | | 7<br>8 | 1.8<br>P | 15 |
| | | 5 | | |
| | -15 | 7<br>8 | 2.0<br>P | |
| Auger and split spoon refusal at 15.5 feet 572.93 | | | | |
| End of Boring | | | | |
| | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 5/4/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 NB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 NB median, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-02
**Station** 218+99.00
**Offset** 3.50ft RT
**Ground Surface Elev.** 588.00 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 577.0 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 16 inches of Asphalt | | | | |
| 586.67 | | 8 | | |
| Gray, Moist<br>FILL: SAND and GRAVEL, trace cobbles | | 16<br>16 | | 6 |
| | | 9 | | |
| | -5 | 8<br>6 | | 6 |
| 582.00 | | 3 | | |
| Gray, Black, Brown, Moist<br>FILL: SILTY CLAY, trace sand and gravel | | 5<br>6 | 3.5<br>B | 20 |
| 579.50 | | 3 | | |
| Hard<br>Brown and Gray, Moist<br>SILTY CLAY, trace gravel (CL/ML) | -10 | 8<br>10 | 6.0<br>B | 20 |
| 577.00 ▼ | | 2 | | |
| Very Stiff<br>Gray, Moist<br>SILTY CLAY LOAM, trace limestone fragments (ML/CL)<br>Sand seam at 11.5 feet | | 3<br>5 | 2.5<br>B | 19 |
| | | 3 | | |
| | -15 | 4<br>11 | 3.0<br>P | 9 |
| | | 6 | | |
| | | 9<br>13 | 3.5<br>P | 11 |
| 569.00 | | 50/6" | | |
| Auger and split spoon refusal at 19.0 feet | | | | 12 |
| End of Boring | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/27/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 NB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 NB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-03
**Station** 233+99.07
**Offset** 3.40ft RT
**Ground Surface Elev.** 588.24 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 577.2 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 3 inches of Topsoil 587.99 | | | | |
| Brown and Gray, Moist FILL: SILTY CLAY, with sand 586.74 | | 3 | | |
| Sand seam at 1.5 feet | | 6 | 3.5 | 20 |
| Very Stiff Brown and Gray, Moist SILTY CLAY, trace gravel (CL/ML) | | 9 | P | |
| | | 2 | | |
| | -5 | 6 8 | 4.0 P | 19 |
| 582.24 | | 3 | | |
| Medium Dense Brown and Gray, Wet SAND, trace gravel (SP) | | 5 6 | | 20 |
| 580.24 | | 3 | | |
| Very Stiff Gray, Moist SILTY CLAY, trace sand (CL/ML) | | 4 | 2.3 | 15 |
| | -10 | 5 | P | |
| 577.24 ▼ | | 5 | | |
| LIMESTONE, highly weathered | | 50/3" | | 15 |
| Auger and split spoon refusal at 575.24 13.0 feet | | 50/2" | | |
| End of Boring | | | | 5 |
| | -15 | | | |
| | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 5/4/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 NB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 NB median, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-04
**Station** 233+99.07
**Offset** 78.70ft RT
**Ground Surface Elev.** 589.00 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 576.0 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 17 inches of Asphalt<br>4 inches of Aggregate Base Course | | 15 | | |
| 587.25 | | 29 | | 6 |
| Brown and Gray, Moist<br>FILL: SAND and GRAVEL | | 17 | | |
| 585.50 | | 2 | | |
| Black, Brown, and Gray, Moist<br>FILL: SILTY CLAY LOAM | | 5 | 6.0 | 15 |
| | -5 | 6 | P | |
| | | 2 | | |
| | | 5 | 4.0 | 10 |
| | | 7 | B | |
| 580.50 | | 4 | | |
| Hard<br>Brown and Gray, Very Moist<br>SILTY CLAY, trace gravel and sand (CL/ML) | | 7 | 4.2 | 30 |
| | -10 | 10 | B | |
| 578.00 | | 3 | | |
| Very Stiff<br>Gray, Moist<br>SILTY CLAY LOAM (ML/CL) | | 3 | 3.1 | 14 |
| | | 6 | B | |
| ▼ 575.50 | | 48 | | |
| LIMESTONE - highly weathered, with sand | | 42 | | 8 |
| | -15 | 12 | | |
| Auger and split spoon refusal at 16.0 feet 573.00 | | 50/1" | | |
| End of Boring | | | | 3 |
| | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

# Illinois Department of Transportation

Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 4/10/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Il 59 (DDI) NB OHS **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** I-55 NB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-05
**Station** 1105+60.41
**Offset** 50.00ft LT
**Ground Surface Elev.** 585.38 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 574.4 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| 8 inches of Topsoil 584.72 | | | |
| Medium Stiff Very Stiff Brown and Gray, Moist SILTY CLAY, trace gravel (CL/ML) | 2 | | |
| | 3<br>3 | 0.8<br>P | 24 |
| | 3 | | |
| | 4<br>6 | 3.1<br>B | 7 |
| -5 | | | |
| | 3 | | |
| | 4<br>5 | 2.1<br>B | 21 |
| 576.88 | | | |
| | 4 | | |
| Very Stiff Gray, Moist SILTY CLAY, trace gravel (CL/ML) | 5<br>6 | 2.3<br>B | 20 |
| -10 | | | |
| ▼ | 5 | | |
| | 9<br>9 | 2.5<br>B | 11 |
| | 8 | | |
| | 8<br>10 | 2.9<br>B | 11 |
| -15 | | | |
| Auger and split spoon refusal at 15.5 feet 569.88 | | | |
| End of Boring | | | |
| -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 4/10/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Il 59 (DDI) NB OHS **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** I-55 NB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-06
**Station** 1105+60.41
**Offset** 25.90ft RT
**Ground Surface Elev.** 585.85 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 574.9 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 7 inches of Topsoil 585.27 | | | | |
| Very Stiff to Hard Brown, Black and Gray, Moist SILTY CLAY, trace gravel (CL/ML) | | 3 | | |
| | | 3<br>4 | 3.3<br>B | 25 |
| | | 4 | | |
| | -5 | 6<br>7 | 6.0<br>B | 20 |
| | | 13 | | |
| Cobbles at 6.5 feet | | 16<br>11 | 4.5<br>P | 21 |
| 577.35 | | | | |
| Very Stiff Gray, Moist SILTY CLAY, trace gravel (CL/ML) | | 5 | | |
| | -10 | 5<br>6 | 3.0<br>P | 22 |
| ▼ | | 3 | | |
| | | 6<br>12 | 2.5<br>B | 11 |
| | | 6 | | |
| | -15 | 7<br>13 | 4.5<br>P | 10 |
| Auger and split spoon refusal at 16.5 feet 569.35 | | 32<br>50/1" | | |
| End of Boring | | | | |
| | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG

**Date** 3/27/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 Entrance Ramp B from SB DDI **LOGGED BY** PS

**SECTION** 2018-075-R **LOCATION** West of IL 59, **SEC.** , **TWP.** , **RNG.** , **Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-07
**Station** 7021+38.77
**Offset** 1.07ft RT
**Ground Surface Elev.** 615.05 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 582.0 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 9 inches of Asphalt | | | | |
| 614.30 | | | | |
| Black and Gray, Moist FILL:SILTY CLAY, with sand, trace gravel | | 8 | | |
| | | 11 | 1.3 | 12 |
| | | 9 | P | |
| | | 3 | | |
| | | 6 | 0.6 | 9 |
| | -5 | 4 | B | |
| | | 3 | | |
| 608.55 | | | | |
| Gray and Brown, Dry to Very Moist FILL: SILTY CLAY LOAM, trace gravel | | 3 | 3.1 | 17 |
| | | 3 | B | |
| | | 4 | 1.9 | 16 |
| | -10 | 7 | B | |
| | | 3 | | |
| | | 6 | 2.5 | 32 |
| | | 8 | B | |
| | | 4 | | |
| | | 5 | 4.0 | 27 |
| | -15 | 7 | B | |
| Cobbles at 18.5 feet | | 15 | | |
| 596.05 | | | | |
| | | 8 | 0.8 | 3 |
| | -20 | 8 | B | |

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| Medium Stiff to Hard Brown and Gray, Moist SILTY CLAY, trace sand, gravel and cobbles (CL/ML) *(continued)* | | | | |
| | | 5 | | |
| | | 7 | 4.5 | 16 |
| | -25 | 13 | P | |
| | | 10 | | |
| | | 9 | 2.0 | 50 |
| | -30 | 7 | P | |
| 582.05 ▼ | | | | |
| Very Stiff Gray, Moist SILTY CLAY, trace gravel (CL/ML) | | 6 | | |
| | | 6 | 2.3 | 18 |
| Rock fragments at 33 to 34 feet | -35 | 9 | P | |
| | | 4 | | |
| | | 6 | 2.5 | 23 |
| | -40 | 7 | B | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG

**Date** 3/27/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 Entrance Ramp B from SB DDI **LOGGED BY** PS

**SECTION** 2018-075-R **LOCATION** West of IL 59, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-07
**Station** 7021+38.77
**Offset** 1.07ft RT
**Ground Surface Elev.** 615.05 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 582.0 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| Very Stiff<br>Gray, Moist<br>SILTY CLAY, trace gravel (CL/ML)<br><br>Rock fragments at 33 to 34 feet<br>*(continued)* | | | | |
| 572.05<br>LIMESTONE, highly weathered | | 12 | | |
| | | 14 | | 7 |
| | -45 | 50/2" | | |
| Auger and split spoon refusal at 46.0 feet<br>569.05 | | 50/1" | | |
| End of Boring | | | | 10 |
| | -50 | | | |
| | -55 | | | |
| | -60 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/11/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Ramp A from I-55 SB to IL-59 **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** West of I-55, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-08
**Station** 912+61.18
**Offset** 27.82ft RT
**Ground Surface Elev.** 596.04 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 575.0 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| 595.54 6 inches of Topsoil | | | |
| Brown, Gray and Black, Moist to Very Moist FILL: SILTY CLAY, with gravel | 3 | | |
| | 4 4 | 2.3 B | 34 |
| | 2 | | |
| -5 | 3 3 | 1.5 B | 20 |
| 590.04 | 3 | | |
| Very Stiff to Hard Brown and Gray, Moist SILTY CLAY, trace gravel | 4 11 | 7.5 B | 19 |
| | 4 | | |
| -10 | 8 10 | 5.2 B | 20 |
| | 4 | | |
| | 6 7 | 2.9 B | 21 |
| | 3 | | |
| -15 | 4 6 | 3.5 B | 21 |
| 580.04 | 4 | | |
| Very Stiff Gray, Moist SILTY CLAY (CL/ML) | 7 7 | 2.9 B | 19 |
| | 3 | | |
| Sand Seam at 19 feet | | | |
| -20 | 4 10 | 3.3 B | 19 |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| Very Stiff Gray, Moist SILTY CLAY (CL/ML) *(continued)* ▼ | 12 | | |
| | 50/4" | | 6 |
| 572.54 Auger and split spoon refusal at 23.5 feet | 50/2" | | |
| End of Boring | | | 12 |
| -25 | | | |
| -30 | | | |
| -35 | | | |
| -40 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 4/2/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** IL-59 NB **LOGGED BY** ES

**SECTION** 2018-075-R **LOCATION** East of IL 59, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-09
**Station** 8005+40.47
**Offset** 21.25ft LT
**Ground Surface Elev.** 607.63 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 584.1 ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 6 inches of Asphalt 607.13 | | | | |
| Brown, Moist FILL: SAND AND GRAVEL | | 12 | | |
| | | 50/5" | | 6 |
| | | 6 | | |
| 603.63 | | | | |
| Brown and Gray, Moist FILL: SILTY CLAY, trace gravel | | 9 | 8.3 | 14 |
| | -5 | 14 | B | |
| Limestone fragments at 6 feet | | 3 | | |
| | | 5 | 3.5 | 13 |
| | | 6 | P | |
| | | 4 | | |
| | | 6 | 1.0 | 13 |
| | -10 | 8 | B | |
| | | 6 | | |
| | | 5 | 3.1 | 12 |
| | | 9 | B | |
| 594.13 | | | | |
| Very Stiff Brown and Gray, Moist SILTY CLAY, trace gravel (CL/ML) | | 4 | | |
| | | 7 | 2.1 | 11 |
| | -15 | 9 | B | |
| | | 3 | | |
| | | 3 | 2.9 | 22 |
| | | 6 | B | |
| | | 4 | | |
| | | 7 | 4.0 | 19 |
| | -20 | 10 | B | |
| Very Stiff Brown and Gray, Moist SILTY CLAY, trace gravel (CL/ML) *(continued)* 586.13 | | 4 | | |
| | | 3 | 3.1 | 19 |
| | | 3 | B | |
| Very Stiff Brown and Gray, Moist SILTY CLAY LOAM, with gravel (CL/ML) | | | | |
| | | 2 | | |
| | | 4 | 2.5 | 12 |
| | -25 | 11 | P | |
| 581.63 | | | | |
| Very Stiff Gray, Moist SILTY CLAY (CL/ML) | | 4 | | |
| | | 6 | 2.1 | 16 |
| | | 9 | B | |
| | | 3 | | |
| | | 5 | 3.1 | 16 |
| | -30 | 6 | B | |
| 576.63 | | | | |
| LIMESTONE, highly weathered | | 15 | | |
| | | 19 | | 6 |
| Auger and split spoon refusal at 32.5 feet 575.13 | | 50/3" | | |
| End of Boring | | | | |
| | -35 | | | |
| | -40 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/24/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Ramp D from IL-59 SB to SW Frontage Rd **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** West of IL 59, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-10
**Station** 402+36.60
**Offset** 17.21ft LT
**Ground Surface Elev.** 592.15 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 573.7 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 6 inches of Topsoil 591.65 | | | | |
| Brown, Black and Gray, Moist FILL: SILTY CLAY, trace gravel and organics | | 2 | | |
| | | 3<br>4 | 1.5<br>B | 20 |
| | | 4 | | |
| | | 7<br>9 | 6.0<br>B | 19 |
| | -5 | | | |
| 586.15 | | | | |
| Gray and Brown, Moist FILL: SILTY CLAY, trace gravel | | 5 | | |
| | | 6<br>8 | 4.0<br>B | 20 |
| | | 3 | | |
| | | 4<br>6 | 3.1<br>B | 22 |
| | -10 | | | |
| 581.15 | | | | |
| Very Stiff Gray, Moist SILTY CLAY (CL/ML) | | 5 | | |
| | | 8<br>10 | 3.5<br>P | 19 |
| | | 4 | | |
| | | 6<br>8 | 3.0<br>P | 19 |
| | -15 | | | |
| 576.15 | | | | |
| LIMESTONE, highly weathered | | 8 | | |
| | | 13<br>13 | | 7 |
| ▼ | | 32 | | |
| | | 50/2" | | 6 |
| Auger and split spoon refusal at 572.15 | -20 | | | |

20.0 feet
End of Boring

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| -25 | | | |
| -30 | | | |
| -35 | | | |
| -40 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 4/3/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 NB OHS **LOGGED BY** EH

**SECTION** 2018-075-R **LOCATION** I-55 NB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-11
**Station** 305+98.12
**Offset** 71.92ft RT
**Ground Surface Elev.** 596.23 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 563.2 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 3 inches of Topsoil 595.98 |
| | 5 | | | Brown and Gray, Moist FILLL: SILTY CLAY, trace gravel |
| | 7 7 | 2.9 B | 12 | |
| | 4 | | | |
| | 6 6 | 2.1 B | 9 | |
| -5 | | | | |
| | 3 | | | 590.23 |
| | 4 6 | 0.4 B | 10 | Soft to Hard Gray, Moist SILTY CLAY, trace gravel (CL/ML) |
| | 2 | | | |
| | 4 6 | 1.7 B | 15 | |
| -10 | | | | |
| | 3 | | | |
| | 4 8 | 3.3 B | 18 | |
| | 2 | | | |
| | 6 7 | 2.5 B | 14 | |
| -15 | | | | |
| | 6 | | | |
| | 8 13 | 4.5 P | 19 | |
| | | | | 577.73 |
| | 9 | | | Dense Gray, Moist SILTY LOAM (ML) |
| | 15 20 | | 17 | |
| -20 | | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | 7 | | | Dense Gray, Moist SILTY LOAM (ML) *(continued)* |
| | 15 19 | | 18 | |
| | | | | 572.73 |
| | 6 | | | Stiff to Very Stiff Gray, Moist SILTY CLAY (CL/ML), with gravel (CL/ML) |
| | 5 6 | 1.7 B | 21 | |
| -25 | | | | |
| | 4 | | | |
| | 3 6 | 2.5 B | 18 | |
| | 3 | | | |
| | 5 7 | 1.9 B | 19 | |
| -30 | | | | |
| | 7 | | | |
| | 9 50/6" | 1.0 P | 8 | |
| | | | | ▼ Auger and split spoon refusal at 562.73 33.5 feet End of Boring |
| -35 | | | | |
| -40 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



**Date** 5/6/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 SB median, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-12
**Station** 314+98.73
**Offset** 0.26ft RT
**Ground Surface Elev.** 601.00 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 562.5 ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 14 inches of Asphalt | | | | |
| 599.84 | | 24 | | |
| Brown and Gray, Moist FILL: SAND and GRAVEL | | 17 | | 10 |
| | | 7 | | |
| 597.50 | | | | |
| Brown and Gray, Moist FILL: SILTY CLAY, with gravel | | 4 | | |
| | | 5 | 5.0 | 15 |
| | -5 | 9 | P | |
| 595.00 | | | | |
| Hard Brown and Gray, Moist SILTY CLAY LOAM, trace gravel (ML/CL) | | 4 | | |
| | | 7 | 5.0 | 17 |
| | | 8 | B | |
| | | 3 | | |
| | | 5 | 5.5 | 23 |
| | -10 | 6 | P | |
| 590.00 | | | | |
| Very Stiff to Hard Gray, Moist to Very Moist SILTY CLAY, trace sand (CL/ML) | | 3 | | |
| | | 7 | 4.4 | 28 |
| | | 8 | B | |
| | | 4 | | |
| | | 5 | 3.8 | 27 |
| | -15 | 6 | B | |
| | | 2 | | |
| | | 4 | 4.2 | 25 |
| | | 6 | B | |
| 582.50 | | | | |
| Very Stiff Gray, Moist SILTY CLAY LOAM (ML/CL) | | 2 | | |
| | | 5 | 3.5 | 23 |
| | -20 | 7 | P | |
| Very Stiff Gray, Moist SILTY CLAY LOAM (ML/CL) *(continued)* | | | | |
| 579.50 | | 11 | | |
| Dense to Very Dense Gray, Very Moist SILTY LOAM (ML) | | 25 | | 23 |
| | | 31 | | |
| | | 15 | | |
| | | 28 | | 19 |
| | -25 | 40 | | |
| | | 13 | | |
| | | 19 | | 20 |
| | | 25 | | |
| 572.50 | | | | |
| Stiff to Hard Gray, Moist to Very Moist SILTY CLAY LOAM (ML/CL) | | 4 | | |
| | | 5 | 1.9 | 8 |
| | -30 | 8 | B | |
| | | 4 | | |
| | | 5 | 2.1 | 32 |
| | | 5 | B | |
| | | 5 | | |
| | | 10 | 6.5 | 18 |
| | -35 | 12 | P | |
| 562.00 | | 5 | | |
| LIMESTONE, highly weathered | | 50/1" | | 13 |
| 561.00 | -40 | | | |

End of Boring

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/4/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** I-55 SB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-13
**Station** 315+4.25
**Offset** 70.10ft LT
**Ground Surface Elev.** 599.70 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 578.7 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| 599.20 | | | |
| 6 inches of Topsoil | | | |
| Brown and Gray, Very Moist | 3 | | |
| FILL: SILTY CLAY, trace gravel | 4 4 | 1.5 B | 28 |
| | 3 | | |
| 595.70 | | | |
| Hard | 4 6 | 5.0 B | 15 |
| -5 | | | |
| Brown and Gray, Moist to Very Moist | 4 | | |
| SILTY CLAY, trace gravel (CL/ML) | 7 8 | 5.0 B | 17 |
| | 4 | | |
| | 6 8 | 5.4 B | 17 |
| -10 | | | |
| | 4 | | |
| | 6 8 | 5.2 B | 26 |
| | 3 | | |
| | 5 7 | 2.1 B | 12 |
| -15 | | | |
| 583.70 | | | |
| Very Stiff | 3 | | |
| Gray, Moist to Very Moist | 4 6 | 3.1 B | 25 |
| SILTY CLAY (CL/ML) | 3 | | |
| | 5 8 | 3.3 B | 26 |
| -20 | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| 578.70 ▼ | | | |
| Medium Dense to Extremely Dense | 6 | | |
| Gray, Moist | 12 23 | | 17 |
| SILTY LOAM (ML) | | | |
| | 16 | | |
| | 23 24 | | 18 |
| -25 | | | |
| | 15 | | |
| | 30 29 | | 18 |
| | 15 | | |
| | 15 9 | | 17 |
| -30 | | | |
| | 10 | | |
| | 10 10 | | 17 |
| | 7 | | |
| | 9 12 | | 13 |
| -35 | | | |
| | 24 | | |
| | 11 10 | | 9 |
| | 50/4" | | |
| | | | 13 |
| 559.70 -40 | | | |

End of Boring

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG

**Date** 5/6/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 SB median, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-14
**Station** 375+98.61
**Offset** 3.98ft LT
**Ground Surface Elev.** 580.00 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 569.0 ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 14 inches of Asphalt | | | | |
| 578.84 | | 10 | | |
| Gray and Brown, Moist FILL: SAND and GRAVEL | | 19 | | 4 |
| | | 20 | | |
| 576.00 | | 7 | | |
| Black, Brown, and Gray, Moist FILL: SILTY CLAY, with sand and gravel | -5 | 9 | 2.0 | 24 |
| | | 6 | P | |
| | | 2 | | |
| | | 2 | 0.5 | 25 |
| | | 4 | P | |
| 571.50 | | 4 | | |
| Brown and Gray, Moist to Wet FILL: SANDY LOAM, with gravel | | 4 | | 16 |
| | -10 | 5 | | |
| Cobbles at 11-12.5 feet | | 5 | | |
| | | 8 | | 8 |
| | | 6 | | |
| 566.50 | | 4 | | |
| Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel (ML/CL) | | 9 | 3.0 | 13 |
| | -15 | 50/2" | P | |
| 564.00 | | 10 | | |
| Hard Gray, Moist SILTY CLAY LOAM, with limestone fragments (ML/CL) | | 7 | | 13 |
| | | 5 | | |
| | | 6 | | |
| | | 22 | 5.0 | 7 |
| | -20 | 41 | P | |

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| Hard Gray, Moist SILTY CLAY LOAM, with limestone fragments (ML/CL) *(continued)* | | 13 | | |
| | | 33 | 5.5 | 14 |
| Auger and split spoon refusal at 22.5 feet | | 50/6" | P | |
| 557.50 | | | | |
| End of Boring | | | | |
| | -25 | | | |
| | -30 | | | |
| | -35 | | | |
| | -40 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 5/1/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 SB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-15
**Station** 375+99.86
**Offset** 63.66ft LT
**Ground Surface Elev.** 579.05 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 573.1 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 10 inches of Asphalt<br>5 inches of Aggregate Base Course | | 7 | | |
| 577.64 | | | | |
| Brown and Gray, Moist<br>FILL: SAND and GRAVEL | | 8<br>10 | | 14 |
| | | 9 | | |
| | | 5<br>4 | | NR |
| | -5 | | | |
| | ▼ | 6 | | |
| | | 9<br>10 | | 13 |
| | | 11 | | |
| | | 5<br>3 | | 14 |
| | -10 | | | |
| 568.05 | | 7 | | |
| Very Stiff to Hard<br>Gray, Moist<br>SILTY CLAY LOAM, trace gravel and limestone fragments (ML/CL) | | 4<br>11 | 3.0<br>P | 11 |
| | | 5 | | |
| | | 9<br>5 | 5.0<br>P | 11 |
| | -15 | | | |
| 563.05 | | 13 | | |
| Extremely Dense<br>Gray, Moist<br>SANDY LOAM, with gravel and limestone fragments (SM) | | 50/6" | | 12 |
| Auger and split spoon refusal at 19.0 feet<br>560.05 | | 14 | | |
| | | 50/2" | | 10 |
| End of Boring | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 5/6/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 SB median, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-16
**Station** 409+99.24
**Offset** 3.67ft LT
**Ground Surface Elev.** 584.00 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 575.5 ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 14 inches of Asphalt | | | | |
| 582.84 | | | | |
| Brown and Gray, Moist FILL: SAND and GRAVEL, moist | | 11 | | |
| | | 17 | | 6 |
| | | 10 | | |
| | | 4 | | |
| | | 6 | | 6 |
| | -5 | 5 | | |
| | | 3 | | |
| | | 9 | | 16 |
| | | 9 | | |
| 575.00 | | 10 | | |
| Stiff Brown and Gray, Moist SILTY CLAY LOAM (ML/CL) | | 7 | 2.0 | 26 |
| | -10 | 5 | P | |
| | | 3 | | |
| | | 7 | 1.0 | 27 |
| | | 14 | B | |
| 570.50 | | | | |
| Stiff to Very Stiff Gray, Moist to Very Moist SILTY CLAY, trace sand and gravel (CL/ML) | | 2 | | |
| | | 4 | 2.7 | 23 |
| | -15 | 4 | B | |
| | | 3 | | |
| | | 4 | 1.9 | 24 |
| Sand seam at 17-17.5 feet | | 6 | B | |
| | | 14 | | |
| | | 50/3" | | 22 |
| 564.00 | -20 | | | |

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| LIMESTONE - highly weathered | | | | |
| Little recovery at 21.0-22.5 feet | | 50/3" | | |
| Auger and split spoon refusal at 24.0 feet | | 50/4" | | |
| 560.00 | | | | |
| End of Boring | -25 | | | 5 |
| | -30 | | | |
| | -35 | | | |
| | -40 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 5/1/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 SB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-17
**Station** 409+98.89
**Offset** 633.07ft LT
**Ground Surface Elev.** 581.97 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 573.5 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 10 inches of Asphalt<br>4 inches of Aggregate Base Course | | 4 | | |
| 580.56 | | | | |
| Brown, Black, and Gray, Moist<br>FILL: SILTY CLAY, with sand and gravel | | 7<br>13 | 2.0<br>P | 10 |
| | | 4 | | |
| 577.97 | | | | |
| Brown and Gray, Dry to Moist<br>FILL: SAND, with gravel | -5 | 13<br>36 | | 4 |
| | | 2 | | |
| | | 9<br>9 | | 9 |
| 573.47 ▼ | | | | |
| Medium Stiff to Stiff<br>Brown and Gray, Moist to Very Moist<br>SILTY CLAY, trace gravel (CL/ML) | -10 | 2<br>3 | 1.9<br>B | 11 |
| | | 2 | | |
| 569.97 | | 2<br>21 | 0.8<br>B | 28 |
| Loose to Medium Dense<br>Brown and Gray, Moist to Wet<br>SAND, with gravel, trace limestone fragments (SPG) | | 6 | | |
| | -15 | 7<br>2 | | 11 |
| | | 4 | | |
| | | 9<br>18 | | 11 |
| 563.97 | | | | |
| LIMESTONE, highly weathered<br>Auger and split spoon refusal at 18.5 feet<br>563.47 | | 50/1" | | |
| End of Boring | -20 | | | 2 |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants, Inc.

# SOIL BORING LOG



Date 12/10/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 NB Median, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-18
**Station** 355+61.48
**Offset** 2.81ft RT
**Ground Surface Elev.** 579.43 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 570.4 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 15 inches of Asphalt |
| 578.18 | 15 | | | Gray, Moist<br>FILL: SAND, with gravel |
| | 23<br>18 | | | |
| 575.93 | 7 | | | Brown and Gray, Moist<br>FILL: SILTY CLAY, with sand and gravel |
| | 8<br>8 | 2.0<br>P | | |
| -5 | 4 | | | |
| | 4<br>4 | 1.5<br>P | | |
| 570.43 ▼ | 50 | 3.0<br>P | | Auger refusal at 9.0 feet |
| | | | | LIMESTONE - Gray and Light Pink, Moderately Weathered, Vugs, Fractured, trace shale seams |
| -10 | | | | Run 1: 9.0 to 19.0 feet<br>Recovery: 94.6%<br>RQD: 41.7% |
| -15 | | | | |
| 560.43 | | | | |
| -20 | | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | Run 2: 19.0 to 24.0 feet<br>Recovery: 100%<br>RQD: 35.0% *(continued)* |
| 555.43 | | | | End of Boring |
| -25 | | | | |
| -30 | | | | |
| -35 | | | | |
| -40 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Rock Core Photo: OHS-18**


| Run | Depth (ft) | Recovery (%) | RQD (%) | RQD Classification | Description |
|---|---|---|---|---|---|
| 1 | 9.0’ – 19.0’ | 94.6 | 41.7 | Poor | Gray Limestone |


| Run | Depth (ft) | Recovery (%) | RQD (%) | RQD Classification | Description |
|---|---|---|---|---|---|
| 2 | 19.0’ – 24.0’ | 100 | 35.0 | Poor | Gray Limestone |

**Illinois Department of Transportation**
Division of Highways
GSG Consultants, Inc.

# SOIL BORING LOG



Date 12/10/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** I-55 SB OHS **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** I-55 SB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** OHS-19
**Station** 355+54.35
**Offset** 87.89ft LT
**Ground Surface Elev.** 574.94 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 568.9 ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 5 inches of Topsoil 574.52 | | | | |
| Brown and Gray, Moist FILL: SILTY CLAY, trace gravel | | 3 | | |
| | | 4 6 | 1.0 P | |
| 571.44 | | | | |
| Medium Dense to Dense Brown and Gray, Moist SAND, with gravel and limestone fragments (SP) | -5 | 4 5 9 | | |
| | | 14 | | |
| 567.94 | | 15 50 | | |
| LIMESTONE, highly weathered | | | | |
| Auger refusal at 8.5 feet 566.44 | | | | |
| End of Boring | -10 | | | |
| | -15 | | | |
| | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
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# SOIL BORING LOG



Date 9/25/18

**ROUTE** I-55 and IL 59 **DESCRIPTION** _____ **LOGGED BY** F. Bozga

**SECTION** 2018-075-R **LOCATION** , **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.** Retaining Wall #6
**Station** _____

**BORING NO.** RW-07
**Station** 4015+90.36
**Offset** 64.49ft RT
**Ground Surface Elev.** 592.46 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 572.0 ft ▼
**Upon Completion** 571.0 ft ▽
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| 592.21 | | | | 3-inch thick, black SILTY LOAM --TOPSOIL-- |
| | 8 | | | Hard, brown and gray SILTY CLAY LOAM --FILL-- --RDR 2-- |
| | 9 | 4.5 | 11 | |
| | 8 | P | | |
| 589.46 | | | | |
| | 3 | | | Very stiff, brown and gray CLAY to SILTY CLAY --RDR 2-- |
| | 4 | 3.8 | 22 | |
| -5 | 5 | B | | |
| 586.96 | | | | |
| | 2 | | | Very stiff to hard, brown and gray SILTY CLAY --RDR 2-- |
| | 3 | 2.3 | 17 | |
| | 5 | B | | |
| | 6 | | | |
| | 9 | | | |
| -10 | 11 | NR | | |
| | 6 | | | |
| | 9 | 4.3 | 22 | |
| | 13 | B | | |
| | 7 | | | |
| | 10 | 4.2 | 16 | -- silt lenses; moist-- |
| -15 | 14 | B | | |
| 576.96 | | | | |
| | 10 | | | Medium dense, gray SILT; damp --RDR 2-- |
| 575.71 | | | | |
| | 8 | 0.8 | 31 | Medium stiff, gray CLAY to SILTY CLAY --RDR 2-- |
| | 8 | B | | |
| 573.96 | | | | |
| | 4 | | | |
| | 10 | | 13 | |
| -20 | 6 | NP | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | Medium dense to very dense, gray SILTY LOAM, little gravel; moist --RDR 2 to 4-- |
| ▽ | 5 | | | --hard drilling; 20 to 23 feet-- *(continued)* |
| | 11 | | 11 | |
| | 40 | NP | | |
| 569.46 | | | | |
| | | | | Strong, light grayish gray, very poor quality DOLOSTONE; closely spaced, fresh, horizontal joints, with <0.05 inch opening, slightly rough walls, and no infill; few chert nodules. |
| -25 | | | | |
| 566.96 | | | | |
| | | | | --RUN 1: 23.0 to 25.5 feet-- --RECOVERY = 93%-- --RQD = 17%-- Boring terminated at 25.50 ft |
| | | | | End of Boring |
| -30 | | | | |
| -35 | | | | |
| -40 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 11/4/19

**ROUTE** I-55 and IL 59 **DESCRIPTION** IL-59 at Seil Rd **LOGGED BY** TEK

**SECTION** 2018-075-R **LOCATION** IL 59 NB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** TSP-1
**Station** 4019+19.7911
**Offset** 42.23ft LT
**Ground Surface Elev.** 608.05 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** None ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 10 inches of Topsoil |
| | | | | 607.22 |
| | 3 | | | Brown, Gray, and Black, Moist FILL: SILTY CLAY, with gravel |
| | 4 | | 24 | |
| | 6 | | | |
| | 3 | | | Cobbels at 3.5 to 5.0 feet |
| | 5 | | 24 | |
| -5 | 3 | | | |
| | 3 | | | Cobbels at 6.0 to 7.5 feet |
| | 2 | | 18 | |
| | 2 | | | |
| | 1 | | | |
| | 3 | 0.4 | 16 | |
| -10 | 5 | B | | |
| | 5 | | | |
| | 6 | 4.5 | 17 | |
| | 8 | P | | |
| | 2 | | | |
| | 5 | | 11 | |
| -15 | 7 | | | |
| | 7 | | | Cobbels at 16.0 to 17.5 feet |
| | 7 | 4.5 | 13 | |
| | 8 | P | | |
| | 5 | | | Cobbels at 18.5 to 20.0 feet |
| | 8 | | 21 | |
| -20 | 12 | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | Brown, Gray, and Black, Moist FILL: SILTY CLAY, with gravel *(continued)* |
| | 3 | | | Cobbels at 21.0 to 22.5 feet |
| | 10 | 2.5 | 10 | |
| | 10 | B | | |
| | 10 | | | Cobbels at 23.5 to 25.0 feet |
| | 12 | | NR | |
| -25 | 19 | | | |
| | 582.05 | | | |
| | 6 | | | Very Stiff to Hard Brown and Gray, Moist SILTY CLAY, trace gravel (CL/ML) |
| | 8 | 5.2 | 18 | |
| | 12 | B | | |
| | 7 | | | |
| | 8 | 3.8 | 18 | |
| -30 | 11 | B | | |
| | 577.05 | | | |
| | 6 | | | Medium Dense Brown and Gray, very Moist SILT (ML) |
| | 10 | | 23 | |
| | 12 | | | |
| | 574.05 | | | |
| | 5 | | | |
| | 9 | | 19 | Medium Dense Gray, Moist SILT (ML) |
| -35 | 13 | | | |
| | 10 | | | |
| | 12 | | 19 | |
| | 16 | | | |
| | 6 | | | |
| | 7 | | 19 | |
| 568.05 -40 | 10 | | | |

End of Boring

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 11/4/19

**ROUTE** I-55 and IL 59 **DESCRIPTION** IL-59 at Seil Rd **LOGGED BY** TEK

**SECTION** 2018-075-R **LOCATION** IL 59 NB off shoulder, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** TSP-2
**Station** 4019+35.743
**Offset** 52.71ft LT
**Ground Surface Elev.** 609.76 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 581.3 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 10 inches of Topsoil |
| | | | | 608.93 |
| | 2 | | | Brown, Gray, and Black, Moist FILL: SILTY CLAY, with gravel |
| | 2 3 | 1.0 P | 17 | |
| | 1 | | | |
| -5 | 2 2 | 0.8 B | 18 | |
| | 7 | | | Cobbles at 6.0 to 7.5 feet |
| | 6 7 | | NR | |
| | 5 | | | Cobbles at 8.5 to 10.0 feet |
| -10 | 7 7 | 2.0 P | 9 | |
| | 11 | | | Cobbles at 11.0 to 12.5 feet |
| | 9 7 | | 15 | |
| | 3 | | | Cobbles at 13.5 to 15.0 feet |
| -15 | 8 9 | 4.5 P | 16 | |
| | 4 | | | |
| | 5 9 | 4.2 B | 18 | |
| | 4 | | | |
| -20 | 6 9 | 4.0 B | 19 | |
| | | | | Brown, Gray, and Black, Moist FILL: SILTY CLAY, with gravel *(continued)* |
| | 5 | | | |
| | 6 8 | 2.7 B | 15 | |
| | | | | 586.26 |
| | 6 | | | Brown and Gray, Moist |
| -25 | 3 3 | | 9 | FILL: GRAVEL WITH SAND, with clay pockets |
| | | | | 583.76 |
| | 2 | | | Very Stiff |
| | 4 5 | 3.5 B | 25 | Brown and Gray, Moist SILTY CLAY, trace gravel (CL/ML) |
| | 5 | | | ▼ Cobbles at 28.5 to 30.0 feet |
| -30 | 7 10 | 3.1 B | 17 | |
| | 5 | | | |
| | 7 10 | 2.3 B | 24 | |
| | | | | 577.76 |
| | 3 | | | Very Stiff Gray, Moist SILTY CLAY, trace gravel (CL/ML) |
| -35 | 3 7 | 2.7 B | 24 | |
| | | | | 573.76 |
| | 12 | | | Medium Dense |
| | 13 12 | | 22 | Brown and Gray, Very Moist SILT (ML) |
| | | | | 571.26 |
| | 2 | | | Hard |
| -40 | 6 7 | 4.4 B | 21 | Gray, Moist SILTY CLAY LOAM (ML/CL) |
| | | | | 569.76 End of Boring |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/13/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** IL-59 (DDI) SB **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** IL-59 (DDI) SB, **SEC.** , **TWP.** , **RNG.** ,
**Latitude** , **Longitude**

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** TSP-3
**Station** 7015+32.5131
**Offset** 41.94ft RT
**Ground Surface Elev.** 600.00 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 579.5 ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| 599.50 | | | |
| 6 inches of Topsoil<br>Brown and Gray and Black, Moist<br>FILL: SILTY CLAY, trace gravel | 4 | | |
| | 5<br>7 | 2.7<br>B | 22 |
| | 3 | | |
| | 6<br>8 | 2.1<br>B | 23 |
| -5 | | | |
| 594.00 | | | |
| Brown and Gray, Moist<br>FILL: SILTY CLAY, trace gravel | 3 | | |
| | 4<br>5 | 2.3<br>B | 22 |
| | 2 | | |
| Sandy Gravel Seam at 9 feet | 2<br>2 | 2.3<br>B | 22 |
| -10 | | | |
| 589.00 | | | |
| Very Stiff to Hard<br>Gray, Moist to Very Moist<br>SILTY CLAY, trace gravel (CL/ML) | 4 | | |
| | 8<br>9 | 3.1<br>B | 26 |
| | 6 | | |
| | 6<br>11 | 5.2<br>B | 20 |
| -15 | | | |
| | 4 | | |
| | 6<br>6 | 2.5<br>B | 26 |
| | 3 | | |
| | 6<br>10 | 2.1<br>B | 17 |
| -20 | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|
| 579.50 | | | |
| Auger and split spoon refusal at 20.5 feet<br>End of Boring | | | |
| -25 | | | |
| -30 | | | |
| -35 | | | |
| -40 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

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# BORING LOG OS-01

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 592.00 ft
North: 1763561.07 ft
East: 1021400.37 ft
Station: 290+82.79
Offset: 82.12 LT

| Profile | Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|---|
| | 591.6 | 5-inch thick, black SILTY CLAY --TOPSOIL-- | | | | | | |
| | | Very stiff, black CLAY, trace organic matter --RDR 2-- | | | 1 | 2 4 5 | 2.30 B | 29 |
| | | | | | 2 | 2 3 4 | 1.00 P | 28 |
| | 587.3 | Stiff to very stiff, black to gray SILTY CLAY --RDR 2-- | 5 | | 3 | 3 5 6 | 1.00 P | 22 |
| | 583.0 | Medium dense, brown to gray, SANDY GRAVEL, few sandy loam lenses; moist to saturated --RDR 2-- | 10 | | 4 | 6 8 10 | NP | 14 |
| | 580.5 | Hard, brown to gray SILTY CLAY, trace gravel --RDR 2-- | | | 5 | 5 4 7 | 4.02 B | 21 |
| | | | 15 | | 6 | 4 7 12 | 4.18 B | 21 |
| | 576.5 | Medium dense, gray SILT; moist --RDR 2-- | | | 7 | 6 10 10 | NP | 21 |
| | 573.0 | Very stiff to hard, gray SILTY CLAY; moist --RDR 2 to 3-- | 20 | | 8 | 6 6 12 | 3.94 B | 23 |
| | | | | | 9 | 4 5 7 | 2.38 B | 31 |
| | 567.5 | Dense, gray GRAVEL; wet | 25 | | 10 | 10 39 21 | 4.92 B | 22 |
| | 565.5 | --AUGER REFUSAL-- Boring terminated at 26.50 ft | 30 | | 11 | 50/6" | | 14 |
| | | | 35 | | | | | |
| | | | 40 | | | | | |
| | | | 45 | | | | | |
| | | | 50 | | | | | |

## GENERAL NOTES

Begin Drilling: **10-08-2018** Complete Drilling: **10-08-2018**
Drilling Contractor: **Wang** Drill Rig: **D25 ATV [93%]**
Driller: **N&K** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **9.00 ft**
At Completion of Drilling: **6.00 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 OS-01A

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 597.23 ft
North: 1763578.02 ft
East: 1021486.18 ft
Station: 291+21.40
Offset: 3.81 LT

| Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|
| 596.1 | 14-inch thick ASPHALT --PAVEMENT-- | | | | | | |
| 594.2 | Dense, gray SANDY GRAVEL; moist --BASE COURSE-- | | | 1 | 10 19 17 | NP | 7 |
| 591.7 | Medium stiff, brown, black, and gray SILTY CLAY LOAM --FILL-- --RDR 1-- | 5 | | 2 | 7 4 3 | 0.75 P | 18 |
| 587.3 | Stiff to very stiff, brown, black, and gray CLAY to SILTY CLAY --RDR 2-- | | | 3 | 2 2 4 | 1.48 B | 27 |
| | --brown-- --trace gravel-- | 10 | | 4 | 2 3 3 | 2.46 B | 21 |
| 586.7 | Brown SAND; wet | | | | | | |
| 584.2 | Very stiff, gray SILTY CLAY LOAM to SILTY LOAM, trace gravel --RDR 2-- | | | 5 | 4 4 9 | 2.95 B | 12 |
| 579.2 | Very stiff to hard, gray SILTY CLAY to SILTY CLAY LOAM, trace gravel --RDR 2-- | 15 | | 6 | 4 4 7 | 2.46 B | 16 |
| | --<1-inch thick silt lenses-- | | | 7 | 7 8 13 | 4.92 B | 22 |
| 574.2 | Medium dense, gray SILT; damp to moist --RDR 2-- --<1-inch thick clay lenses-- | 20 | | 8 | 4 11 13 | NP | 19 |
| | | | | 9 | 11 9 19 | NP | 18 |
| | Very stiff, gray SILTY CLAY --RDR 2-- | 25 | | 10 | 8 8 11 | 3.28 B | 20 |

| Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|
| 571.7 | Medium dense, gray SILT; wet --RDR 2-- | | | 11 | 4 6 12 | NP | 18 |
| 569.2 | Dense, gray SILTY LOAM, trace gravel; moist --RDR 3 to 5-- | 30 | | 12 | 7 11 21 | NP | 11 |
| | --hard drilling; 30 to 31 feet-- | | | | | | |
| 566.2 | --AUGER REFUSAL-- | | | | | | |
| | Strong, light grayish gray, fair quality, DOLOSTONE; closely spaced, fresh, horizontal joints, with 0.05 - 0.2 inch opening, rough walls, and no infill. --RUN 1: 31.0 to 41.0 feet-- --RECOVERY = 94%-- --RQD = 55%-- | 35 | | 13 | CORE | | |
| | | 40 | | | | | |
| 556.2 | Boring terminated at 41.00 ft | | | | | | |
| | | 45 | | | | | |
| | | 50 | | | | | |

## GENERAL NOTES

Begin Drilling: **10-08-2018** Complete Drilling: **10-08-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **17D50T [81%]**
Driller: **J&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **3.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **10.00 ft**
At Completion of Drilling: **23.00 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 OS-03

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 590.72 ft
North: 1762477.18 ft
East: 1020825.94 ft
Station: 7005+20.63
Offset: 59.83 RT

| Depth (ft) | Elevation (ft) | SOIL AND ROCK DESCRIPTION | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|
| | 590.1 | 8-inch thick, black SILTY CLAY --TOPSOIL-- | | | | | |
| | | Hard, brown to gray SILTY CLAY, trace gravel <<R>--RDR 2-- | | 1 | 3 5 10 | 4.92 B | 19 |
| | 587.7 | --FILL-- | | | | | |
| | | Very stiff to hard, brown to gray CLAY to SILTY CLAY; moist --RDR 2-- | | 2 | 7 9 9 | 4.02 B | 21 |
| 5 | | | | | | | |
| | 583.7 | --saturated sand lens-- | ▽ | 3 | 6 7 10 | 3.69 B | 20 |
| | | | | 4 | 3 6 10 | 3.26 B | 21 |
| 10 | | | | | | | |
| | 580.2 | Very stiff, gray to brown SILTY CLAY LOAM, little gravel; moist --RDR 2-- | | 5 | 5 9 12 | 2.36 B | 22 |
| | | | | 6 | 5 12 12 | 2.46 B | 18 |
| 15 | | | | | | | |
| | 574.7 | | | | | | |
| | 574.2 | Very dense, gray DOLOSTONE fragments; wet --AUGER REFUSAL | ▽ | 7 | 50/6" | NP | 10 |
| | | Boring terminated at 16.50 ft | | | | | |
| 20 | | | | | | | |
| 25 | | | | | | | |

## GENERAL NOTES

Begin Drilling: **10-08-2018** Complete Drilling: **10-08-2018**
Drilling Contractor: **Wang** Drill Rig: **D25 ATV [93%]**
Driller: **N&K** Logger: **M. Sadowski** Checked by: **C. Marin**
Drilling Method: **2.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling ▽ **7.00 ft**
At Completion of Drilling ▼ **16.50 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 OS-04

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 607.11 ft
North: 1762439.67 ft
East: 1020906.15 ft
Station: 7005+38.81
Offset: 27.81 LT

| Depth (ft) | SOIL AND ROCK DESCRIPTION | Elevation (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|
| 0 | Black SILTY CLAY --TOPSOIL-- | 607.0 | | | | | |
| | Hard, gray SILTY CLAY LOAM, trace gravel | | | 1 | 6 10 10 | > 4.50 P | 11 |
| | --FILL-- | 604.4 | | | | | |
| | --RDR 3-- | 603.9 | | | | | |
| | Possible sand; wet spoon | | | 2 | 6 8 8 | > 4.50 P | 17 |
| 5 | Stiff to hard, brown and gray SILTY CLAY LOAM to SILTY CLAY, trace gravel | | | | | | |
| | --FILL-- | | | 3 | 3 5 50/3" | 1.72 B | 14 |
| | --RDR 2 to 4-- | | | | | | |
| | | | | 4 | 5 7 11 | 2.00 P | 14 |
| 10 | | | | | | | |
| | --brown, black and gray-- | | | 5 | 8 9 10 | 6.15 B | 18 |
| | | | | 6 | 4 6 7 | 2.46 B | 13 |
| 15 | | | | | | | |
| | Hard, brown and gray CLAY to SILTY CLAY, trace gravel | 591.6 | | | | | |
| | --RDR 2-- | | | 7 | 4 8 9 | 4.18 B | 20 |
| | | | | 8 | 3 6 11 | 4.43 B | 20 |
| 20 | | | | | | | |
| | Loose to medium dense, brown SANDY GRAVEL; saturated | 586.6 | | | | | |
| | --RDR 2-- | | | 9 | 2 3 4 | NP | 18 |
| | | | | 10 | 4 7 9 | NP | 11 |
| 25 | | | | | | | |
| | Hard, gray SILTY CLAY, silt lenses | 581.6 | | | | | |
| | --RDR 2 to 4-- | | | 11 | 5 7 12 | 5.82 B | 18 |
| | | | | 12 | 7 8 16 | 4.10 B | 22 |
| 30 | | | | | | | |
| | --hard drilling; 31 to 31.5 feet-- | | | | | | |
| | --AUGER REFUSAL-- | 575.5 | | 13 | 50/1" | NR | |
| | Boring terminated at 31.58 ft | | | | | | |
| 35 | | | | | | | |
| 40 | | | | | | | |
| 45 | | | | | | | |
| 50 | | | | | | | |

## GENERAL NOTES

Begin Drilling: **10-09-2018** Complete Drilling: **10-09-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **17D50T [81%]**
Driller: **J&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **3.00 ft**
At Completion of Drilling: **23.00 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 OS-08

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 595.52 ft
North: 1761560.00 ft
East: 1021054.50 ft
Station: 8022+78.37
Offset: 178.02 LT

| Profile | Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|---|
| | 594.9 | 8-inch thick, black SILTY CLAY LOAM | | | | | | |
| | | --TOPSOIL-- | | | | | | |
| | | Very stiff to hard, brown SILTY CLAY LOAM, trace gravel | | | 1 | 7 7 7 | 3.25 P | 20 |
| | | --FILL-- | | | | | | |
| | | --RDR 2 to 4-- | | | 2 | 6 7 9 | 4.00 P | 20 |
| | | | 5 | | | | | |
| | 590.0 | --hard drilling; 5 to 6 feet-- | | | | | | |
| | | Very stiff to hard, brown and gray CLAY to SILTY CLAY | | | 3 | 14 9 10 | 3.12 B | 21 |
| | | --RDR 2-- | | | | | | |
| | | | | | 4 | 3 5 7 | 2.05 B | 27 |
| | | | 10 | | | | | |
| | | - moist silt lenses-- | | | 5 | 5 8 11 | 4.51 B | 20 |
| | | --moist silt lenses-- | | | 6 | 5 8 11 | 2.87 B | 20 |
| | | | 15 | | | | | |
| | 579.2 | | | | | | | |
| | | Medium dense, gray SILT; moist | | | 7 | 6 12 13 | NP | 27 |
| | | --RDR 2-- | | | | | | |
| | 576.5 | | | | | | | |
| | | Very stiff, gray SILTY CLAY | | | 8 | 5 5 6 | 1.64 B | 25 |
| | 575.5 | --RDR 2-- | 20 | | | | | |
| | | --hard drilling; 20 to 21 feet-- | | | | | | |
| | | Very dense, gray SANDY GRAVEL; saturated | | | 9 | 50/3" | NP | 11 |
| | 574.0 | --WEATHERED BEDROCK-- | | | | | | |
| | | --AUGER REFUSAL-- | | | | | | |
| | | Boring terminated at 21.50 ft | | | | | | |
| | | | 25 | | | | | |

## GENERAL NOTES

Begin Drilling: **10-04-2018** Complete Drilling: **10-04-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **D25 ATV [93%]**
Driller: **N&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **20.00 ft**
At Completion of Drilling: **19.50 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 OS-08A

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 594.58 ft
North: 1761615.41 ft
East: 1021125.31 ft
Station: 8022+80.38
Offset: 88.12 LT

| Profile | Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|---|
| | 593.8 | 10-inch thick, black SILTY CLAY LOAM | | | | | | |
| | | --TOPSOIL-- | | | | | | |
| | | Stiff to hard, brown and gray SILTY CLAY | | | 1 | 3 5 5 | 1.72 B | 27 |
| | | --RDR 2-- | | | | | | |
| | | | 5 | | 2 | 4 6 9 | 3.12 B | 19 |
| | | | | | 3 | 9 10 12 | 2.00 P | 20 |
| | | --<1-inch thick sand seams; moist-- | | | 4 | 4 10 20 | 6.56 B | 21 |
| | | --trace gravel-- | 10 | | | | | |
| | | | | | 5 | 6 7 12 | 3.28 B | 22 |
| | | | 15 | | 6 | 6 8 11 | 3.94 B | 19 |
| | 577.6 | | | | 7 | 5 6 13 | 1.64 B | 25 |
| | | Gray SILT; wet | | | | | | |
| | 576.6 | --RDR 3-- | | | | | | |
| | | Medium dense, gray SANDY GRAVEL; saturated | | | 8 | 7 14 15 | NP | 14 |
| | | --RDR 3 to 5-- | 20 | | | | | |
| | | --hard drilling; 20 to 21 feet-- | | | | | | |
| | 573.6 | --AUGER REFUSAL-- | | | 9 | 50/0" | NR | |
| | | Boring terminated at 21.00 ft | | | | | | |
| | | | 25 | | | | | |

## GENERAL NOTES

Begin Drilling: **10-04-2018** Complete Drilling: **10-04-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **D25 ATV [93%]**
Driller: **N&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **17.00 ft**
At Completion of Drilling: **14.00 ft**
Time After Drilling: **NA**
Depth to Water: **NA**

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# BORING LOG OS-10

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 586.34 ft
North: 1760392.81 ft
East: 1021434.21 ft
Station: 8008+36.25
Offset: 63.83 LT

| Profile | Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|---|
| | 585.8 | 6-inch thick, black SILTY CLAY LOAM --TOPSOIL-- | | | | | | |
| | | Very stiff to hard, brown SILTY CLAY LOAM, trace gravel --FILL-- --RDR 2-- | | | 1 | 4 7 10 | 5.33 B | 20 |
| | | | 5 | | 2 | 5 5 6 | 2.21 B | 27 |
| | 580.8 | Medium dense, brown and gray SANDY GRAVEL; wet to saturated --RDR 2 to 3-- | | | 3 | 7 10 10 | NP | 10 |
| | | | 10 | | 4 | 6 18 9 | NP | 11 |
| | 575.8 | Medium dense, gray SILT; saturated --RDR 2-- | | | 5 | 9 11 13 | NP | 21 |
| | 573.3 | Very stiff, gray CLAY to SILTY CLAY --RDR 2-- | 15 | | 6 | 7 8 9 | 2.05 B | 30 |
| | 570.8 | Medium dense to very dense, gray SILTY LOAM; wet to damp --RDR 2 to 5-- | | | 7 | 9 11 12 | NP | 10 |
| | | | | | 8 | 17 39 50/4" | NP | 8 |
| | | --hard drilling; 19.5 to 20.5 feet-- | 20 | | | | | |
| | 565.8 | --possible cobbles-- --AUGER REFUSAL-- | | | 9 | 50/1" | NR | |
| | | Boring terminated at 20.58 ft | 25 | | | | | |

| 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: **10-05-2018** Complete Drilling: **10-05-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **D25 ATV [93%]**
Driller: **N&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **5.50 ft**
At Completion of Drilling: **8.00 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 OS-11

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 588.60 ft
North: 1760368.99 ft
East: 1021512.90 ft
Station: 8008+38.43
Offset: 18.36 RT

| Profile | Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|---|
| | 587.6 | 12-inch thick ASPHALT --PAVEMENT-- | | | | | | |
| | | Medium dense, gray SANDY GRAVEL; moist --BASE COURSE-- --RDR 3-- | | | 1 | 9 7 7 | NP | 6 |
| | 585.6 | Very stiff, gray SILTY CLAY, trace gravel | | | | | | |
| | 584.1 | --FILL-- --RDR 2-- | 5 | | 2 | 4 4 23 | 2.50 P | 12 |
| | 582.6 | --hard drilling, 4.5 to 6.0 feet-- --wet spoon-- Saturated SANDY GRAVEL | | | 3 | 2 3 5 | 1.23 B | 29 |
| | 580.6 | Stiff, brown and black SILTY CLAY LOAM, little gravel --RDR 2-- | | | | | | |
| | | Medium dense, brown and gray SANDY GRAVEL; wet to saturated --RDR 2-- | 10 | | 4 | 7 8 11 | NP | 14 |
| | | | | | 5 | 8 11 14 | NP | 12 |
| | 574.6 | Very stiff, gray SILTY CLAY --RDR 2-- | 15 | | 6 | 5 6 8 | 3.12 B | 19 |
| | | | | | 7 | 3 4 6 | 2.46 B | 30 |
| | 570.6 | Medium dense to very dense, gray SILTY LOAM, trace gravel; moist --RDR 2 to 3-- | 20 | | 8 | 8 10 14 | NP | 11 |
| | | | | | 9 | 19 24 50 | NP | 10 |
| | 566.1 | --hard drilling; 22.5 to 24.0 feet-- RDR 3 to 5-- | | | 10 | 50/0" | NR | |
| | 564.6 | Possible WEATHERED BEDROCK | 25 | | | | | |

| Profile | Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|---|
| | | --AUGER REFUSAL-- | | | | | | |
| | | Boring terminated at 24.00 ft | 30 | | | | | |
| | | | 35 | | | | | |
| | | | 40 | | | | | |
| | | | 45 | | | | | |
| | | | 50 | | | | | |

## GENERAL NOTES

Begin Drilling: **10-09-2018** Complete Drilling: **10-09-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **17D50T [81%]**
Driller: **J&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **2.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **5.50 ft**
At Completion of Drilling: **7.00 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 OS-14

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 590.88 ft
North: 1759542.19 ft
East: 1021351.53 ft
Station: 250+66.85
Offset: 4.51 LT

| Elevation (ft) | Depth (ft) | SOIL AND ROCK DESCRIPTION | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|
| 589.7 | 0 | 14-inch thick ASPHALT --PAVEMENT-- | | | | | |
| | | Medium dense to dense, gray and brown SANDY GRAVEL; moist --FILL-- --RDR 3-- | | 1 | 12 12 9 | NP | 8 |
| | | | | 2 | 7 17 14 | NP | 6 |
| 585.4 | 5 | Mediuim dense, brown, medium SAND, trace gravel; moist --RDR 2-- | | 3 | 3 5 5 | NP | 8 |
| | | | | 4 | 7 13 10 | NP | 6 |
| 580.4 | 10 | Medium dense, brown GRAVELLY SAND; wet to saturated --RDR 2-- | | 5 | 11 12 11 | NP | 17 |
| | | | | 6 | 5 13 13 | NP | 13 |
| 575.4 | 15 | Medium dense, gray, coarse SAND, trace gravel; saturated --RDR 2-- | | 7 | 5 8 9 | NP | 19 |
| | | | | 8 | 7 10 11 | NP | 22 |
| 570.4 | 20 | Dense to very dense, gray SILTY LOAM, trace to little gravel; moist --RDR 3 to 4-- | | 9 | 14 21 22 | NP | 8 |
| | | --rig chatter; cobbles-- | | | | | |
| | | --AUGER REFUSAL-- | | 10 | 6 22 50/3" | NP | 10 |
| 565.9 | 25 | | | | | | |

| Elevation (ft) | Depth (ft) | SOIL AND ROCK DESCRIPTION | Sample Type / recovery | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|---|
| | 30 | Strong, dark grayish gray, poor quality, shaly DOLOSTONE; closely spaced, fresh, horizontal joints, with 0.05 - 0.2 inch opening, slightly rough walls, and no infill. --RUN 1: 25.0 to 34.0 feet-- --RECOVERY = 91%-- --RQD = 50%-- | | 11 | CORE | | |
| 556.9 | | Boring terminated at 34.00 ft | | | | | |
| | 35 | | | | | | |
| | 40 | | | | | | |
| | 45 | | | | | | |
| | 50 | | | | | | |

## GENERAL NOTES

Begin Drilling: **10-08-2018** Complete Drilling: **10-08-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **17D50T [81%]**
Driller: **J&K** Logger: **F. Bozga** Checked by: **C. Marin**
Drilling Method: **3.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **10.50 ft**
At Completion of Drilling: **12.00 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 OS-15

**WEI Job No.: 555-16-04**

Client: **IDOT**
Project: **I-55 at IL 59**
Location: **Will County, IL**

Datum: NAVD 88
Elevation: 590.49 ft
North: 1759544.31 ft
East: 1021423.53 ft
Station: 250+66.75
Offset: 67.53 RT

| Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|
| 589.5 | 6-inch thick ASPHALT<br>6-inch thick CONCRETE<br>--PAVEMENT-- | | | | | |
| 588.7 | Hard, brown and black SILTY CLAY, trace gravel; damp<br>--FILL-- | | 1 | 8<br>20<br>13 | NP | 3 |
| 587.5 | Dense, gray SANDY GRAVEL; damp<br>--FILL-- | | 2 | 2<br>6<br>11 | 2.54<br>B | 20 |
| 586.0 | Very stiff, black, brown, and gray SILTY CLAY, trace gravel; damp<br>--FILL-- | 5 | 3 | 2<br>4<br>6 | NP | 8 |
| | Medium dense, brown GRAVELLY SAND; damp to saturated<br>--RDR 2-- | | 4 | 3<br>12<br>13 | NP | 5 |
| | | 10 | 5 | 5<br>9<br>10 | NP | 10 |
| | | | 6 | 6<br>8<br>8 | NP | 17 |
| | | 15 | 7 | 19<br>50/5" | NP | 10 |
| | | | 8 | 4<br>5<br>6 | NP | 17 |
| | | 20 | | | | |
| 570.0 | Medium dense, gray SILTY LOAM, little to some gravel; damp to moist<br>--RDR 2 to 3-- | | 9 | 12<br>12<br>13 | NP | 10 |
| 567.5 | Very dense, gray SANDY GRAVEL; saturated<br>--WEATHERED BEDROCK--<br>--RDR 3 to 5-- | | 10 | 30<br>21<br>50/2" | NP | 15 |
| 565.7 | | 25 | | | | |

| Elevation (ft) | SOIL AND ROCK DESCRIPTION | Depth (ft) | Sample No. | SPT Values (blw/6 in) | Qu (tsf) | Moisture Content (%) |
|---|---|---|---|---|---|---|
| | --AUGER REFUSAL--<br>Boring terminated at 24.75 ft | 30 | | | | |
| | | 35 | | | | |
| | | 40 | | | | |
| | | 45 | | | | |
| | | 50 | | | | |

## GENERAL NOTES

Begin Drilling: **10-02-2018** Complete Drilling: **10-02-2018**
Drilling Contractor: **Wang Testing Services** Drill Rig: **17D50T [81%]**
Driller: **J&K** Logger: **M. Ciapas** Checked by: **C. Marin**
Drilling Method: **3.25" ID HSA; auto hammer; boring grouted backfilled**

## WATER LEVEL DATA

While Drilling: **12.00 ft**
At Completion of Drilling: **11.00 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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**Illinois Department of Transportation**
Division of Highways
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# SOIL BORING LOG



Date 4/30/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Culvert **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** West of IL-59 SB

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.** Culvert Boring
**Station**

**BORING NO.** CB-01
**Station** 7002+3.6
**Offset** 28.00ft RT
**Ground Surface Elev.** 588.07 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** None ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| Blind drill to 20 feet | | | | |
| | -5 | | | |
| | -10 | | | |
| | -15 | | | |
| 568.07 | -20 | | | |
| Brown, Gray, and Black, Moist FILL: SILTY CLAY, trace sand and gravel | | 6 | | |
| | | 4 5 | | NR |
| | | 2 | | |
| | | 5 6 | 4.8 B | 16 |
| | -25 | | | |
| | | 6 | | |
| | | 9 10 | 5.8 B | 15 |
| 559.07 | | 5 | | |
| Hard Brown and Gray, Moist SILTY CLAY LOAM, trace sand (ML/CL) | | 7 13 | 4.6 B | 22 |
| | -30 | | | |
| 557.07 | | | | |
| Very Stiff Gray, Moist SILTY CLAY LOAM, trace sand (ML/CL) | | 4 | | |
| | | 6 9 | 2.9 B | 17 |
| | | 9 | | |
| | | 10 11 | 3.5 P | 18 |
| | -35 | | | |
| 549.57 | | | | |
| Medium Dense Gray, Moist SILTY LOAM, with sand and | | 9 | | |
| | | 11 12 | | 13 |
| 548.07 | -40 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG

**Date** 4/30/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Culvert **LOGGED BY** MH

**SECTION** 2018-075-R **LOCATION** West of IL-59 SB

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.** Culvert Boring
**Station**

**BORING NO.** CB-01
**Station** 7002+3.6
**Offset** 28.00ft RT
**Ground Surface Elev.** 588.07 **ft**

**Surface Water Elev.** N/A **ft**
**Stream Bed Elev.** N/A **ft**

**Groundwater Elev.:**
**First Encounter** None **ft**
**Upon Completion** N/A **ft**
**After** N/A **Hrs.** N/A **ft**

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| limestone fragments (ML) / End of Boring | -45 | | | |
| | -50 | | | |
| | -55 | | | |
| | -60 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/27/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Roadway Boring **LOGGED BY** PS

**SECTION** 2018-075-R **LOCATION** Ramp A

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** SGB-125
**Station** 1005+5.5
**Offset** 11.54ft LT
**Ground Surface Elev.** 614.06 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** None ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 4 inches of Asphalt 613.73 |
| | 6 | | | Gray, Moist FILL: SILTY CLAY, with sand, trace gravel and cobbles |
| | 4 5 | 1.0 B | 16 | |
| | 5 | | | |
| -5 | 5 6 | 2.1 B | 16 | |
| | 7 | | | |
| | 7 12 | 3.1 B | 15 | |
| | 4 | | | |
| -10 | 8 12 | 1.8 P | 11 | |
| | 4 | | | Cobbles from 10 to 11.5 feet |
| | 5 5 | 2.1 B | 12 | |
| | 3 | | | 600.56 Brown, Moist FILL: SILTY CLAY LOAM, with sand, trace gravel |
| -15 | 4 9 | 1.3 B | 15 | |
| | 8 | | | |
| -20 | 9 11 | 2.3 P | 14 | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | Brown, Moist FILL: SILTY CLAY LOAM, with sand, trace gravel *(continued)* |
| | 5 | | | |
| -25 | 2 3 | 1.0 P | 11 | 589.06 |
| | | | | End of Boring |
| -30 | | | | |
| -35 | | | | |
| -40 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/27/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Roadway Boring **LOGGED BY** PS

**SECTION** 2018-075-R **LOCATION** Ramp A

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** SGB-127
**Station** 916+71.8601
**Offset** 10.22ft RT
**Ground Surface Elev.** 619.07 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** None ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 6 inches of Asphalt 618.57 |
| | 4 | | | Gray, Moist FILL: SILTY CLAY LOAM, trace sand and gravel |
| | 3 5 | 1.3 B | 5 | |
| | 5 | | | |
| | 9 10 | 4.4 B | 11 | |
| -5 | | | | |
| | 4 | | | |
| | 5 9 | 4.3 P | 11 | |
| | 4 | | | |
| | 6 9 | 3.1 B | 11 | |
| -10 | | | | Cobbles at 9.5 feet |
| | 5 | | | |
| | 7 9 | 4.2 B | 12 | |
| | 10 | | | |
| | 10 14 | 1.3 B | 13 | Cobbles at 14 feet |
| -15 | | | | |
| | 9 | | | |
| | 9 11 | 1.0 P | 10 | |
| -20 | | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | Gray, Moist FILL: SILTY CLAY LOAM, trace sand and gravel *(continued)* |
| | 5 | | | |
| | 13 13 | 1.3 B | 22 | |
| -25 | | | | Cobbles at 24.5 feet 594.07 |
| | | | | End of Boring |
| -30 | | | | |
| -35 | | | | |
| -40 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/12/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** Roadway Boring **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** IL-59 DDI NB

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** SGB-171
**Station** 8009+73.7288
**Offset** 50.37ft RT
**Ground Surface Elev.** 595.08 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 584.1 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| 594.58 | | | | 6 inches of Topsoil |
| | 5 | | | Brown and Gray and Black, Moist to Very Moist FILL: SILTY CLAY, trace sand, trace organics |
| | 6 6 | 2.9 B | 19 | |
| | 2 | | | |
| | 3 4 | 1.3 B | 25 | |
| -5 | | | | |
| | 2 | | | |
| | 3 6 | 0.8 B | 40 | |
| 586.58 | | | | |
| | 2 | | | Stiff Brown and Gray, Very Moist SILTY CLAY, trace gravel (CL/ML) |
| | 2 2 | 1.3 B | 29 | |
| -10 | | | | |
| 584.08 ▼ | | | | |
| | 3 | | | Very Stiff to Hard Gray, Moist to Very Moist SILTY CLAY, trace gravel (CL/ML) |
| | 3 4 | 2.1 B | 12 | |
| | 3 | | | |
| | 4 6 | 2.3 B | 21 | Sand Seam at 14 feet |
| -15 | | | | |
| | 7 | | | |
| | 7 9 | 5.4 B | 21 | |
| | 3 | | | |
| | 3 7 | 2.1 B | 29 | |
| -20 | | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| 574.08 | | | | |
| | 10 | | | Medium Dense Gray, Moist GRAVEL, with sand and silt (GPS) |
| | 12 12 | | 10 | |
| 571.58 | | | | |
| | | | | Auger Refusal at 23.5 End of Boring |
| -25 | | | | |
| -30 | | | | |
| -35 | | | | |
| -40 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 3/13/20

**ROUTE** I-55 and IL 59 **DESCRIPTION** IL-59 (DDI) SB **LOGGED BY** AB

**SECTION** 2018-075-R **LOCATION** IL-59 (DDI) SB

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.**
**Station**

**BORING NO.** TSP-3
**Station** 7015+32.5131
**Offset** 41.94ft RT
**Ground Surface Elev.** 600.00 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** 579.5 ft ▼
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 6 inches of Topsoil 599.50 |
| | 4 | | | Brown and Gray and Black, Moist FILL: SILTY CLAY, trace gravel |
| | 5 7 | 2.7 B | 22 | |
| | 3 | | | |
| | 6 8 | 2.1 B | 23 | |
| -5 | | | | |
| | | | | 594.00 |
| | 3 | | | Brown and Gray, Moist FILL: SILTY CLAY, trace gravel |
| | 4 5 | 2.3 B | 22 | |
| | 2 | | | |
| | 2 2 | 2.3 B | 22 | Sandy Gravel Seam at 9 feet |
| -10 | | | | |
| | | | | 589.00 |
| | 4 | | | Very Stiff to Hard Gray, Moist to Very Moist SILTY CLAY, trace gravel (CL/ML) |
| | 8 9 | 3.1 B | 26 | |
| | 6 | | | |
| | 6 11 | 5.2 B | 20 | |
| -15 | | | | |
| | 4 | | | |
| | 6 6 | 2.5 B | 26 | |
| | 3 | | | |
| | 6 10 | 2.1 B | 17 | |
| -20 | | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | Auger refusal at 20.5 feet 579.50 ▼ |
| | | | | End of Boring |
| -25 | | | | |
| -30 | | | | |
| -35 | | | | |
| -40 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 12/19/19

**ROUTE** I-55 and IL 59 **DESCRIPTION** Roadway Boring **LOGGED BY** PS

**SECTION** 2018-075-R **LOCATION** IL-59 DDI SB

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.** _____
**Station** _____

**BORING NO.** SGB-83
**Station** 7023+90.3954
**Offset** 6.41ft RT
**Ground Surface Elev.** 605.75 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** None ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 6 inches of Asphalt<br>6 inches of Aggregate Base Course (605.25 / 604.75) | | 10 | | |
| Brown, Moist<br>FILL: SAND with gravel, some clay | | 14<br>6 | 3.1<br>B | 10 |
| (602.25) | | 6 | | |
| Brown and Gray, Moist<br>FILL: SILTY CLAY, trace sand and gravel | -5 | 6<br>7 | 3.8<br>B | 13 |
| | | 6 | | |
| | | 6<br>8 | 5.0<br>B | 15 |
| | | 4 | | |
| | -10 | 6<br>7 | 4.4<br>B | 13 |
| | | 4 | | |
| | | 5<br>6 | 1.9<br>B | 12 |
| | | 7 | | |
| (590.75) | -15 | 11<br>8 | 4.8<br>B | 11 |
| End of Boring | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

# Illinois Department of Transportation

Division of Highways
GSG Consultants

# SOIL BORING LOG



Date 12/19/19

**ROUTE** I-55 and IL 59 **DESCRIPTION** Roadway Boring **LOGGED BY** PS

**SECTION** 2018-075-R **LOCATION** IL-59 DDI SB

**COUNTY** WILL **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

**STRUCT. NO.** _____
**Station** _____

**BORING NO.** SGB-85
**Station** 7022+90.9746
**Offset** 3.60ft RT
**Ground Surface Elev.** 609.93 ft

**Surface Water Elev.** N/A ft
**Stream Bed Elev.** N/A ft

**Groundwater Elev.:**
**First Encounter** None ft
**Upon Completion** N/A ft
**After** N/A **Hrs.** N/A ft

| | DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) |
|---|---|---|---|---|
| 6 inches of Asphalt (609.43)<br>6 inches of Aggregate Base Course (608.93) | | 4 | | |
| Brown and Gray, Moist<br>FILL: SILTY CLAY, trace sand and gravel | | 4<br>6 | | 11 |
| | | 4 | | |
| | -5 | 8<br>8 | 5.8<br>B | 14 |
| | | 7 | | |
| | | 7<br>7 | 5.0<br>B | 16 |
| | | 5 | | |
| | -10 | 5<br>6 | 3.8<br>B | 16 |
| | | 5 | | |
| | | 8<br>9 | 4.8<br>B | 11 |
| | | 7 | | |
| (594.93) | -15 | 9<br>10 | 4.0<br>P | 13 |
| End of Boring | | | | |
| | -20 | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

# SOIL BORING LOG

Date 33N98N31

**ROUTE** M66 gnv M161 **DESCRIPTION** M161 SP TTMoUel M66 **LOGGED BY** mu

**SECTION** 9830\856\C **LOCATION** M66 SP off shoRavel

**COUNTY** r MF **DRILLING METHOD** uL: **HAMMER TYPE** : ( A)

**STRUCT. NO.** LS 811\7222
**Station** 0830D32.73

**BORING NO.** PLP\83
**Station** 926D13.60
**Offset** 380.16fyCA
**Ground Surface Elev.** 613.75 ft

**Surface Water Elev.** SN ft
**Stream Bed Elev.** SN ft

**Groundwater Elev.:**
**First Encounter** Sone ft
**Upon Completion** SN ft
**After** SN **Hrs.** SN ft

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | 7 inches of Aopsoia 613.37 |
| | | | | Plot nGr ey |
| | | | | , MFIL: ST : ST YC: wdF |
| | 4 | | | |
| | 7 | | 95 | |
| | 5 | | | 601.75 |
| | | | | Plot n gnv YlgbGwelb moisy |
| | | | | , MFIL MAOEF: OGJgce - lgUea |
| | 9 | | | |
| | 7 | 9.8 | 96 | |
| \6 | 2 | B | | |
| | 9 | | | |
| | 7 | 7.2 | 92 | |
| | 2 | P | | |
| | 4 | | | |
| | 7 | 7.0 | 43 | |
| \88 | 5 | P | | |
| | | | | 608.75 |
| | 9 | | | welb Lyff |
| | 6 | 9.1 | 98 | YlgbGmoisy |
| | 5 | P | | LMAOEF: OGJgce sgnv HEFNnF/ |
| | | | | |
| | 9 | | | 655.75 |
| | 6 | | 31 | meviR+ Tense yo Tense |
| \86 | 5 | | | YlgbGmoisy |
| | | | | LMAGt iyh cagb gnv Fi+ esyone |
| | | | | flg- + enys HnF/ |
| | 1 | | | |
| | 32 | | 30 | |
| | 34 | | | |
| | 37 | | | |
| | 37 | | 94 | |
| \98 | 31 | | | |

| DEPTH (ft) | BLOWS (/6") | UCS Qu (tsf) | MOIST (%) | Description |
|---|---|---|---|---|
| | | | | : R- Rl lefRsgagy98.6 feey 658.15 |
| | | | | : ppglenyWevlock gy98.6 feey |
| | | | | dnv of Polin- |
| \96 | | | | |
| \48 | | | | |
| \46 | | | | |
| \78 | | | | |

**The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)**
**The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)**

# APPENDIX C

# LABORATORY TEST RESUTLS

GSG CONSULTANTS, INC
ENGINEERS • SCIENTISTS • CONSTRUCTION MANAGERS
623 Cooper Court • Schaumburg, IL 60173
Tel: 630.994.2600 • Fax: 312.733.5612

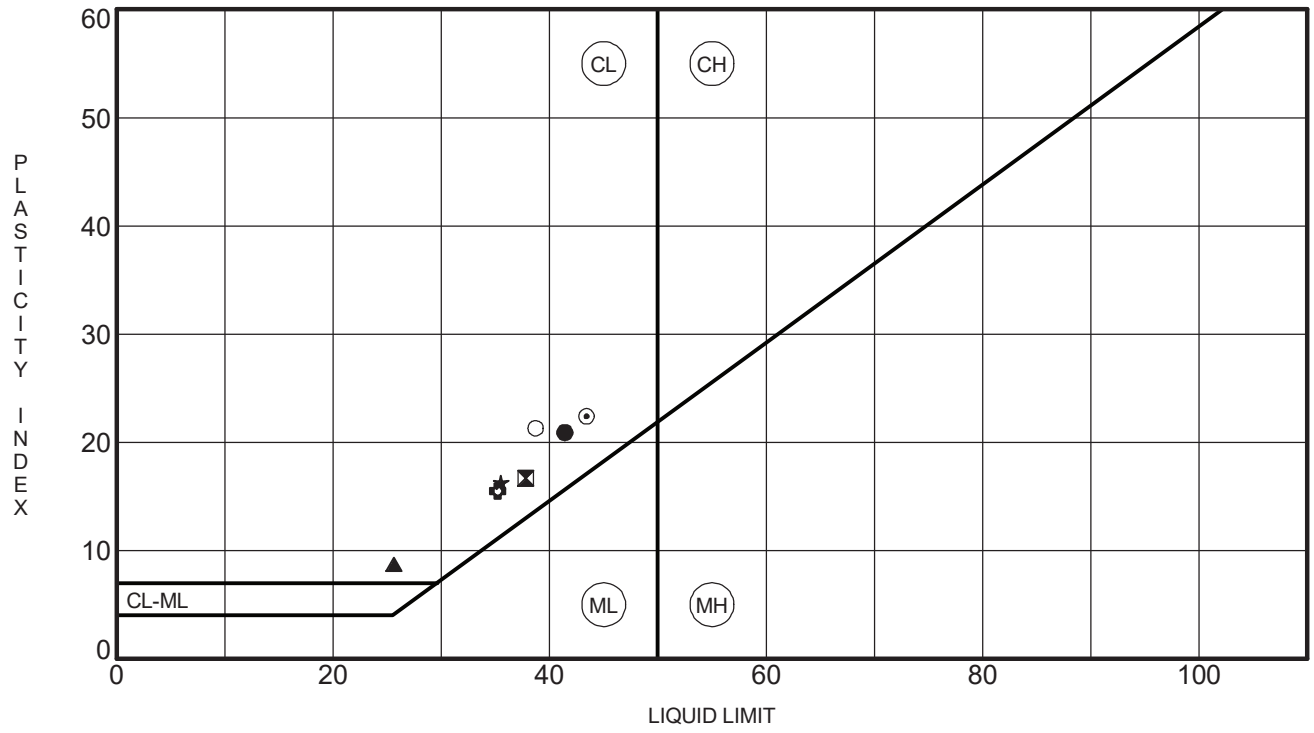


**Table D1a Test Results – Atterberg Limits**

| Boring ID | Sample Depth (ft) | Liquid Limit (%) | Plastic Limit (%) | Plasticity Index (%) | Soil Classification |
|---|---|---|---|---|---|
| BSB-01 | 8.5-11.0 | 41.1 | 20.5 | 20.9 | CL |
| OHS-05 | 3.5-6.0 | 37.8 | 21.1 | 16.7 | CL |
| OHS-07 | 23.5-26.0 | 25.6 | 16.9 | 8.7 | CL |
| OHS-17 | 11.0-13.5 | 43.4 | 21.0 | 22.4 | CL |
| RWB-07 | 8.5-11.0 | 35.5 | 19.2 | 16.3 | CL |
| SGB-171 | 18.5-21.0 | 35.2 | 19.7 | 15.5 | CL |
| TSP-2 | 26.0-28.5 | 38.7 | 17.4 | 21.3 | CL |

**Table D1b Test Results – Dry Unit Weight**

| Boring ID | Sample Depth (ft) | Dry Unit Weight (pcf) | Wet Unit Weight (pcf) | Soil Classification |
|---|---|---|---|---|
| BSB-01 | 11.0-12.5 | 137.6 | 158.7 | CL |
| OHS-17 | 8.5-10.0 | 119.7 | 132.9 | CL |
| RWB-07 | 11.0-12.5 | 104.7 | 129.0 | CL |
| SGB-171 | 16.0-17.5 | 95.6 | 123.6 | CL |




| | Specimen Identification | | LL | PL | PI | Fines | Classification |
|---|---|---|---|---|---|---|---|
| ● | **BSB-01** | **8.50** | **41.4** | **20.5** | **20.9** | | |
| ⊠ | **OHS-05** | **3.50** | **37.8** | **21.1** | **16.7** | | |
| ▲ | **OHS-07** | **23.50** | **25.6** | **16.9** | **8.7** | | |
| ★ | **OHS-17** | **8.50** | **35.5** | **19.2** | **16.3** | | |
| ⊙ | **RWB-07** | **11.00** | **43.4** | **21.0** | **22.4** | | |
| ✿ | **SGB-171** | **18.50** | **35.2** | **19.7** | **15.5** | | |
| ○ | **TSP-2** | **26.00** | **38.7** | **17.4** | **21.3** | | |

**Illinois Department of Transportation**
Division of Highways
GSG Consultants

## ATTERBERG LIMITS' RESULTS

Route: I-55 and IL 59

Section: 2018-075-R

County: WILL

ATTERBERG LIMITS 189-011 BENESCH.GPJ IL DOT.GDT 7/2/20

# APPENDIX D

# RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

**Table C-1: Summary of Soil Parameters Overhead Sign Structure, Sta. 219+00 I-55 NB** (OHS-01 and OHS-02)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 588-578 | Fill Silty Clay | 125 | 4,500 | 0 | 150 | 25 | 0.41 | 2.46 | 0.58 | 2,000 | 0.004 | Type A |
| 588-582 OHS-02 | Fill Sand with Gravel | 125 | 0 | 26 | 0 | 26 | 0.39 | 2.56 | 0.56 | 90 | N/A | Type C |
| 578-569 | Stiff to Hard Silty Clay | 136 | 2,500 | 0 | 250 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-2: Summary of Soil Parameters Overhead Sign Structure, Sta. 234+00 I-55 NB** (OHS-03 and OHS-04)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 588-581 | Fill Silty Clay | 125 | 4,370 | 0 | 150 | 25 | 0.41 | 2.46 | 0.58 | 2,000 | 0.004 | Type A |
| 588-585 OHS-04 | Fill Sand with Gravel | 125 | 0 | 26 | 0 | 26 | 0.39 | 2.56 | 0.56 | 125 | N/A | Type C |
| 582-580 OSH-03 | Medium Dense Sand | 129 | 0 | 34 | 0 | 34 | 0.28 | 3.53 | 0.44 | 60 | N/A | Type C |
| 581-576 | Very Stiff to Hard Silty Clay | 136 | 3200 | 0 | 320 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-3: Summary of Soil Parameters Overhead Sign Structure at IL 59 (DDI NB), Sta. 8025 +70** (OHS-05 and OSH-06)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 585-577 | Brown and Gray Very Stiff to Hard Silty Clay | 125 | 3,300 | 0 | 330 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |
| 577-569 | Gray Very Stiff Silty Clay | 125 | 2,900 | 0 | 290 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-4: Summary of Soil Parameters Cantilever Sign Structure Sign Structure at I-55 Entrance Ramp B from SB DDI, Sta. 1201+85**
(OHS-07)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 614-596 | Fill Silty Clay | 125 | 2,200 | 0 | 100 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 696-572 | Medium Stiff to Hard Silty Clay | 125 | 2,400 | 0 | 240 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-5: Summary of Soil Parameters Overhead Sign Structure at I-55 SB Exit Ramp A to DDI, Sta. 1002+20** (OHS-08 and RWB-07)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 595-590 | Fill Silty Clay | 125 | 1,600 | 0 | 75 | 25 | 0.41 | 2.46 | 0.58 | 500 | 0.007 | Type A |
| 590-572 | Stiff to Hard Silty Clay | 125 | 2,800 | 0 | 280 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-6: Summary of Soil Parameters Overhead Sign Structure at IL 59 (DDI NB), Sta. 8005+40** (OHS-09 and OS-04)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 607-593 | Fill Silty Clay | 125 | 3,700 | 0 | 125 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 593-575 | Very Stiff to Hard Silty Clay | 125 | 3,400 | 0 | 340 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |
| 586-581 OS-04 | Loose to Medium Dense Gravel | 122 | 0 | 34 | 0 | 34 | 0.28 | 3.53 | 0.44 | 90 | N/A | Type C |

**Table C-7: Summary of Soil Parameters Overhead Sign Structure at IL 59 (DDI SB), Sta. 7005+15** (OHS-10 and OS-03)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 582-586 | Fill Silty Clay | 139 | 4,100 | 0 | 150 | 25 | 0.41 | 2.46 | 0.58 | 2,000 | 0.004 | Type A |
| 586-581 OHS-10 | Fill Silty Clay | 137 | 3,500 | 0 | 125 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 587-572 | Very Stiff Silty Clay | 136 | 3,100 | 0 | 310 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-8: Summary of Soil Parameters Cantilever Sign Structure Sign Structure at I-55 SB, Sta. 306+00 (**OHS-11)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 595-590 | Fill Silty Clay | 133 | 2,500 | 0 | 100 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 590-577 | Soft to Hard Silty Clay | 132 | 2,400 | 0 | 240 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |
| 577-572 | Dense Silty Loam | 135 | 0 | 40 | 0 | 40 | 0.22 | 4.59 | 0.36 | 225 | N/A | Type C |
| 572-562 | Stiff to Very Stiff Silty Clay | 137 | 1,750 | 0 | 175 | 28 | 0.36 | 2.77 | 0.53 | 500 | 0.007 | Type A |

**Table C-9: Summary of Soil Parameters Overhead Sign Structure at I-55 SB, Sta. 315+00** (OHS-12 and OHS-13)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 601-597 OHS-12 | Fill Sand | 133 | 0 | 26 | 0 | 26 | 0.39 | 2.56 | 0.56 | 90 | N/A | Type C |
| 597-595 OHS-12 | Fill Silty Clay | 142 | 4,000 | 0 | 150 | 25 | 0.41 | 2.46 | 0.58 | 2,000 | 0.004 | Type A |
| 595-579 OHS-12 | Very Stiff to Hard Silty Clay | 140 | 3,500 | 0 | 350 | 28 | 0.36 | 2.77 | 0.53 | 2,000 | 0.004 | Type A |
| 579-572 OHS-12 | Dense to Very Dense Loam | 140 | 0 | 39 | 0 | 39 | 0.23 | 4.39 | 0.37 | 225 | N/A | Type C |
| 572-562 OHS-12 | Stiff to Hard Silty Clay | 137 | 3,500 | 0 | 350 | 28 | 0.36 | 2.77 | 0.53 | 2,000 | 0.005 | Type A |
| 578-560 OHS-13 | Medium Dense to Extremely Dense Loam | 135 | 0 | 39 | 0 | 39 | 0.23 | 4.39 | 0.37 | 225 | N/A | Type C |

**Table C-10: Summary of Soil Parameters Overhead Sign Structure at I-55 SB, Sta. 367+00** (OHS-14 and OHS-15)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 580-567 | Fill Sand | 129 | 0 | 26 | 0 | 26 | 0.39 | 2.56 | 0.56 | 90 | N/A | Type C |
| 576-571 OHS-14 | Fill Silty Clay | 133 | 1,250 | 0 | 50 | 25 | 0.41 | 2.46 | 0.58 | 500 | 0.007 | Type B |
| 567-560 | Very Stiff to Hard Silty Clay | 139 | 4,000 | 0 | 400 | 28 | 0.36 | 2.77 | 0.53 | 2,000 | 0.004 | Type A |
| 563-560 OHS-15 | Extremely Dense Loam | 151 | 0 | 45 | 0 | 45 | 0.17 | 5.82 | 0.29 | 125 | N/A | Type C |

**Table C-11: Summary of Soil Parameters Overhead Sign Structure at I-55 SB, Sta. 410+00** (OHS-16 and OHS-17)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 584-575 OHS-16 | Fill Sand | 130 | 0 | 26 | 0 | 26 | 0.39 | 2.56 | 0.56 | 90 | N/A | Type C |
| 575-564 OHS-16 | Stiff to Very Stiff Silty Clay | 138 | 1,900 | 0 | 190 | 28 | 0.36 | 2.77 | 0.53 | 950 | 0.007 | Type A |
| 582-578 OHS-17 | Fill Silty Clay | 130 | 2,000 | 0 | 75 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 578-573 OHS-17 | Fill Sand | 140 | 0 | 30 | 0 | 30 | 0.33 | 3.00 | 0.5 | 225 | N/A | Type C |
| 573-570 OHS-17 | Medium Stiff to Stiff Silty Clay | 134 | 1,350 | 0 | 135 | 28 | 0.36 | 2.77 | 0.53 | 500 | 0.007 | Type B |
| 570-564 OHS-17 | Loose to Medium Dense Sand | 129 | 0 | 36 | 0 | 36 | 0.26 | 3.85 | 0.41 | 60 | N/A | Type C |

**Table C-12: Summary of Soil Parameters Overhead Sign Structure at I-55 SB, Sta. 291+00** (OS-01 and OS-01A)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 595-567 | Medium Stiff to Hard Silty Clay | 134 | 2,700 | 0 | 270 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |
| 579-567 OS-01A | Medium Dense Silt and Silty Loam | 133 | 0 | 32 | 0 | 32 | 0.31 | 3.25 | 0.47 | 60 | N/A | Type C |

**Table C-13: Summary of Soil Parameters Overhead Sign Structure at IL 59 DDI & I-55 NB Entrance Ramp from SB DDI, Sta. 8014+35** (OS-08 and OS-08A)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 595-592 OS-08 | Fill Silty Clay | 137 | 3,600 | 0 | 125 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 592-575 | Stiff to Hard Silty Clay | 135 | 3,000 | 0 | 300 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-14: Summary of Soil Parameters Overhead Sign Structure at I-55 NB and SB DDI, Sta. 808+45** (OS-10 and OS-11)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 587-582 | Fill Silty Clay | 136 | 3,300 | 0 | 125 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 582-575 | Medium Dense to Extremely Dense Sand | 142 | 0 | 43 | 0 | 43 | 0.19 | 5.28 | 0.32 | 225 | N/A | Type C |
| 575-570 | Very Stiff Silty Clay | 133 | 2,500 | 0 | 250 | 32 | 0.31 | 3.25 | 0.47 | 1,260 | 0.005 | Type A |
| 570-565 | Medium Dense to Extremely Dense Silty Loam | 143 | 0 | 45 | 0 | 45 | 0.17 | 5.82 | 0.29 | 125 | N/A | Type C |

**Table C-15: Summary of Soil Parameters Overhead Sign Structure at I-55 NB, Sta. 250+65** (OS-14 and OS-15)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 590-585 | Fill Sand | 134 | 0 | 26 | 0 | 26 | 0.39 | 2.56 | 0.56 | 90 | N/A | Type C |
| 585-565 | Medium Dense to Dense Sand and Silty Loam | 132 | 0 | 35 | 0 | 35 | 0.27 | 3.69 | 0.43 | 90 | N/A | Type C |

**Table C-16: Summary of Soil Parameters Overhead Sign Structure at I-55 SB, Sta. 355+55** (OHS-18 and OHS-19)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| OHS-18 1-3 (578-576) | Fill Gray Sand | 140 | 0 | 26 | 0 | 26 | 0.39 | 2.56 | 0.56 | 225 | N/A | Type C |
| OHS-18 3-9 (576-570) | Fill Brown and Gray Silty Clay | 131 | 2,100 | 0 | 210 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| OHS-19 1-5 (575-571) | Fill Brown and Gray Silty Clay | 130 | 1,000 | 0 | 100 | 25 | 0.41 | 2.46 | 0.58 | 100 | 0.007 | Type B |
| OHS-19 5-8 (571-568) | Brown and Gray Medium Dense to Dense Sand | 135 | 0 | 39 | 0 | 39 | 0.23 | 4.39 | 0.37 | 90 | N/A | Type C |

**Table C-17: Summary of Soil Parameters Traffic Signal Structures, IL 59 at Seil Road** (CB-01, TSP-1 and TSP-2)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 609-583 | Fill Silty Clay | 125 | 3,000 | 0 | 100 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 583-569 | Very Stiff to Hard Silty Clay | 125 | 3,500 | 0 | 350 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |
| 577-568 TSP-1 | Medium Dense Silt | 127 | 0 | 37 | 0 | 37 | 0.25 | 4.02 | 0.4 | 60 | N/A | Type C |
| 588-559 CB-01 | Fill Silty Clay | 125 | 3,000 | 0 | 100 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 549-559 CB-01 | Very Stiff to Hard Silty Clay | 137 | 3,600 | 0 | 360 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

**Table C-18: Summary of Soil Parameters Traffic Signal Structures, West DDI traffic Signals** (TSP-3, SGB-125, SGB-127, and SGB-171)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 619-589 | Fill Silty Clay | 131 | 2,200 | 0 | 100 | 25 | 0.41 | 2.46 | 0.58 | 1,000 | 0.005 | Type A |
| 589-579 | Very Stiff to Hard Silty Clay | 136 | 3,200 | 0 | 320 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |

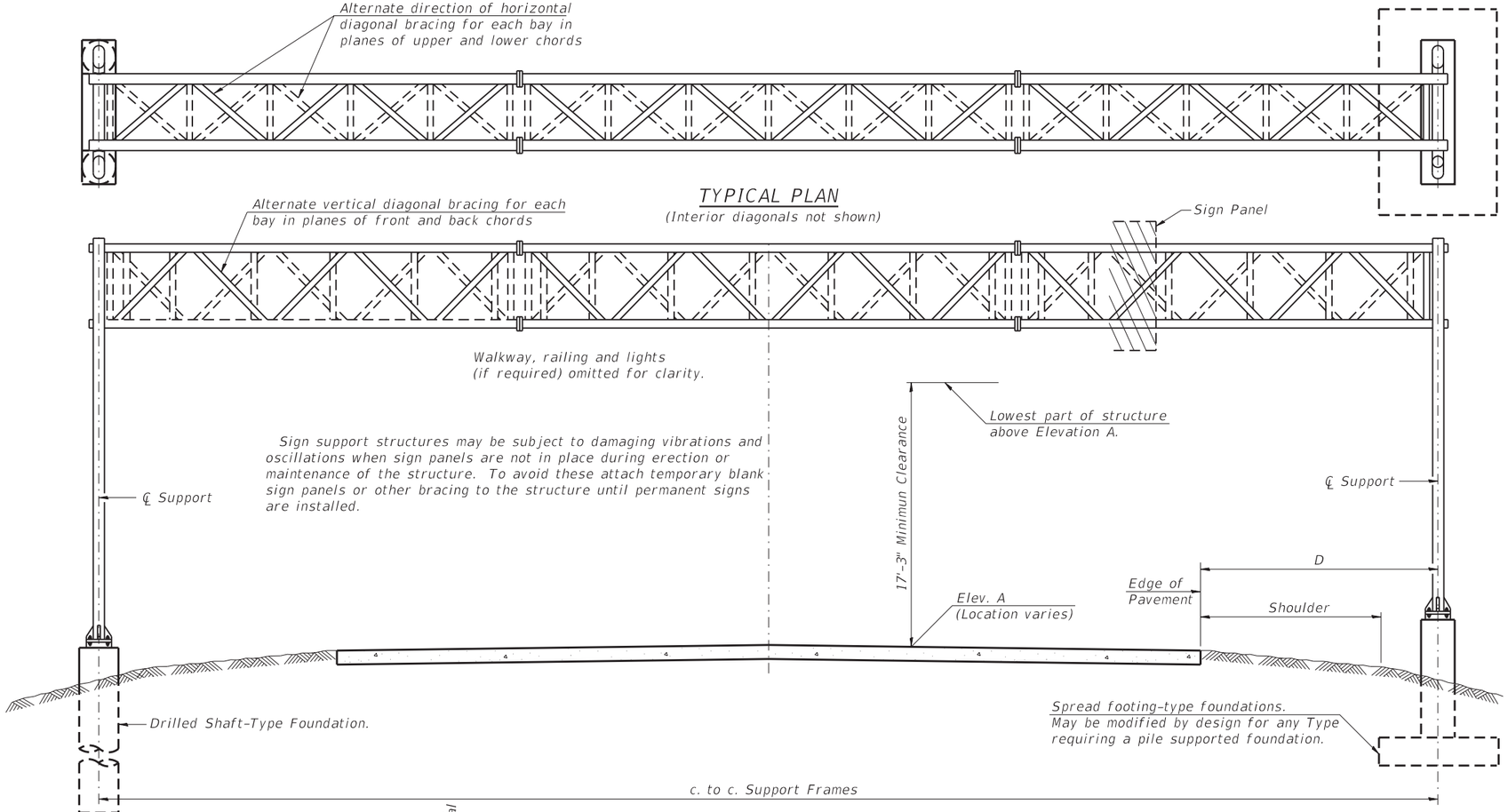
**Table C-19: Summary of Soil Parameters Traffic Signal Structures, East DDI traffic Signals** (SGB-83, SGB-85, and BSB-01)

| Depth (Elevation) in feet | Soil Description | In situ Unit Weight γ (pcf) | Undrained | | Drained | | | | | L-Pile Parameters | | OSHA Soil Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cohesion c (psf) | Friction Angle ϕ (°) | Cohesion c (psf) | Friction Angle ϕ (°) | Active Earth Pressure Coefficient ($K_p$) | Passive Earth Pressure Coefficient ($K_p$) | At Rest Earth Pressure Coefficient ($K_o$) | Coefficient of Lateral Modulus of Subgrade Reaction (pci) | Soil Strain ($\varepsilon_{50}$) | |
| 610-580 | Fill Silty Clay | 125 | 4,100 | 0 | 150 | 25 | 0.41 | 2.46 | 0.58 | 2,000 | 0.004 | Type A |
| 580-577 | Very Stiff Silty Clay | 125 | 2,900 | 0 | 290 | 28 | 0.36 | 2.77 | 0.53 | 1,000 | 0.005 | Type A |
| 577-571 | Medium Dense to Dense Silt | 136 | 0 | 41 | 0 | 41 | 0.21 | 4.81 | 0.34 | 90 | N/A | Type C |

# APPENDIX E

# IDOT SIGN and TRAFFIC SIGNAL

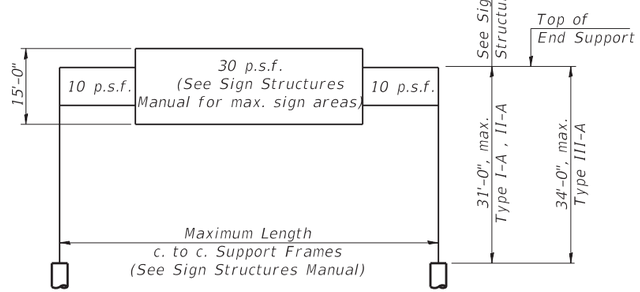
# STRUCTURE FOUNDATION STANDARDS




## TYPICAL PLAN

(Interior diagonals not shown)

Sign support structures may be subject to damaging vibrations and oscillations when sign panels are not in place during erection or maintenance of the structure. To avoid these attach temporary blank sign panels or other bracing to the structure until permanent signs are installed.




## DESIGN WIND LOADING DIAGRAM

Parameters shown are basis for I.D.O.T. Standards and Sign Manual Tables. Installations not within dimensional limits shown require special analysis for all components.

## TYPICAL ELEVATION

(Looking at Face of Signs**)

Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

| Structure Number | Station | Design Truss Type | c. to c. Supports | Elev. A | Dim. D | Height of Tallest Sign | Total Sign Area |
|---|---|---|---|---|---|---|---|
| | NB I-55, 219+00 | I-A | 80'-0" | | | | |
| | NB I-55, 234+00 | I-A | 80'-0" | | | | |
| | I-55 SB Ramp A to DDI, 1002+20 | I-A | 75'-0" | | | | |
| | IL 59 (DDI SB), 7005+15 | I-A | 85'-0" | | | | |
| | SB I-55, 376+00 | I-A | 65'-0" | | | | |
| | SB I-55, 410+00 | I-A | 65'-0" | | | | |
| | NB I-55, 250+65 | II-A | 90'-0" | | | | |
| | I-55 NB Exit Ramp C to NB and SB DDI, 808+45 | II-A | 100'-0" | | | | |
| | IL 59 (DDI NB), 8025+70 | II-A | 90'-0" | | | | |
| | IL 59 SB DDI & I 55 NB Entrance Ramp from SBDDI, 8014+35 | II-A | 105'-0" | | | | |
| | IL 59 (DDI NB), 8005+40 | II-A | 95'-0" | | | | |
| | SB I-55, 291+00 | II-A | 90'-0" | | | | |
| | SB I-55, 315+00 | II-A | 90'-0" | | | | |

**Looking upstation for structures with signs both sides.

* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.

## GENERAL NOTES

DESIGN: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. ("AASHTO Specifications")

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. ("Standard Specifications")

LOADING: 90 M.P.H. WIND VELOCITY

WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load.

DESIGN STRESSES:
Field Units
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (reinforcement)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 and D1.2 Structural Welding Codes (Steel and Aluminum) and the Standard Specificiations.

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53. All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

FASTENERS FOR ALUMINUM TRUSSES: All bolts noted as "high strength" must satisfy the requirements of AASHTO M164 (ASTM A325), or approved alternate, and must have matching lock nuts. Threaded studs for splices (if Members interfere) must satisfy the requirements of ASTM A449, ASTM A193, Grade B7, or approved alternate, and must have matching lock nuts. Bolts and lock nuts not required to be high strength must satisfy the requirements of ASTM A307. All bolts and lock nuts must be hot dip galvanized per AASHTO M232. The lock nuts must have nylon or steel inserts. A stainless steel flat washer conforming to ASTM A240 Type 302 or 304, is required under both head and nut or under both nuts where threaded studs are used. High strength bolt installation shall conform to Article 505.04 (f) (2)d of the IDOT Standard Specifications for Road and Bridge Construction. Rotational capacity ("ROCAP") testing of bolts will not be required.

U-BOLTS AND EYEBOLTS: U-Bolts and Eyebolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts and Eyebolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless steel flat washer conforming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to ASTM F1554 Gr. 105.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Concrete Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for Concrete Foundations and Drilled Shaft Concrete Foundations shall include reinforcement bars complete in place.

## TOTAL BILL OF MATERIAL

| ITEM | UNIT | TOTAL |
|---|---|---|
| OVERHEAD SIGN STRUCTURE SPAN TYPE I-A | Foot | |
| OVERHEAD SIGN STRUCTURE SPAN TYPE II-A | Foot | |
| OVERHEAD SIGN STRUCTURE SPAN TYPE III-A | Foot | |
| OVERHEAD SIGN STRUCTURE WALKWAY TYPE A | Foot | |
| CONCRETE FOUNDATIONS | Cu. Yds. | |
| DRILLED SHAFT CONCRETE FOUNDATIONS | Cu. Yds. | |
| | | |

OS-A-1

2-17-2017


benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450
Job No. 10740

USER NAME = ablaszczyk | DESIGNED - EO | REVISED -
PLOT SCALE = | CHECKED - DTS | REVISED -
PLOT DATE = 2/26/2020 | DRAWN - AJB | REVISED -
CHECKED - DTS | REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN STRUCTURE - GENERAL PLAN AND ELEVATION
STRUCTURE NO. 099-4666
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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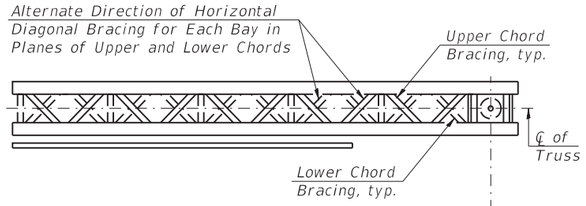
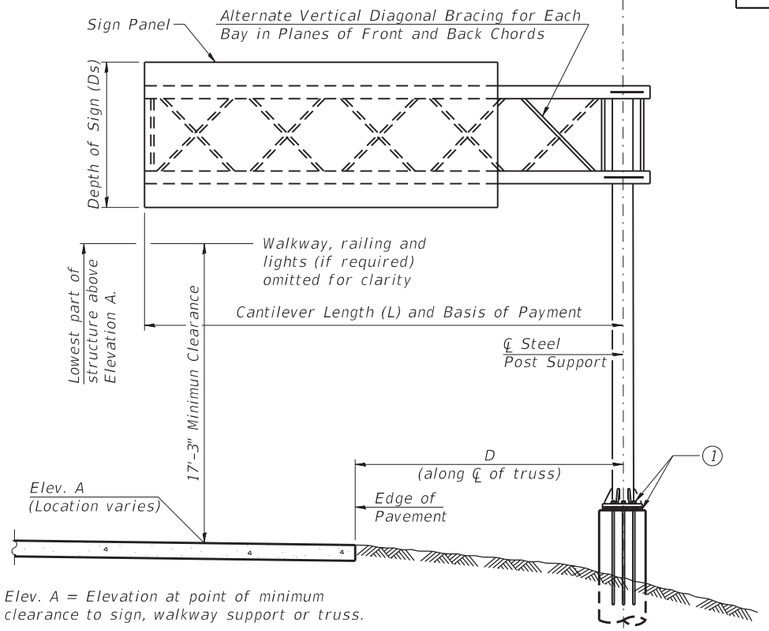



## TYPICAL PLAN

(Walkway not shown)




Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

## TYPICAL ELEVATION

Looking in Direction of Traffic

Sign support structures may be subject to damaging vibrations and oscillations when sign panels are not in place during erection or maintenance of the structure. To avoid these vibrations and oscillations, consideration should be given to attaching temporary blank sign panels to the structure.

| Structure Number | Station | Design Truss Type | Cantilever Length (L) | Elev. A | Dim. D | Ds | Total Sign Area |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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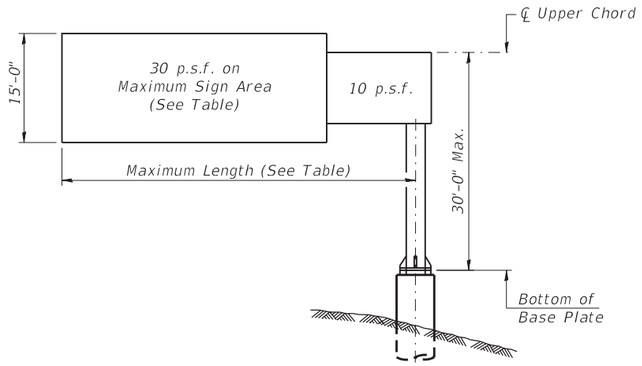
| Truss Type | Maximum Sign Area | Maximum Length |
|---|---|---|
| I-C-A | 170 Sq. Ft. | 25 Ft. |
| II-C-A | 340 Sq. Ft. | 30 Ft. |
| III-C-A | 400 Sq. Ft. | 40 Ft. |




## DESIGN WIND LOADING DIAGRAM

Parameters shown are basis for I.D.O.T. Standards Installations not within dimensional limits shown require special analysis for all components.

Note:
Trusses shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The contractor is responsible for maintaining the configuration and protection of the trusses.

(1) After adjustments to level truss and insure adequate vertical clearance, all top and leveling nuts shall be tightened against the base plate with a minimum torque of 200 lb.-ft. Stainless steel mesh shall then be placed around the perimeter of the base plate. Secure to base plate with stainless steel banding.

* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.

## GENERAL NOTES

DESIGN: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. ("AASHTO Specifications")

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. ("Standard Specifications")

LOADING: 90 M.P.H. WIND VELOCITY

WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load.

DESIGN STRESSES:
Field Units
f' = 3,500 p.s.i.
fy = 60,000 p.s.i. (reinforcement)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 and D1.2 Structural Welding Codes (Steel and Aluminum) and the Standard Specificiations.

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

FASTENERS FOR ALUMINUM TRUSSES: All bolts noted as "high strength" must satisfy the requirements of AASHTO M164 (ASTM A325), or approved alternate, and must have matching lock nuts. Threaded studs for splices (if Members interfere) must satisfy the requirements of ASTM A449, ASTM A193, Grade B7, or approved alternate, and must have matching lock nuts. Bolts and lock nuts not required to be high strength must satisfy the requirements of ASTM A307. All bolts and lock nuts must be hot dip galvanized per AASHTO M232. The lock nuts must have nylon or steel inserts. A stainless steel flat washer conforming to ASTM A240 Type 302 or 304, is required under both nuts where threaded studs are used. High strength bolt installation shall conform to Article 505.04 (f) (2)d of the IDOT Standard Specifications for Road and Bridge Construction. Rotational capacity ("ROCAP") testing of bolts will not be required.

U-BOLTS AND EYEBOLTS: U-Bolts and Eyebolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts and Eyebolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless steel flat washer conforming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to ASTM F1554 Gr. 105.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Concrete Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for Drilled Shaft Concrete Foundations shall include reinforcement bars complete in place.

## TOTAL BILL OF MATERIAL

| ITEM | UNIT | TOTAL |
|---|---|---|
| OVERHEAD SIGN STRUCTURE CANTILEVER TYPE I-C-A | Foot | |
| OVERHEAD SIGN STRUCTURE CANTILEVER TYPE II-C-A | Foot | |
| OVERHEAD SIGN STRUCTURE CANTILEVER TYPE III-C-A | Foot | |
| OVERHEAD SIGN STRUCTURE WALKWAY, TYPE A | Foot | |
| | | |
| | | |
| DRILLED SHAFT CONCRETE FOUNDATIONS | Cu. Yds. | |

OSC-A-1 2-17-2017

benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES – GENERAL PLAN AND ELEVATION**
**STRUCTURE NO. 099-4666**
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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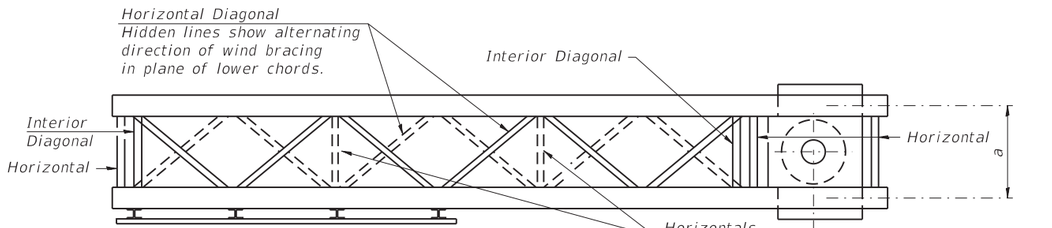
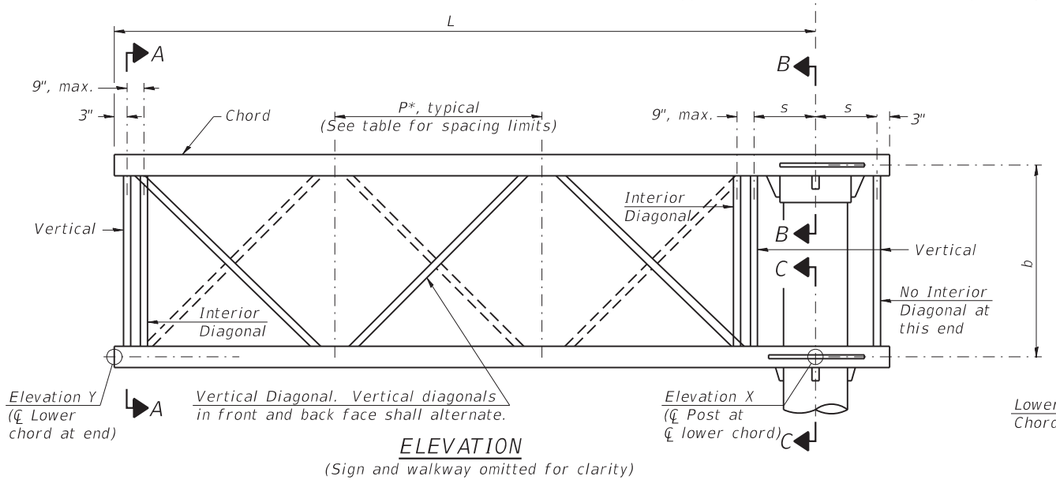



PLAN

(Walkway not shown)




ELEVATION

(Sign and walkway omitted for clarity)

TYPICAL TRUSS UNIT

For Section B-B and Section C-C, see Base Sheet 0SC-A-3.

Note:
There are twice as many horizontal diagonals as there are vertical diagonals.

TRUSS UNIT TABLE

| Truss Type | Dimension "a" | Dimension "b" | Dimension "s" | Limits for Panel Spacing (P)* | Up. & Low. Chord | | Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals | |
|---|---|---|---|---|---|---|---|---|
| | | | | | O.D. | Wall | O.D. | Wall |
| I-C-A | 24" | 54" | 16" | 36" min. to 48" max. | 5" | 5/16" | 2½" | 5/16" |
| II-C-A | 36" | 66" | 21" | 42" min. to 54" max. | 6½" | 5/16" | 3¼" | 5/16" |
| III-C-A (35' Max.) | 36" | 84" | 21" | 48" min. to 66" max. | 7" | ⅜" | 3½" | ⅜" |
| III-C-A (>35' to 40') | 36" | 84" | 21" | 48" min. to 66" max. | 8" | ⅜" | 3½" | ⅜" |

$*P = \frac{L-s-3"}{\#\ Panels}$

| Structure Number | Station | Truss Type | Design Length (L) | Number of Panels Per Unit | Panel Length (P)* |
|---|---|---|---|---|---|
| | I-55 NB Entrance Ramp B from SB DDI, 1201+85 | III-C-A | 40'-0" | | |
| | NB I-55, 306+00 | III-C-A | 35'-0" | | |
| | | | | | |
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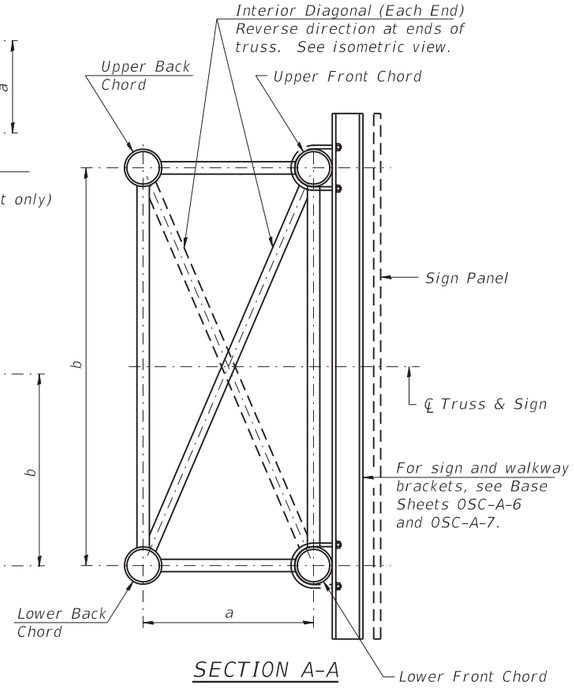
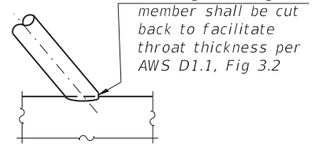
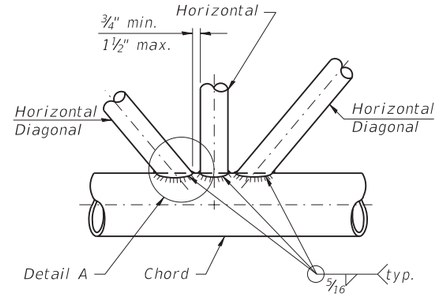


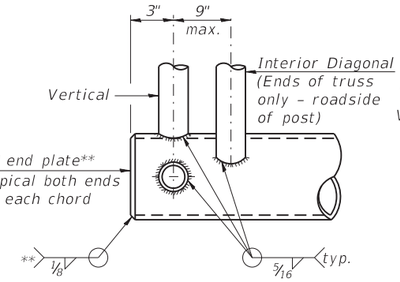

SECTION A-A




DETAIL A

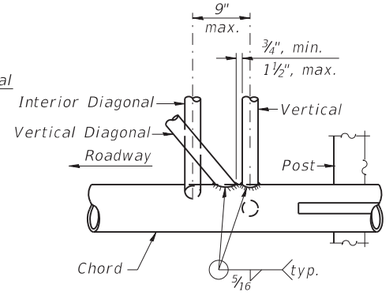



TRUSS INTERIOR JOIN DETAIL

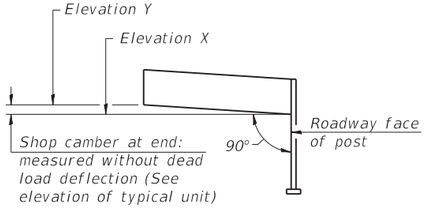



CANTILEVER END JOINT DETAIL

** Contractor may alternatively use standard aluminum drive-fit cap to close ends. ½" Ø Drain hole in end plate / drive-fit cap.




POST END JOINT DETAIL




CAMBER DIAGRAM

(For Fabrication Only)

SHOP CAMBER TABLE

| Unit Length (L) | Shop Camber at End |
|---|---|
| 15' | 1½" |
| 16'-17' | 1¾" |
| 18'-20' | 2" |
| 21'-22' | 2¼" |
| 23'-25' | 2½" |
| 26'-27' | 2¾" |
| 28'-30' | 3" |
| 31'-32' | 3¼" |
| 33'-35' | 3½" |
| 36'-37' | 4" |
| 38'-40' | 4½" |




ISOMETRIC VIEW

TYPICAL TRUSS UNIT

ASTM B221 Alloy 6061 Temper T6

0SC-A-2 2-17-2017

benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = oblaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES – TRUSS DETAILS**
**STRUCTURE NO. 099-4666**

SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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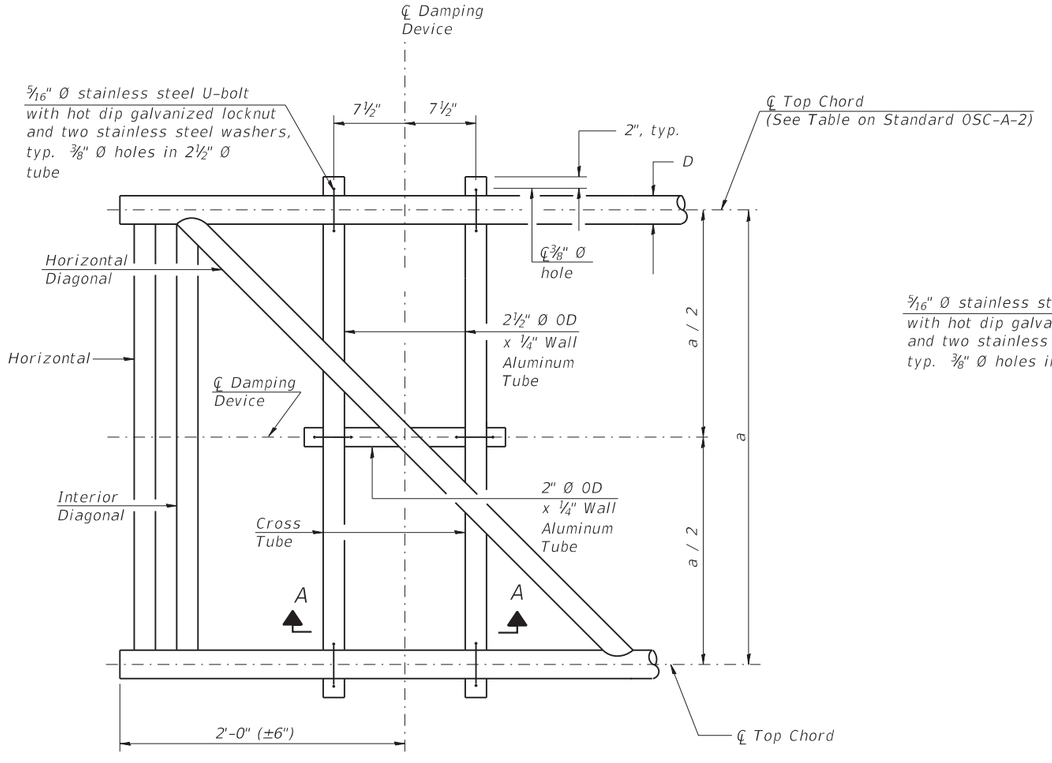
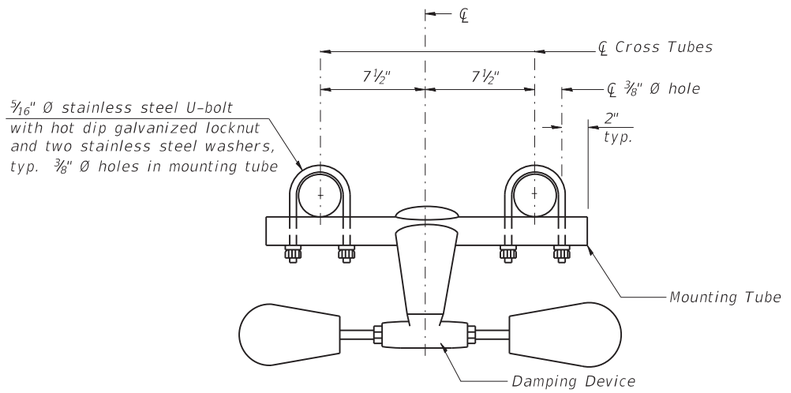
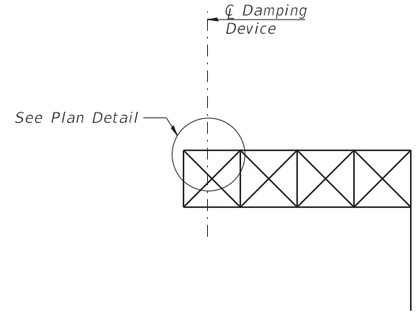



PLAN DETAIL




TRUSS DAMPING DEVICE CONNECTION DETAIL



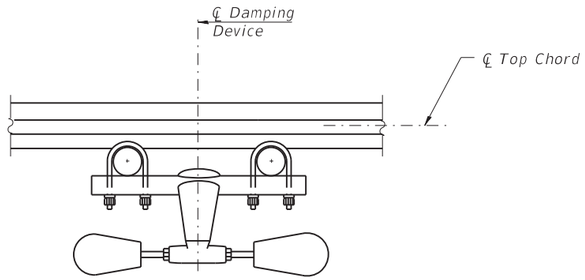

ELEVATION

Aluminum Cantilever Sign Structure

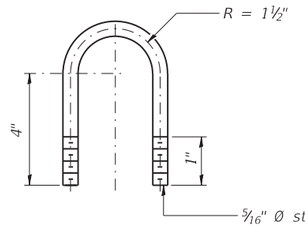
## GENERAL NOTES

**Damper:** One damper per truss. (31 lbs. Stockbridge-Type Aluminum-29" minimum between ends of weights)

**Materials:** Aluminum tubes shall be ASTM B221 alloy 6061 temper T6

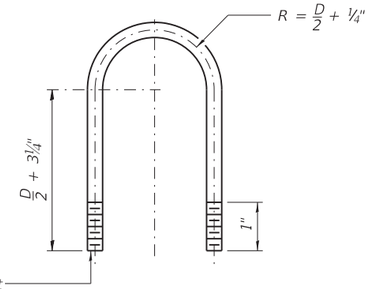



SECTION A-A




DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL

(Typical)




TOP CHORD TO CROSS TUBE U-BOLT DETAIL

(Typical)

OSC-A-D 2-17-2017


benesch
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Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CANTILEVER SIGN STRUCTURES – DAMPING DEVICE
STRUCTURE NO. 099-4666
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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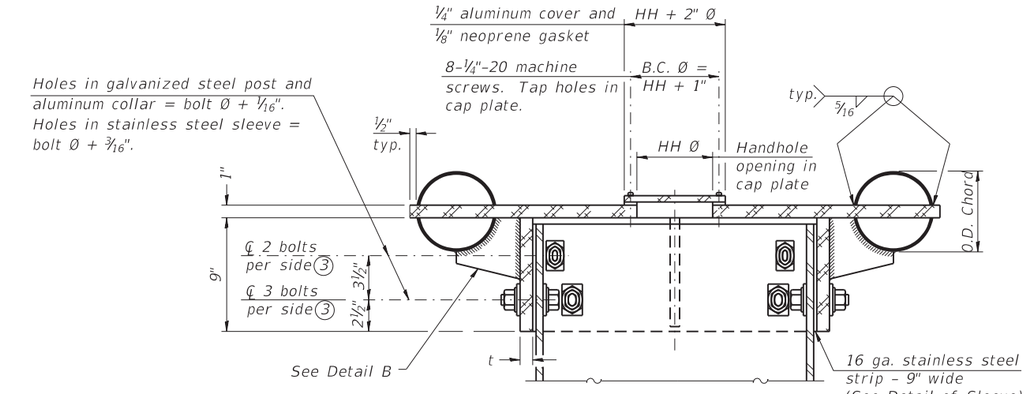
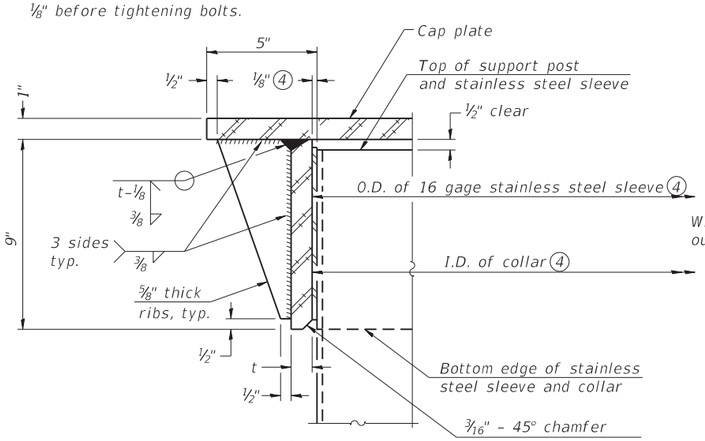



## SECTION B-B

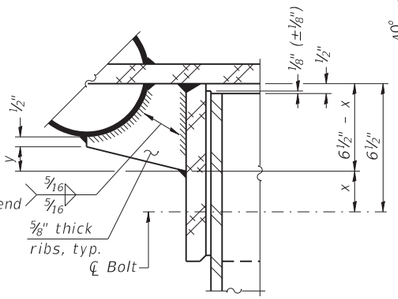
Bolts, washers (including contoured washers), and locknuts shall be stainless steel.

④ Collar I.D. shall be manufactured to correspond to O.D. of actual galvanized post and stainless steel sleeve plus ⅛" (±1/16"). Maximum gap between post and collar at any location equals ⅛" before tightening bolts.




## DETAIL A

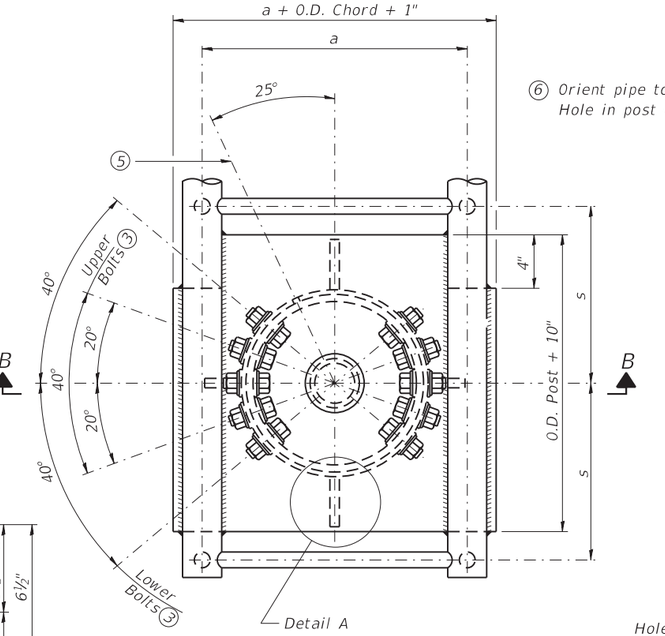
(Two locations)




## DETAIL B

Two locations

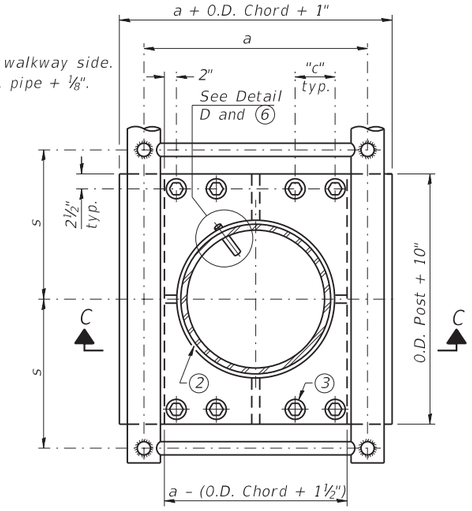
(For details not shown, see Detail C)




## PLAN VIEW - TOP OF COLUMN

⑤ Optional full penetration weld in collar. (Two locations maximum....(180° apart)....X-ray or UT 100%)

⑥ Orient pipe toward walkway side. Hole in post = 0.D. pipe + ⅛".

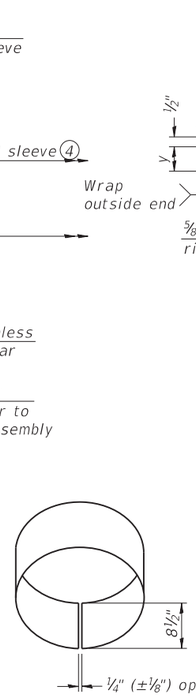



## SECTION THRU POST ABOVE LOWER CHORDS



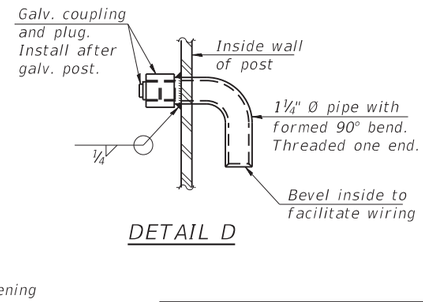

## CONTOURED WASHERS

| Bolt Size | Contoured Washers | |
|---|---|---|
| | Hole Dia. | B |
| ⅞" | 1" | 2½" |
| 1" | 1⅛" | 3" |
| 1¼" | 1⅜" | 3¼" |

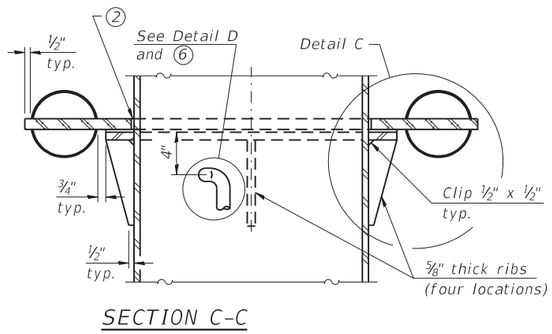



## DETAIL OF STAINLESS STEEL SLEEVE

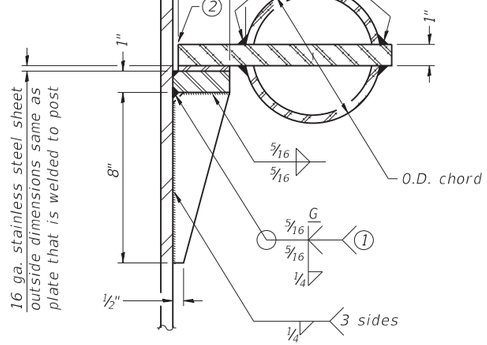
Weld to post after galvanizing. (Prepare post surface to insure tight, uniform fit and allow welding.) Welds to be 1½" long at 6" cts. along top edge and at ¼" opening.




## DETAIL D




## SECTION C-C




## DETAIL C

| Truss Type | Post Size | Upper & Lower Connection Bolt Diameter ③ | Lower Juncture Bolt Spacing Dimension "c" ③ | Opening in Cap Plate "HH" | Collar Thickness (t) | Side Ribs | |
|---|---|---|---|---|---|---|---|
| | | | | | | x | y |
| I-C-A | 16" Ø (83#/') | ⅞" | 3¼" | 8" | ⅝" | 1¾" | 2¼" |
| II-C-A | 24" Ø (125#/') | 1" | 3½" | 12" | ⅞" | 2" | 1¼" |
| III-C-A (35' max.) | 24" Ø (125#/') | 1¼" | 3½" | 12" | ⅞" | 2" | 1" |
| III-C-A (>35' to 40') | 24" Ø (171#/') | 1¼" | 3½" | 12" | ⅞" | 2" | 1" |

① Grind top if required to fully seat aluminum plate and stainless steel sheet.

② After tightening lower connection bolts, fill gap with non-hardening, silicone caulk suitable for exterior exposure and acceptable to the Engineer. Cost is included in Overhead Sign Structure Cantilever.

③ Upper and lower connection bolts in collar and bolts at lower chord connection shall be high strength with matching locknuts. Connection bolts shall have 2 stainless steel flat washers each.

OSC-A-3

2-17-2017

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Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES - JUNCTURE DETAILS**
**STRUCTURE NO. 099-4666**

SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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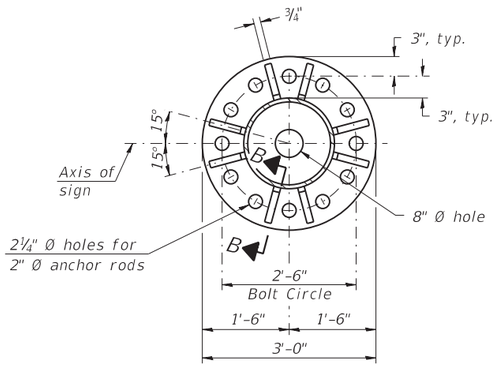
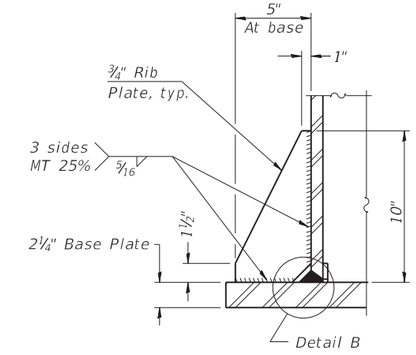
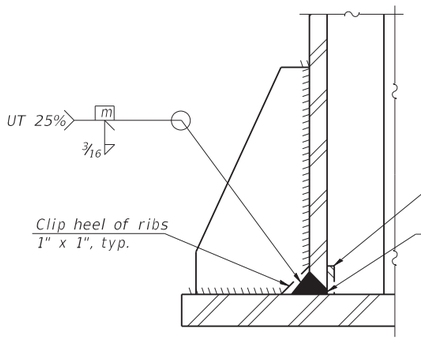



## SECTION A-A

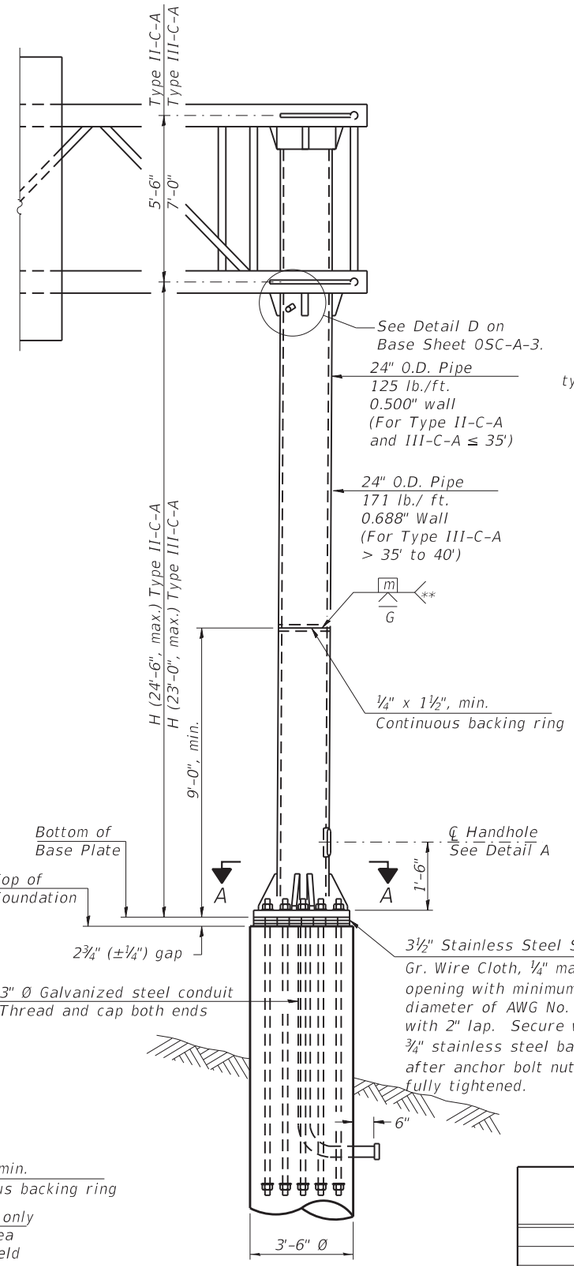



## SECTION B-B



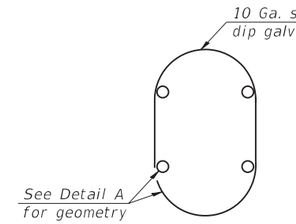

## DETAIL B

(Typical rib)

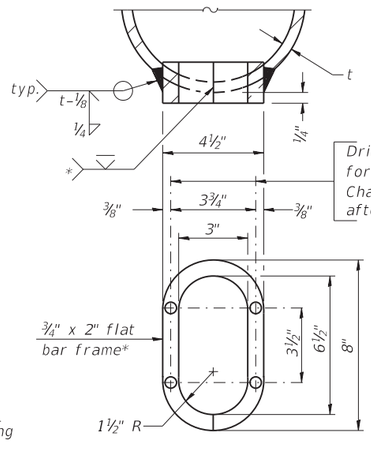



## FRONT ELEVATION

For Foundation Details see Base Sheet 0SC-A-9.




## HANDHOLE COVER

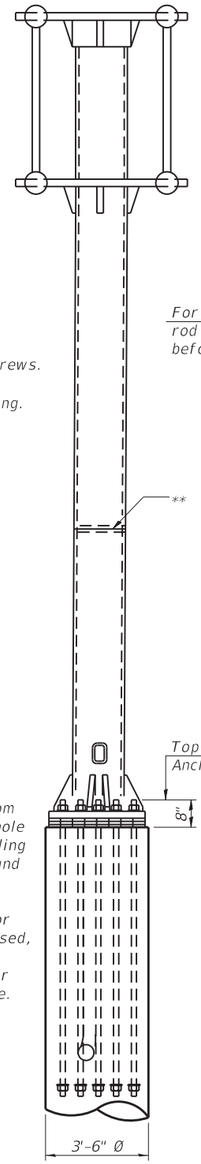



Provide 8" x 4½" cover. Outside corners = 2¼" radius. Provide 4-5/16" Ø holes in cover for ¼" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

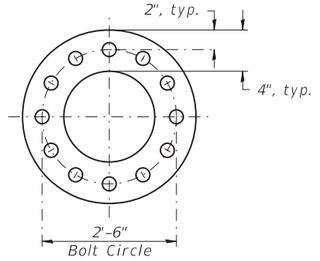
## DETAIL A

* Bent bars may be butt welded top and bottom or bottom only. In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500μ in or less.

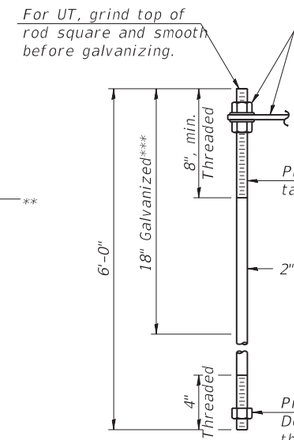
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.




## SIDE ELEVATION




## SUGGESTED POSITIONING PLATE




*** 18" is minimum to be galvanized. Entire rod may be galvanized at Contractor's option.

All Thread = NC (National Coarse)

## ANCHOR ROD DETAIL

Anchor rods shall conform to ASTM F1554 Grade 105. Galvanize the upper 18" (minimum***) and associated AASHTO M291, Grade A, C or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on rods. Provide a nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor rod shall be ultrasonically tested (UT) by a Level II or III inspector, qualified in accord with ANSI guidelines, to insure no rejectable flaws exist in the upper 18" (tension criteria). Cost of testing included in Drilled Shaft Concrete Foundations.

| Structure Number | Station | H |
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Note: "H" based on 15'-0" or actual sign height, whichever is greater.




benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

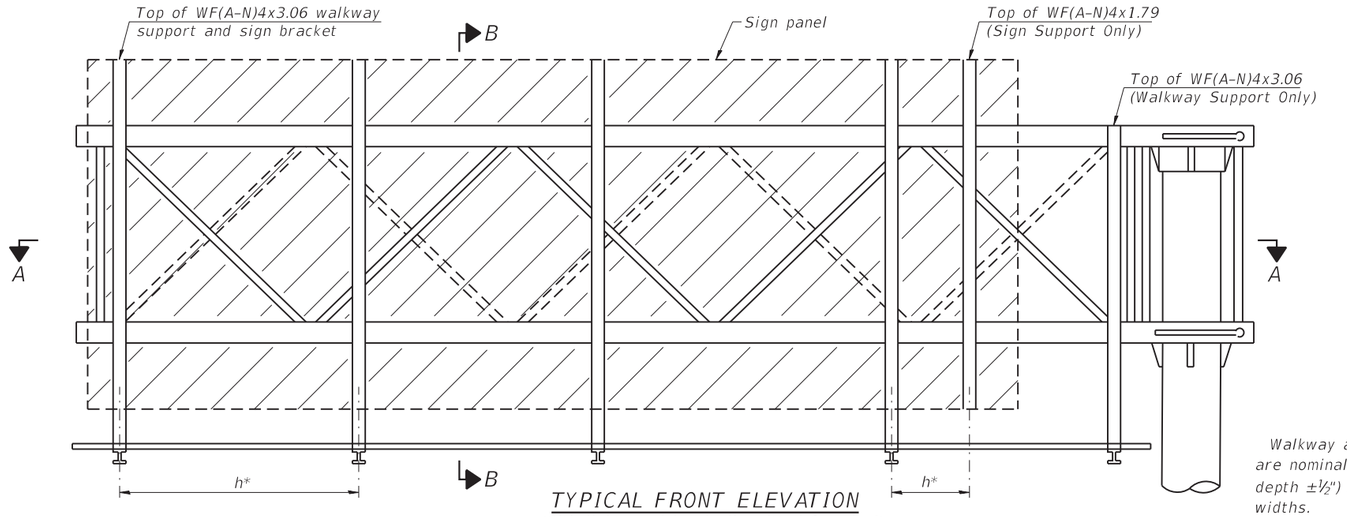

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES - TRUSS SUPPORT POST**
**STRUCTURE NO. 099-4666**

SHEET NO. S03 OF S50 SHEETS

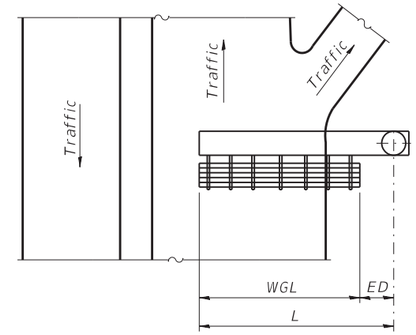
| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |




## TYPICAL FRONT ELEVATION

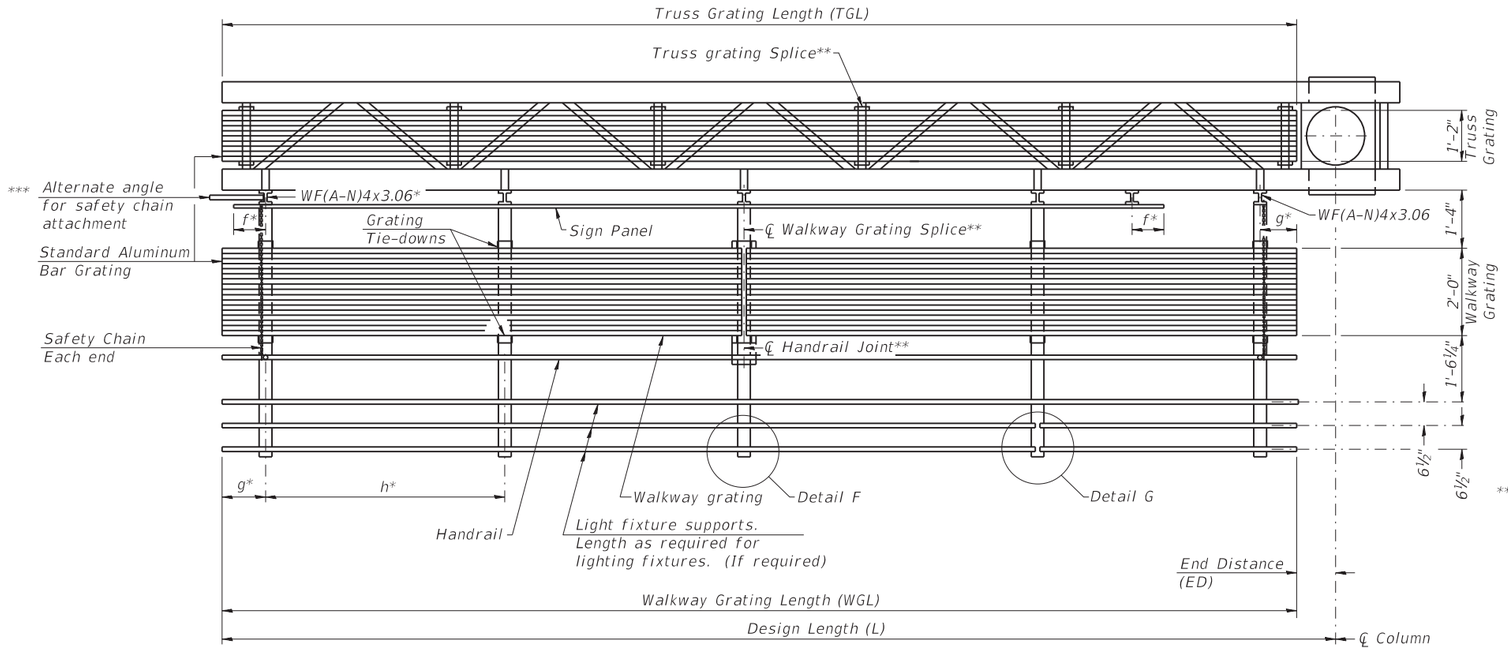
With lights and handrail omitted for clarity.

Walkway and truss grating dimensions are nominal and may vary (width ±½", depth ±½") based on available standard widths.




## PLAN
## WALKWAY AND HANDRAIL SKETCH

(Road plan beneath truss varies)




## SECTION A-A

Truss grating to facilitate inspection shall run full length of cantilevers. Cost of truss grating is included in Overhead Sign Structure Cantilever.

** Handrail and walkway grating shall span a minimum of three brackets between splices. Use and location of handrail joints or grating splices are optional, based on lengths needed and material availability.

$$TGL = L - \left(\frac{Post\ O.D.}{2} + 6"\right)$$

| Structure Number | Station | WGL | ED | TGL |
|---|---|---|---|---|
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Notes:

* Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:

f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway to ℄ of nearest bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)

*** If walkway bracket at safety chain location is behind sign, add angle to bracket. See alternate safety chain attachment on base sheet 0SC-A-8

For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet 0SC-A-7.
For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet 0SC-A-8.

## BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06
ASTM B308, Alloy 6061-T6

| Sign Width | | Number Brackets Required |
|---|---|---|
| Greater Than | Less Than or Equal To | |
| | 8'-0" | 2 |
| 8'-0" | 14'-0" | 3 |
| 14'-0" | 20'-0" | 4 |
| 20'-0" | 26'-0" | 5 |
| 26'-0" | 32'-0" | 6 |

0SC-A-6 2-17-2017

benesch
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Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES – ALUMINUM WALKWAY**
**STRUCTURE NO. 099-4666**

SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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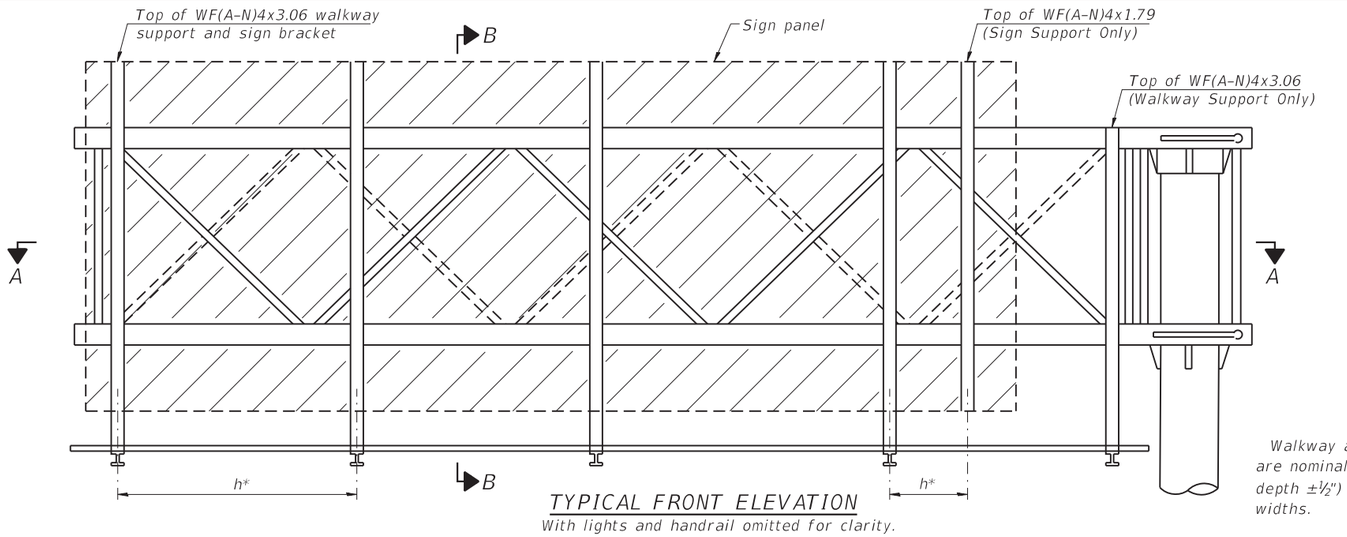
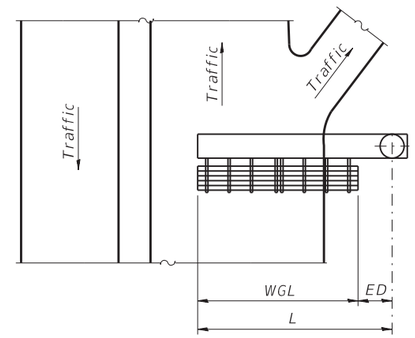
$FILE$ 1:39:33 PM 2/26/2020




## TYPICAL FRONT ELEVATION

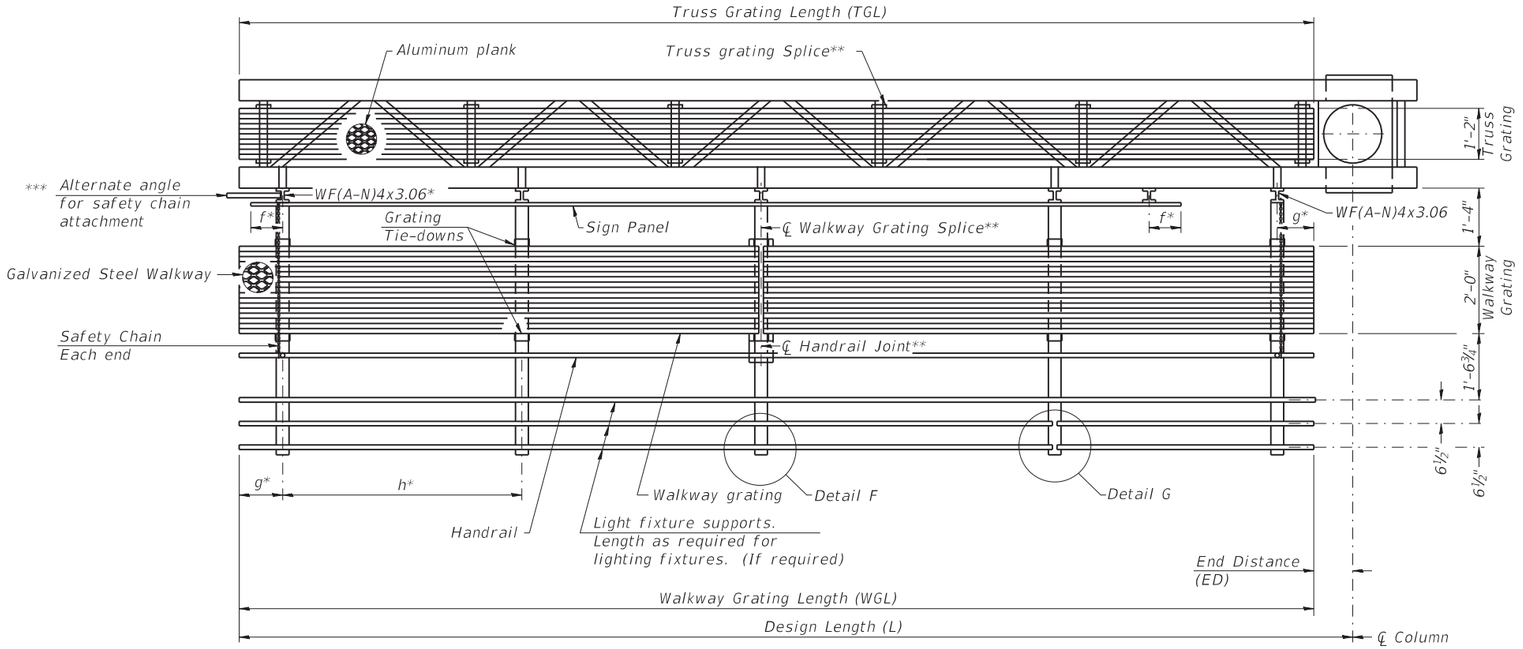
With lights and handrail omitted for clarity.

Walkway and truss grating dimensions are nominal and may vary (width ±½", depth ±½") based on available standard widths.




## PLAN
## WALKWAY AND HANDRAIL SKETCH

(Road plan beneath truss varies)




## SECTION A-A

Truss grating to facilitate inspection shall run full length of cantilevers. Cost of truss grating is included in Overhead Sign Structure Cantilever.

** Handrail and walkway grating shall span a minimum of three brackets between splices. Use and location of handrail joints or grating splices are optional, based on lengths needed and material availability.

$$TGL = L - \left( \frac{\text{Post O.D.}}{2} + 6'' \right)$$

| Structure Number | Station | WGL | ED | TGL |
|---|---|---|---|---|
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Notes:

* Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:

f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway to ℄ of nearest bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)

*** If walkway bracket at safety chain location is behind sign, add angle to bracket. See alternate safety chain attachment on base sheet 0SC-A-8.

For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet 0SC-A-7S.
For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet 0SC-A-8.

## BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06
ASTM B308, Alloy 6061-T6

| Sign Width | | Number Brackets Required |
|---|---|---|
| Greater Than | Less Than or Equal To | |
| | 8'-0" | 2 |
| 8'-0" | 14'-0" | 3 |
| 14'-0" | 20'-0" | 4 |
| 20'-0" | 26'-0" | 5 |
| 26'-0" | 32'-0" | 6 |

0SC-A-6S 2-17-2017

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Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES – ALTERNATE STEEL WALKWAY DETAILS**
**STRUCTURE NO. 099-4666**

SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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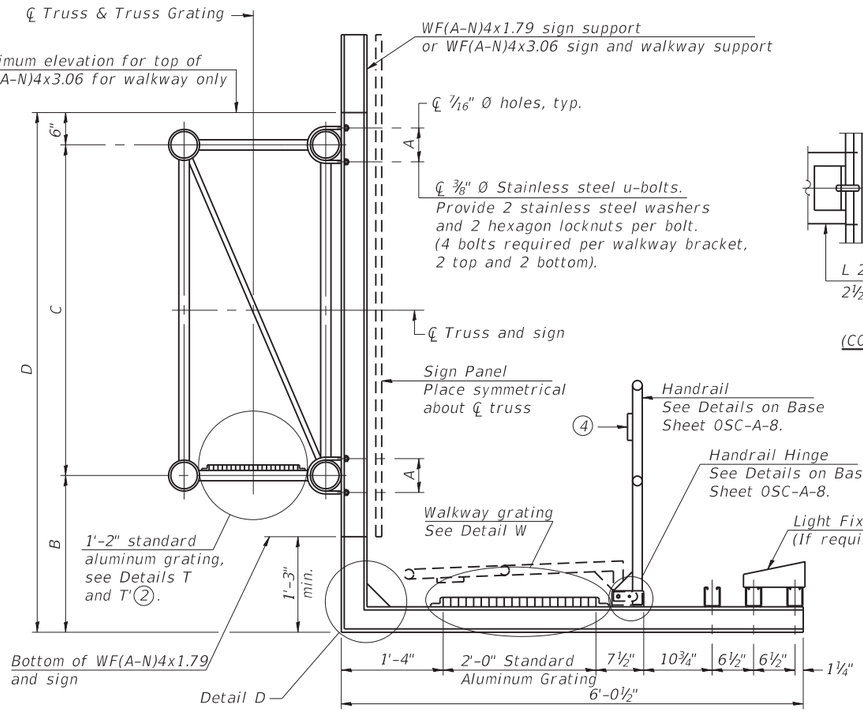
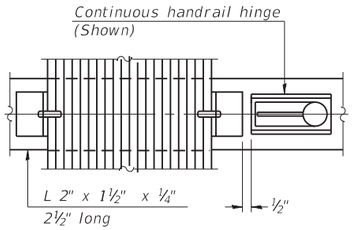
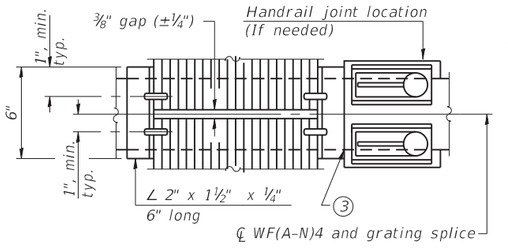



Sign shall be even with the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.

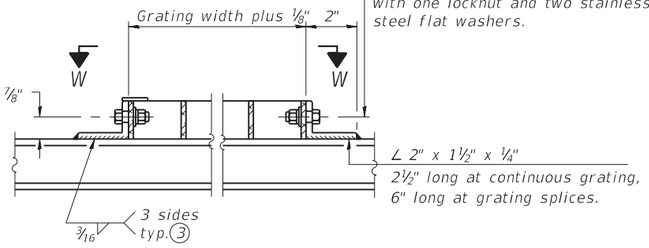



(CONTINUOUS WALKWAY GRATING)



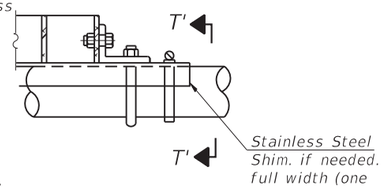

(AT WALKWAY GRATING SPLICE)

## SECTION W-W




## DETAIL W

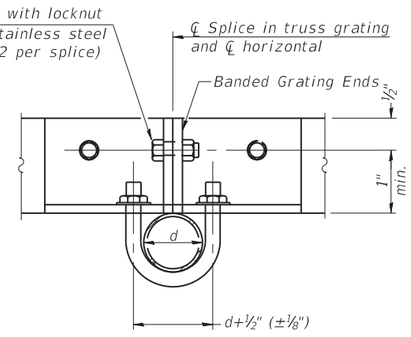
(Walkway grating)



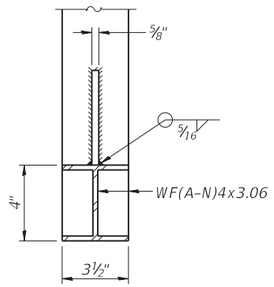

## DETAIL T'

(Truss grating splice)

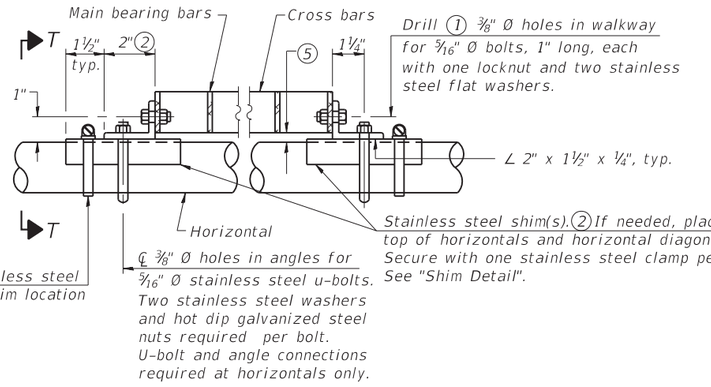
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.




## SECTION T-T

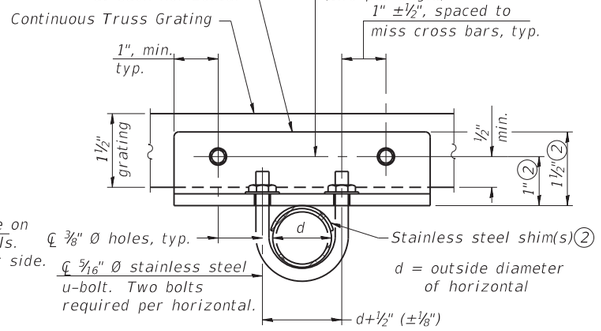



## SECTION B-B

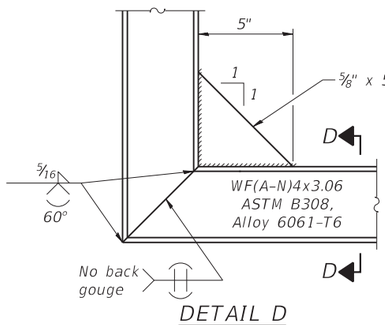



## DETAIL T

(Continuous Truss grating)




## SECTION T-T




## DETAIL D

| Structure Number | Station | A | 6 B | C | 6 D |
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## SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars (MBB) shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B211 Alloy 6061-T6.

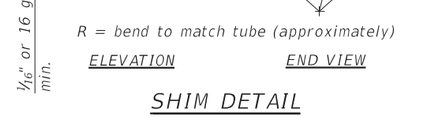
Cross bars (CB) shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

Aluminum Grating with modified "t" sections for main bearing bars shall meet the following requirements:

Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1½", spaced on 1 3/16" centers.

Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.




## SHIM DETAIL

1. Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
2. Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
3. If Handrail Joint present, weld angle to WF(A-N)4 and ¼" extension bars. (See Base Sheet 0SC-A-8.)
4. PL ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.
5. Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.
6. Based on actual sign height, Ds, given on 0SC-A-1.

0SC-A-7 2-17-2017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Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

USER NAME = ablaszczyk | DESIGNED - EO | REVISED -
PLOT SCALE = | CHECKED - DTS | REVISED -
PLOT DATE = 2/26/2020 | DRAWN - AJB | REVISED -
CHECKED - DTS | REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CANTILEVER SIGN STRUCTURES – WALKWAY DETAILS
STRUCTURE NO. 099-4666
SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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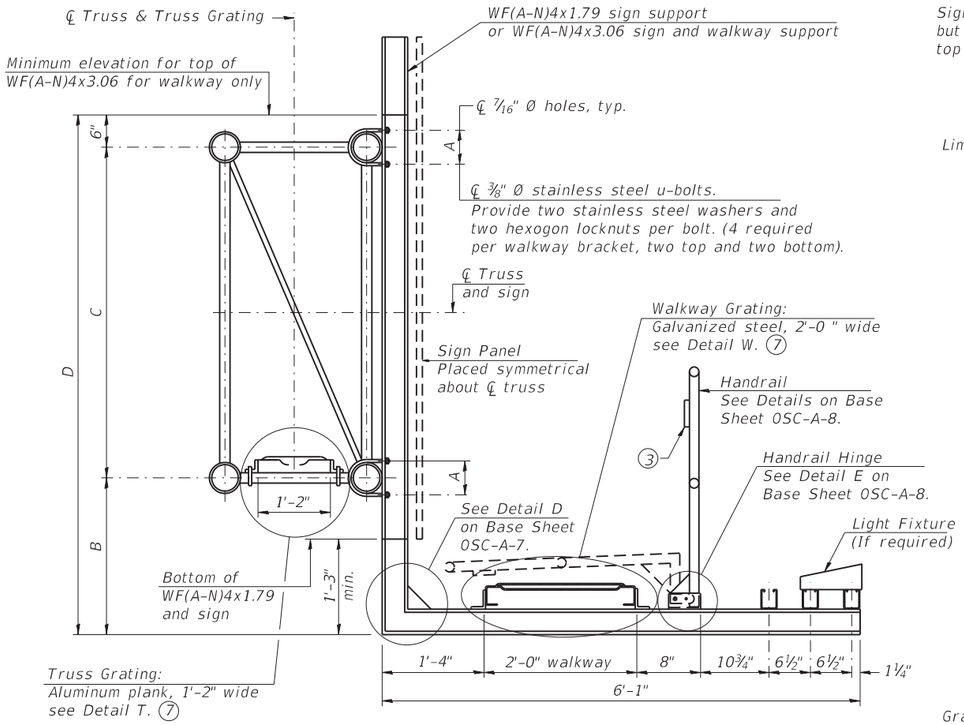
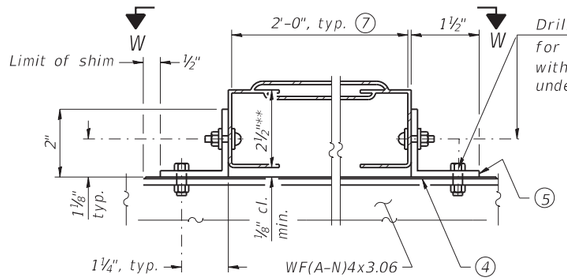


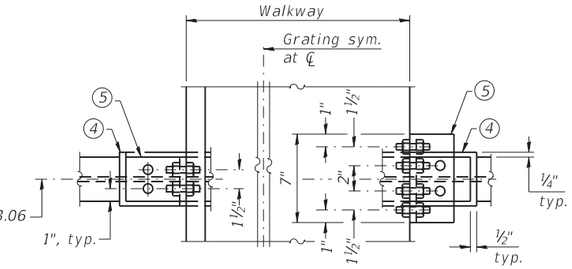

SECTION B–B

Sign shall be even with the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.



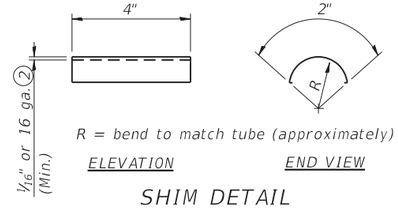

DETAIL W

GALVANIZED STEEL WALKWAY GRATING




WALKWAY GRATING CONTINUOUS AT WALKWAY GRATING SPLICE

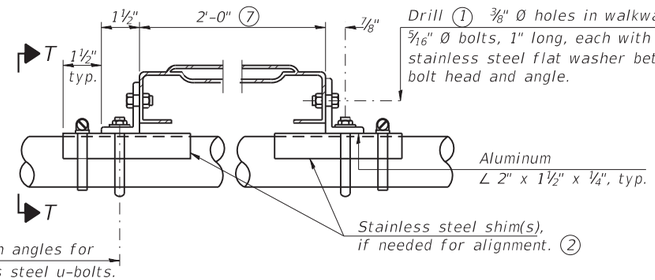
SECTION W–W




R = bend to match tube (approximately)

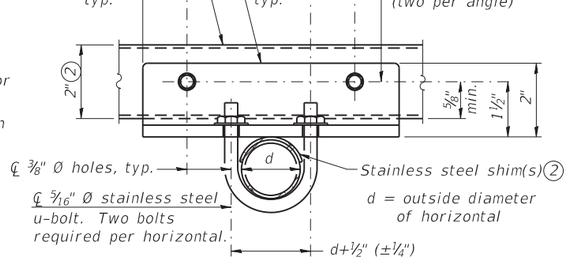
ELEVATION END VIEW

SHIM DETAIL



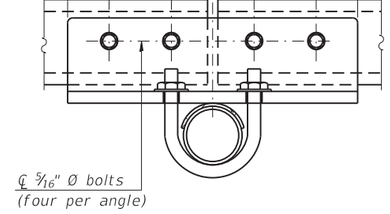

DETAIL T

(Truss grating at horizontal)




SECTION T–T

(Truss Grating Continuous)




SECTION T–T

(Truss Grating Splice)

Alternate splice details and locations may be used subject to the Engineer's review and approval.

ALUMINUM TRUSS GRATING

| Structure Number | Station | A | 8 B | C | 8 D |
|---|---|---|---|---|---|
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1. Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
2. Stainless steel shims shall be placed under angles at horizontals and horizonal diagonals if needed to compensate for alignment variations and differences in horizontal diagonal pipe sizes beyond adjustment provided by angles. Secure with one stainless steel clamp per location, se "Shim Detail". Thicker shim plates may be used when needed subject to shims performing properly.
3. ℄ ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.
4. 1⁄16" (or 16 ga.) x 2½" x 4" stainless steel shim adhered to top of WF(A–N)4x3.06 beneath each galvanized angle, typ. Adhesives for shims shall be suitable for materials joined and full exposure conditions.
5. Galvanized steel ∠ 2" x 2" x ¼", 3½" long with continuous grating 7" long at grating splice.
6. Details shown are considered equal alternatives to Aluminum Walkway Details and may be substituted by Contractor at no charge in contract cost.
7. Perforated or expanded metal grating providing a skid resistant (non–serrated) surface and capable of supporting a 500 pound concentrated load with a 6'–0" clear span. Walkway and truss grating dimensions are nominal and may vary (width ±½", depth ½") based on available standard sizes. Cut ends of grating shall be free of burrs or hazardous projections and coated with zinc–rich primer or equivalent.
8. Based on actual sign height, Ds, given on 0SC–A–1.

0SC–A–7S 2–17–2017

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Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CANTILEVER SIGN STRUCTURES – ALTERNATE WALKWAY DETAILS
STRUCTURE NO. 099–4666
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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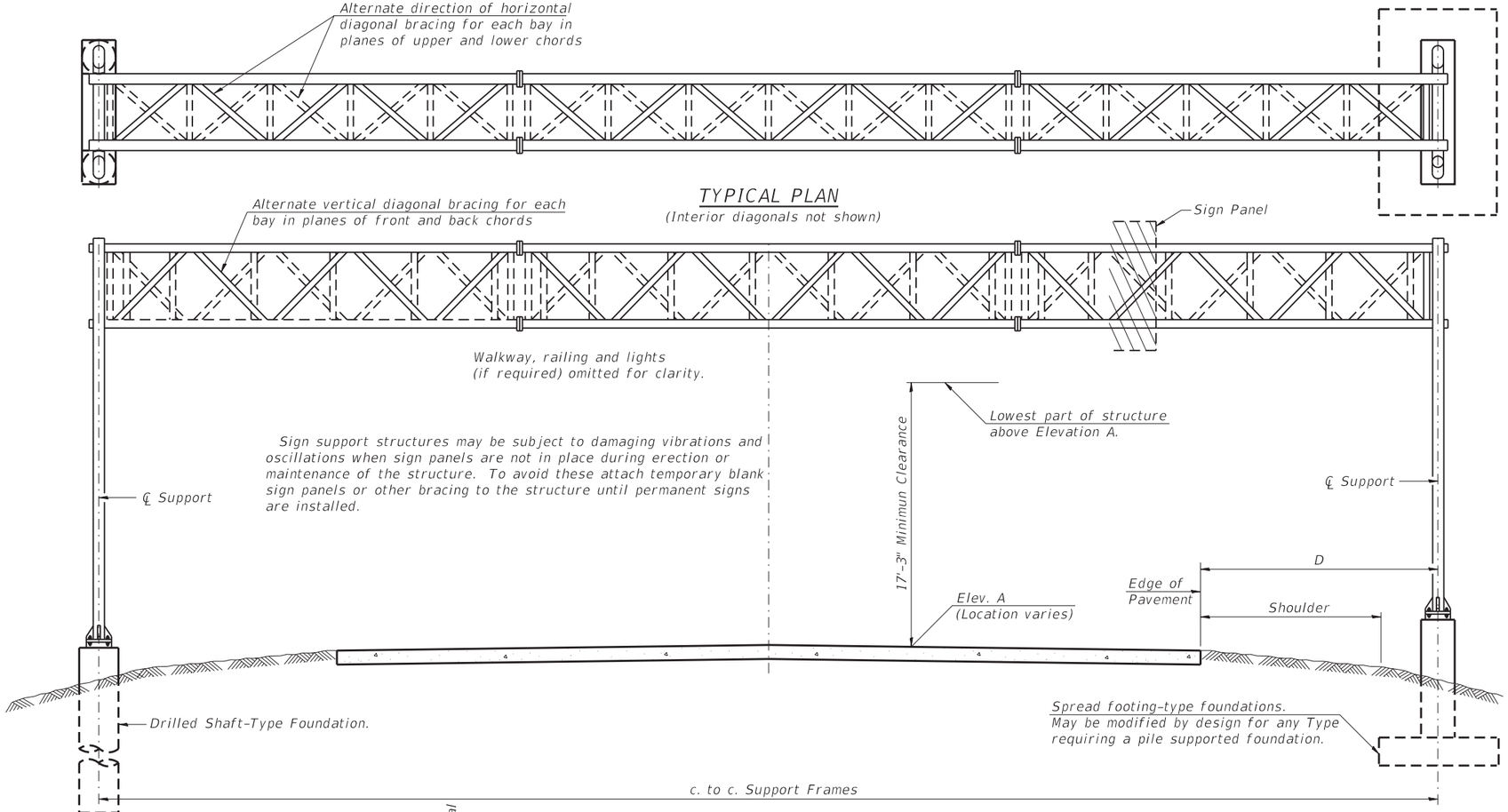
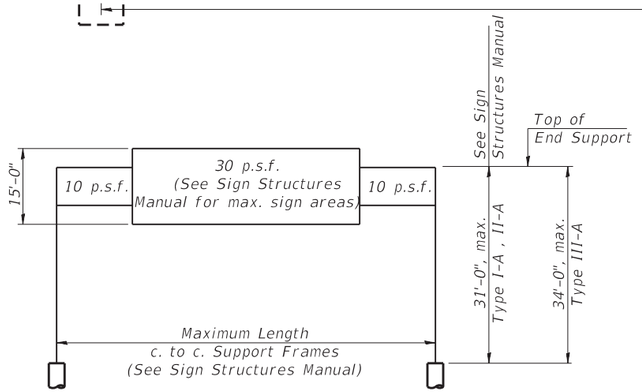



## TYPICAL PLAN

(Interior diagonals not shown)




## DESIGN WIND LOADING DIAGRAM

Parameters shown are basis for I.D.O.T. Standards and Sign Manual Tables. Installations not within dimensional limits shown require special analysis for all components.

## TYPICAL ELEVATION

(Looking at Face of Signs**)

Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

| Structure Number | Station | Design Truss Type | c. to c. Supports | Elev. A | Dim. D | Height of Tallest Sign | Total Sign Area |
|---|---|---|---|---|---|---|---|
| | NB I-55, 219+00 | I-A | 80'-0" | | | | |
| | NB I-55, 234+00 | I-A | 80'-0" | | | | |
| | I-55 SB Ramp A to DDI, 1002+20 | I-A | 75'-0" | | | | |
| | IL 59 (DDI SB), 7005+15 | I-A | 85'-0" | | | | |
| | SB I-55, 376+00 | I-A | 65'-0" | | | | |
| | SB I-55, 410+00 | I-A | 65'-0" | | | | |
| | NB I-55, 250+65 | II-A | 90'-0" | | | | |
| | I-55 NB Exit Ramp C to NB and SB DDI, 808+45 | II-A | 100'-0" | | | | |
| | IL 59 (DDI NB), 8025+70 | II-A | 90'-0" | | | | |
| | IL 59 SB DDI & I 55 NB Entrance Ramp from SBDDI, 8014+35 | II-A | 105'-0" | | | | |
| | IL 59 (DDI NB), 8005+40 | II-A | 95'-0" | | | | |
| | SB I-55, 291+00 | II-A | 90'-0" | | | | |
| | SB I-55, 315+00 | II-A | 90'-0" | | | | |

**Looking upstation for structures with signs both sides.

* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.

## GENERAL NOTES

DESIGN: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. ("AASHTO Specifications")

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. ("Standard Specifications")

LOADING: 90 M.P.H. WIND VELOCITY

WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load.

DESIGN STRESSES:
Field Units
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (reinforcement)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 and D1.2 Structural Welding Codes (Steel and Aluminum) and the Standard Specificiations.

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53. All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

FASTENERS FOR ALUMINUM TRUSSES: All bolts noted as "high strength" must satisfy the requirements of AASHTO M164 (ASTM A325), or approved alternate, and must have matching lock nuts. Threaded studs for splices (if Members interfere) must satisfy the requirements of ASTM A449, ASTM A193, Grade B7, or approved alternate, and must have matching lock nuts. Bolts and lock nuts not required to be high strength must satisfy the requirements of ASTM A307. All bolts and lock nuts must be hot dip galvanized per AASHTO M232. The lock nuts must have nylon or steel inserts. A stainless steel flat washer conforming to ASTM A240 Type 302 or 304, is required under both head and nut or under both nuts where threaded studs are used. High strength bolt installation shall conform to Article 505.04 (f) (2)d of the IDOT Standard Specifications for Road and Bridge Construction. Rotational capacity ("ROCAP") testing of bolts will not be required.

U-BOLTS AND EYEBOLTS: U-Bolts and Eyebolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts and Eyebolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless steel flat washer conforming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to ASTM F1554 Gr. 105.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Concrete Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for Concrete Foundations and Drilled Shaft Concrete Foundations shall include reinforcement bars complete in place.

## TOTAL BILL OF MATERIAL

| ITEM | UNIT | TOTAL |
|---|---|---|
| OVERHEAD SIGN STRUCTURE SPAN TYPE I-A | Foot | |
| OVERHEAD SIGN STRUCTURE SPAN TYPE II-A | Foot | |
| OVERHEAD SIGN STRUCTURE SPAN TYPE III-A | Foot | |
| OVERHEAD SIGN STRUCTURE WALKWAY TYPE A | Foot | |
| CONCRETE FOUNDATIONS | Cu. Yds. | |
| DRILLED SHAFT CONCRETE FOUNDATIONS | Cu. Yds. | |
| | | |

OS-A-1

2-17-2017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Job No. 10740

USER NAME = ablaszczyk | DESIGNED - EO | REVISED -
PLOT SCALE = | CHECKED - DTS | REVISED -
PLOT DATE = 2/26/2020 | DRAWN - AJB | REVISED -
CHECKED - DTS | REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN STRUCTURE - GENERAL PLAN AND ELEVATION
STRUCTURE NO. 099-4666
SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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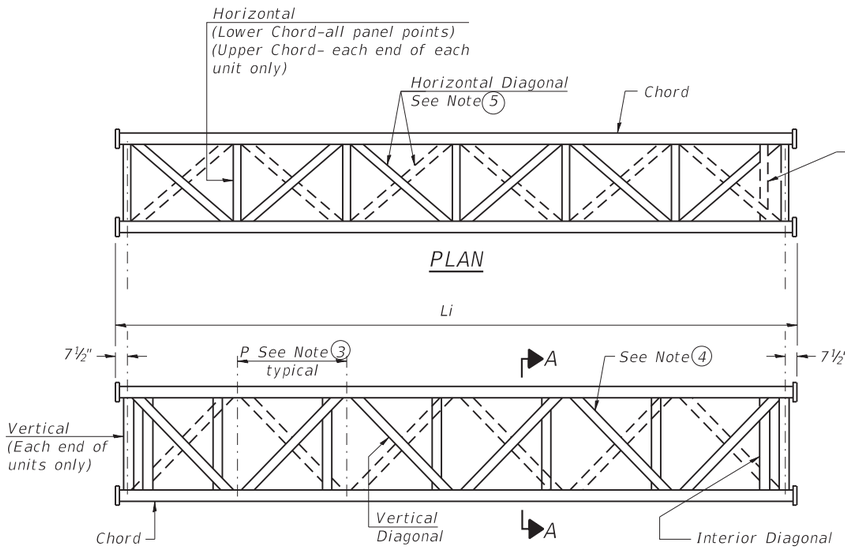
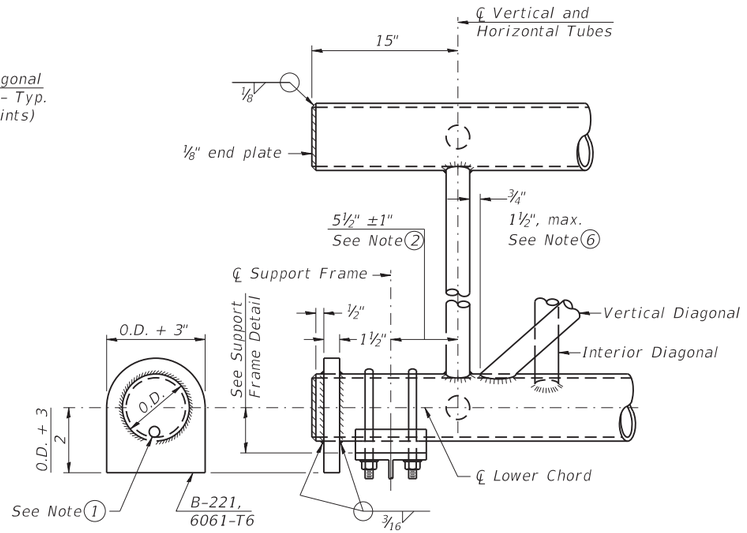


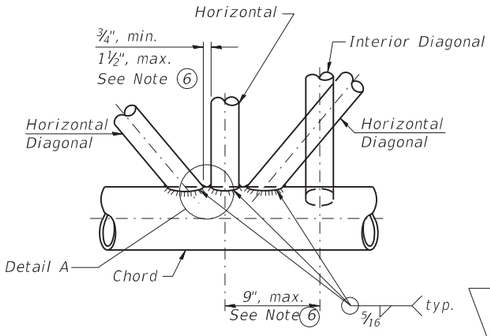

ELEVATION

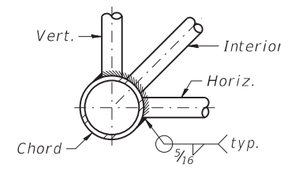
TYPICAL INTERIOR UNIT

*Even number of panels/interior unit required.*

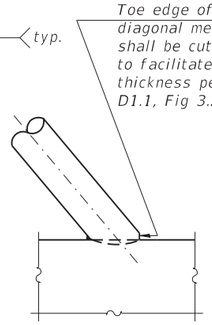



SUPPORT END DETAIL FOR EXTERIOR UNIT

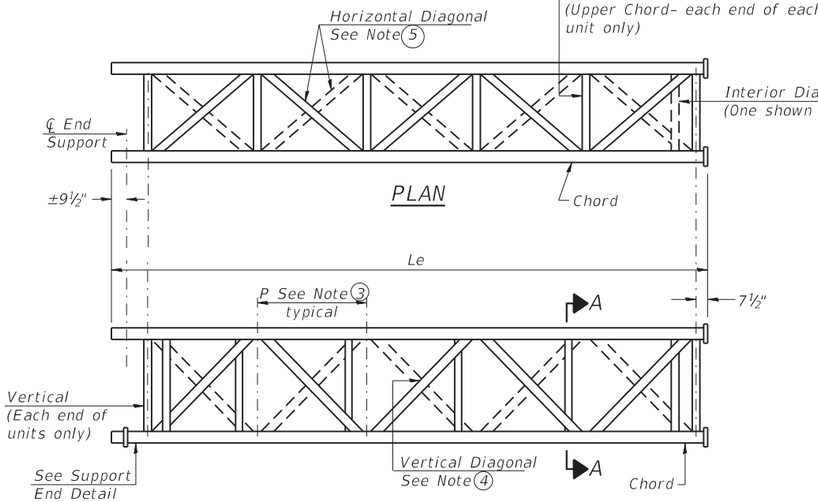



TYPICAL JOINT DETAILS



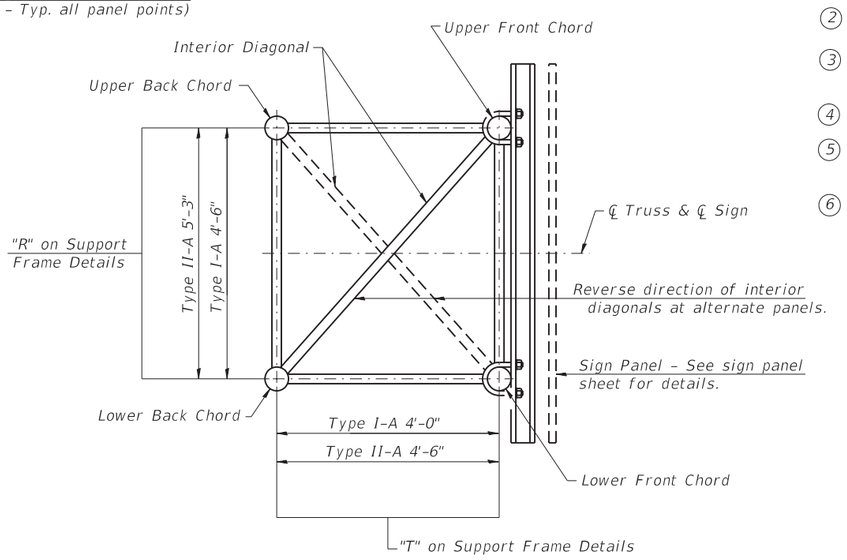

DETAIL A




ELEVATION

TYPICAL EXTERIOR UNIT

*Even or odd number of panels/exterior units allowed.*




SECTION A-A

1. Contractor may alternatively use standard aluminum drive-fit cap to close end. ½" Ø drain hole in end plate/drive-fit cap. (Typ. at ends of all chords)
2. 5½" end dimension may vary by ±1" to provide uniform panel spacing (P).
3. Panel spacing (P) shall be uniform for entire truss and between 4'-0" and 5'-0" for Type I-A or 4'-0" and 5'-6" for Types II-A and III-A.
4. Vertical Diagonals in front and back face shall alternate.
5. Hidden lines show wind bracing alternates direction between planes of top and bottom chords.
6. All diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a ¾" minimum to 1½" maximum clearance between any diagonal and any horizontal or vertical member, and to provide clearance for U-bolt connections of signs or walkway brackets.

OS-A-2

2-17-2017

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| | | |
|---|---|---|
| USER NAME = oblaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – ALUMINUM TRUSS DETAILS**
**STRUCTURE NO. 099-4666**

SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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## TRUSS UNIT TABLE

| Structure Number | Station | Design Truss Type | Exterior Units (2) | | | Interior Unit | | | | Upper & Lower Chord | | Verticals; Horizontals; Vertical,Horizontal, and Interior Diagonals | | Camber at Midspan | Splicing Flange | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. Panels per Unit | Unit Lgth.(Le) | Panel Lgth.(P) | No. Req'd. | No. Panels per Unit | Unit Lgth.(Li) | Panel Lgth.(P) | O.D. | Wall | O.D. | Wall | | Bolts | | Weld Sizes | | A | B |
| | | | | | | | | | | | | | | | No./Splice | Dia. | W | W1 | | |
| | | | | | | | | | | | | | | | | | | | | |
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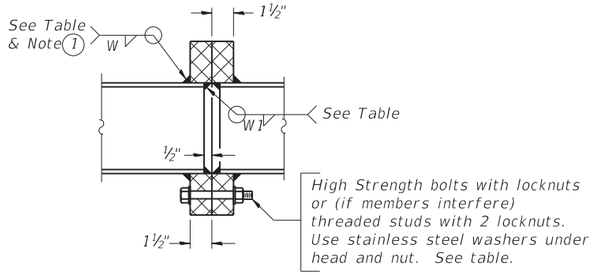
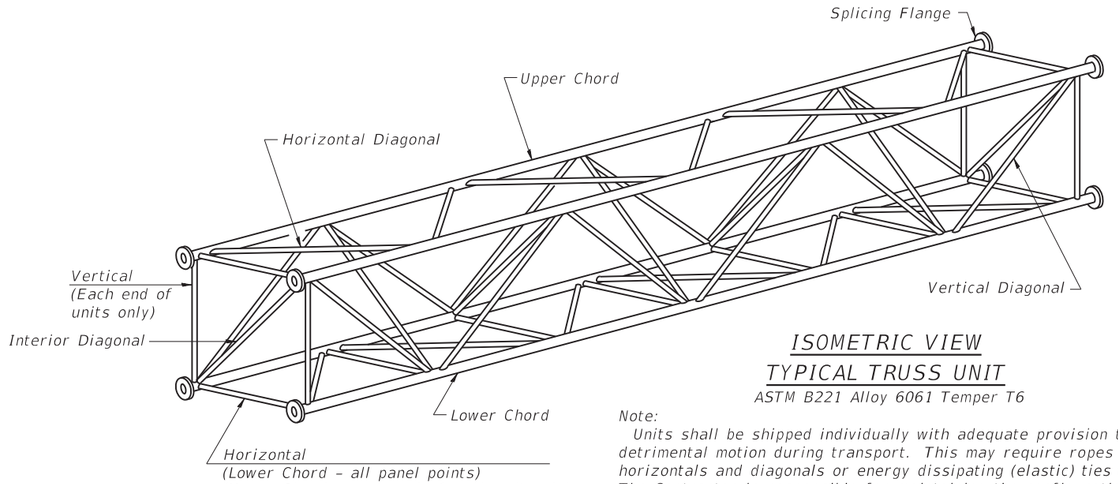



### SECTION B-B

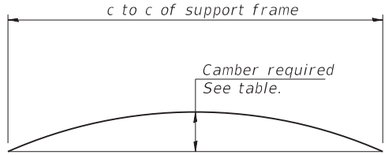
(1) Splicing Flanges shall be attached to each truss unit with the truss shop assembled to camber shown. Truss units shall be in proper alignment and flange surfaces shall be shop bolted into full contact before welding. Sufficient external welds or tacks shall be made to secure flanges until remaining welds are made after disassembly. Adjacent flanges shall be "match marked" to insure proper field assembly.




### ISOMETRIC VIEW
### TYPICAL TRUSS UNIT

ASTM B221 Alloy 6061 Temper T6

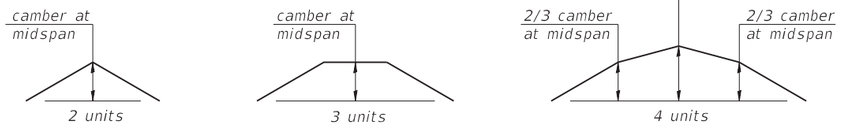
Note:
Units shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The Contractor is responsible for maintaining the configuration and protection of the units.



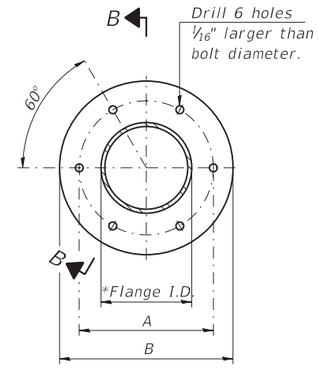

### CAMBER DIAGRAM

Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

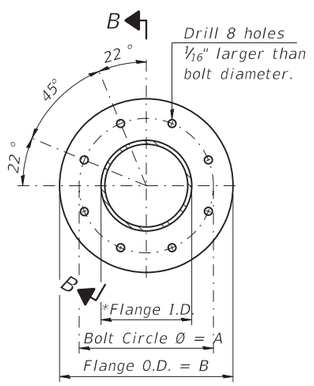
### CAMBER ATTAINMENT EXAMPLES:




Camber shown is for fabrication only, measured with truss fully supported. (No-load condition)




TRUSS TYPES I-A, II-A, & III-A




TRUSS TYPES II-A & III-A

### SPLICING FLANGES

ASTM B221, Alloy 6061-T6
or ASTM B209, Alloy 6061-T651
*To fit O.D. of Chord with maximum gap of 1/16".

OS4-A-2

2-17-2017

| | | | |
|---|---|---|---|
| benesch<br>Alfred Benesch & Company<br>35 W Wacker Drive, Suite 3300<br>Chicago, Illinois 60601<br>312-565-0450 Job No. 10740 | USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | | CHECKED - DTS | REVISED - |
| | PLOT SCALE = | DRAWN - AJB | REVISED - |
| | PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – ALUMINUM TRUSS DETAILS**
**STRUCTURE NO. 099-4666**

SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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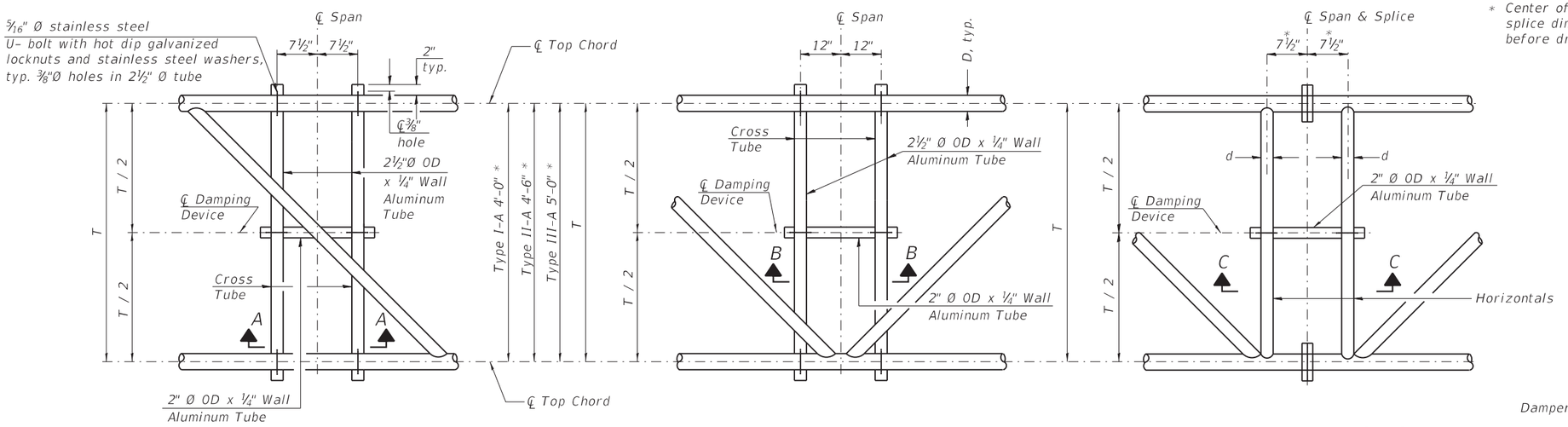



* Center of horizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.

## PLAN DETAIL "A"
℄ Span between Panel Points

## PLAN DETAIL "B"
℄ Span at Panel Point

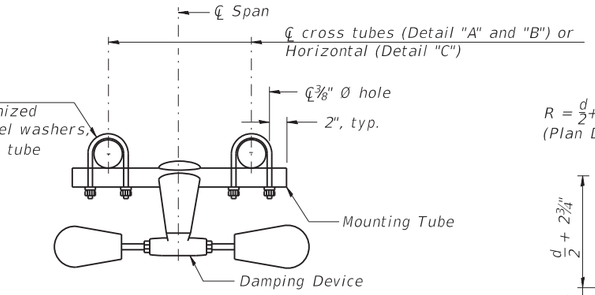
## PLAN DETAIL "C"
℄ Span at ℄ Chord Splice



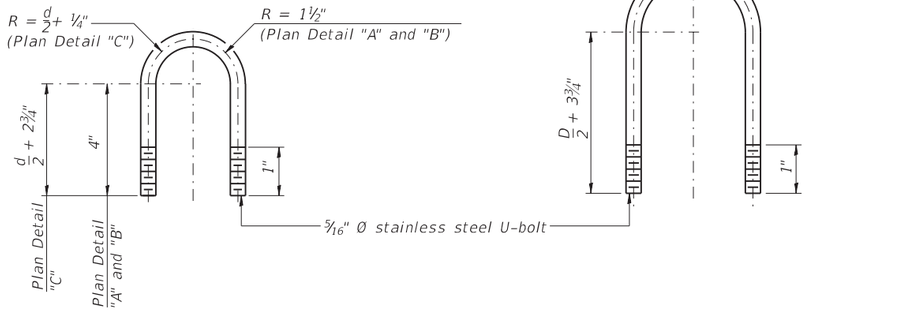

## SECTION A-A

## SECTION B-B

## SECTION C-C



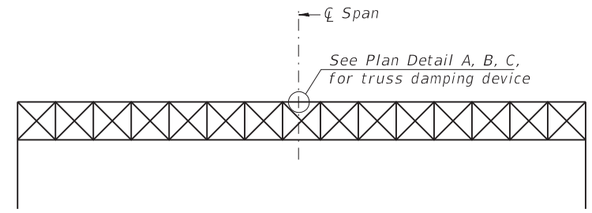

## TRUSS DAMPING DEVICE CONNECTION DETAIL
(Typical)




## DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)




## TOP CHORD TO CROSS TUBE U-BOLT DETAIL
(Typical - Detail "A" and "B")




## ELEVATION
Aluminum Overhead Sign Truss

## NOTES

**Damper:** One damper per truss. (31 lbs. minimum Stockbridge-Type Aluminum - 29" minimum between ends of weights) Cost included in Overhead Sign Structure...

**Materials:** Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...

OS-A-D 2-17-2017

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| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE - DAMPING DEVICE**
**STRUCTURE NO. 099-4666**
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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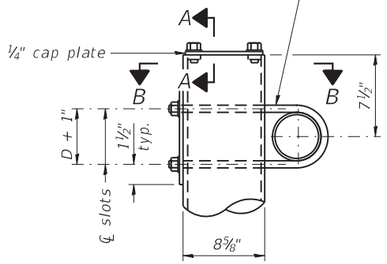
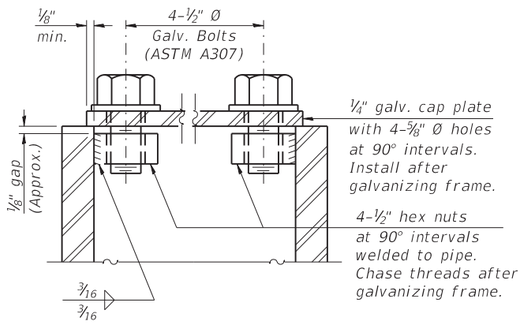
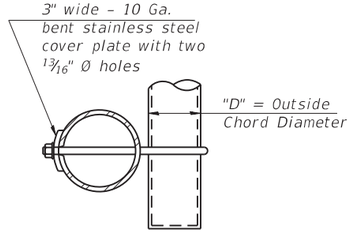



## DETAIL A

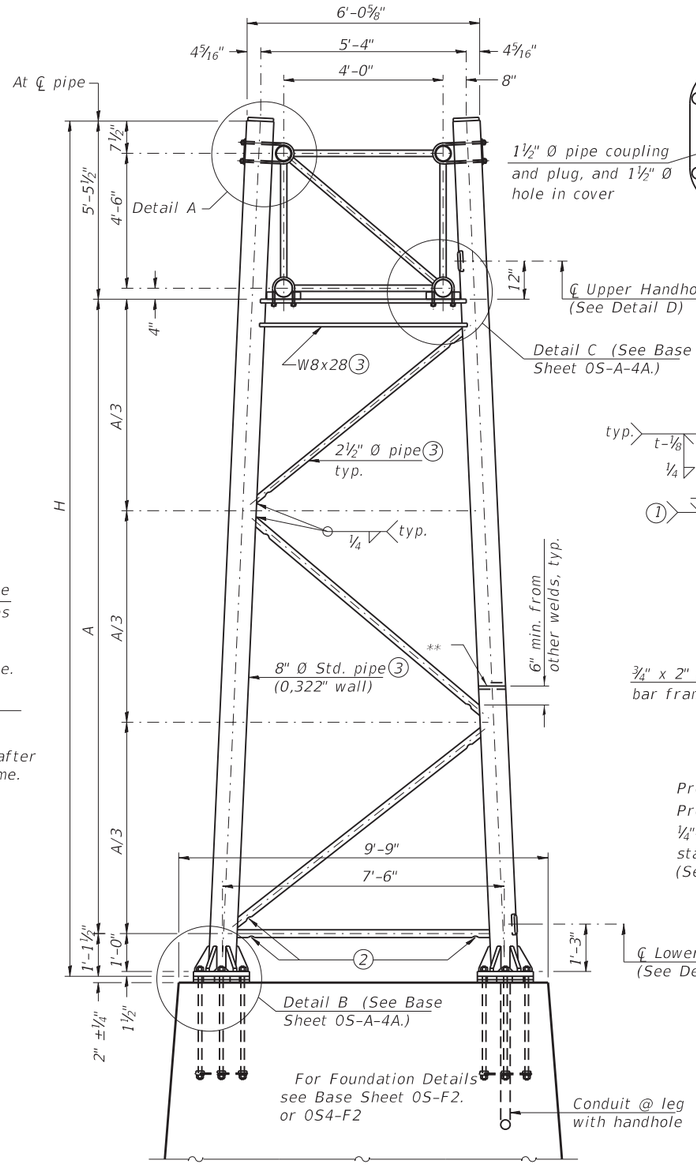



## SECTION A-A

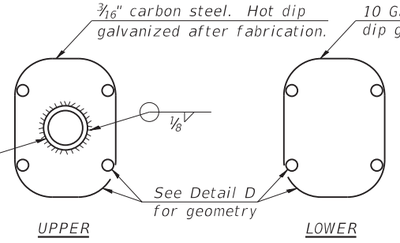
As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.



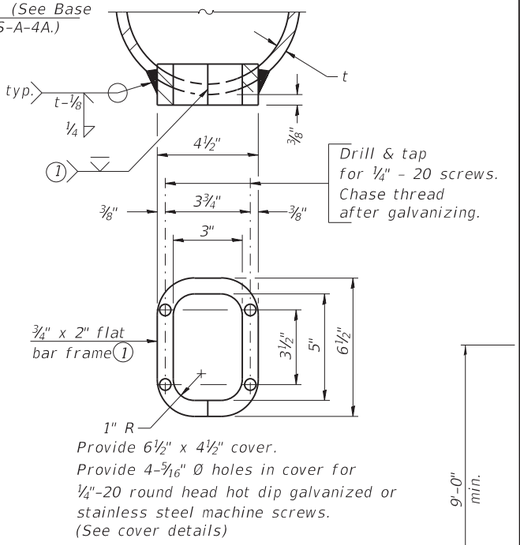

## SECTION B-B



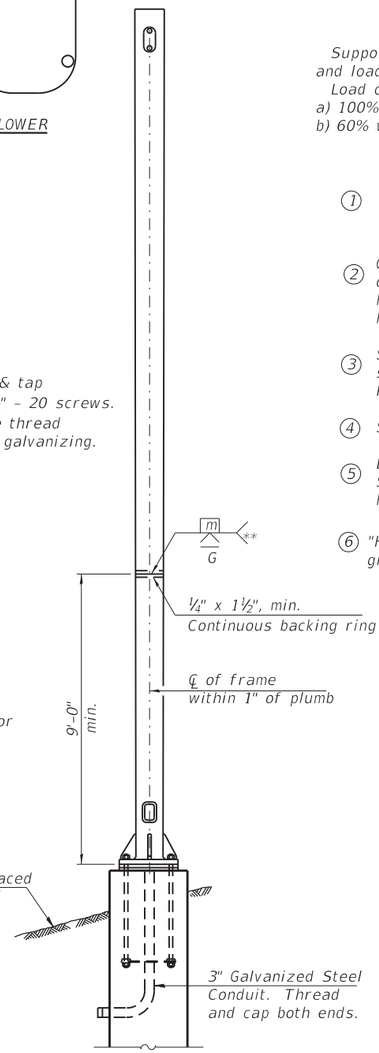

## SIDE ELEVATION




## HANDHOLE COVERS




## DETAIL D




## END ELEVATION

*Support Design Loads:* See Base Sheet 0S-A-1 for design and loading criteria.

Load combinations checked include deadload plus:

a) 100% wind normal to sign, 20% parallel to sign

b) 60% wind normal to sign, 30% parallel to sign

(1) In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500μ in or less.

(2) Galvanizing vent holes of adequate size shall be provided on underside at each end of bracing pipes. Alternately, holes may be provided in wall of pipe column. All vent holes shall be drilled and de-burred, typ.

(3) Steel pipe, plate, carbon steel handhole covers and rolled sections shall be hot dip galvanized after fabrication. Painting is not permitted. See Base Sheet 0S-A-1.

(4) See General Notes for fasteners.

(5) Dimensions shown are based on selection criteria in the Sign Structures Manual. Nonstandard applications must have dimensions verified or amended as appropriate.

(6) "H" based on 15'-0" or actual sign height, whichever is greater.

## 8" Ø PIPE TRUSS SUPPORT FRAME

** One butt welded joint is allowed only on one post per support frame. If used, weld procedure must be pre-approved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.

| Structure Number | Station | Support | | H (6) | A |
|---|---|---|---|---|---|
| | | Left | Right | | |
| | | | | | |
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0S-A-4 2-17-2017

benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – 8" DIA. PIPE SUPPORT FRAME FOR ALUMINUM TRUSS**
**STRUCTURE NO. 099-4666**
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
FILE NAME: pw:\\beneschpwise1.benesch.local:Benesch_Projects\Documents\10720s\10740.020\Eng Docs_Phase II\Structures\Sign Structures\Final\D10740-SS05-pipesupport-s001

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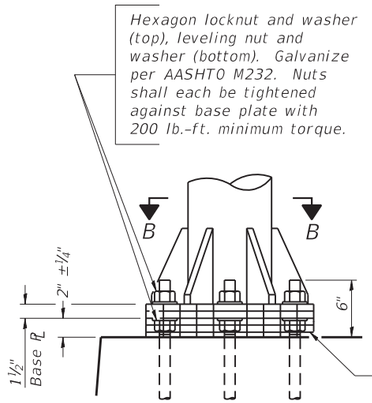
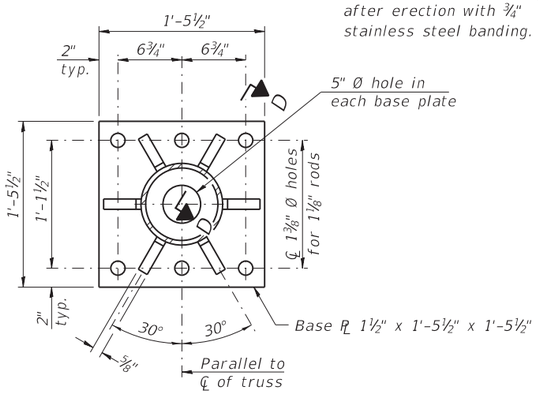
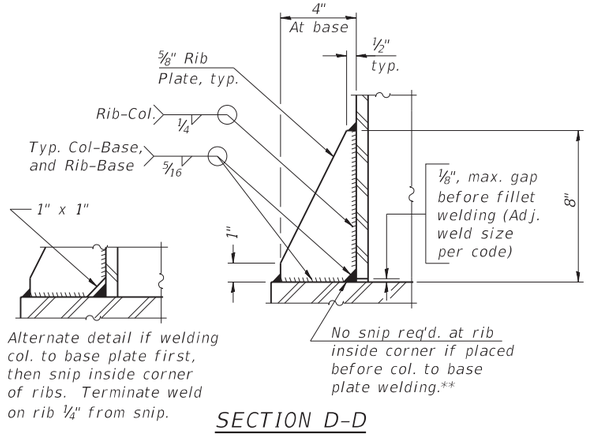



## DETAIL B

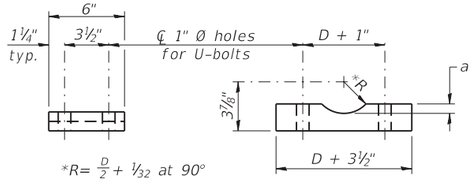
Ribs shall be cut to fit slope of pipe.




## SECTION B-B



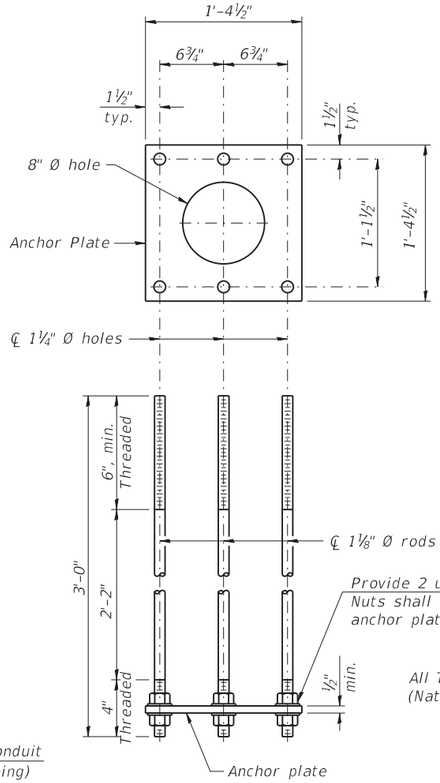

## SECTION D-D




## SADDLE SHIM DETAIL

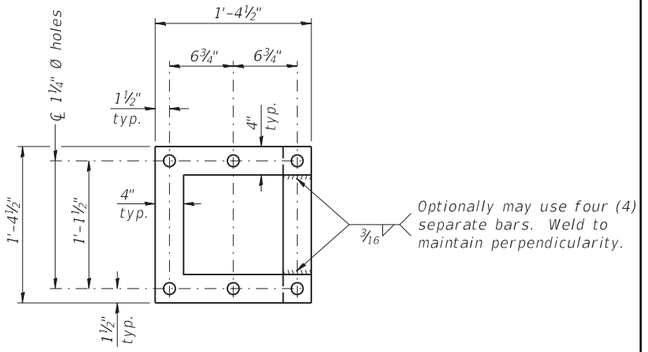
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

| Truss Chord Nominal Dia. | a |
|---|---|
| 5" | ¾" |
| 5½" | 13⁄16" |
| 6" | ⅞" |
| 6½" | 15⁄16" |

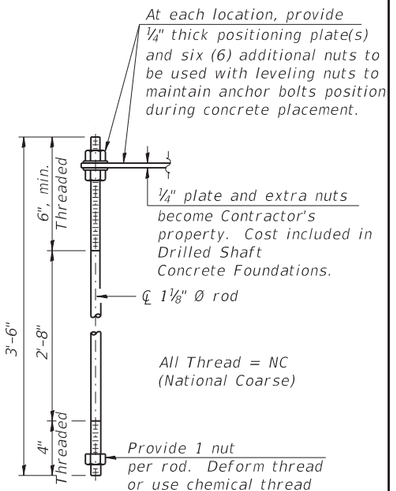



## ANCHOR ROD DETAIL

Spread Footing Foundation



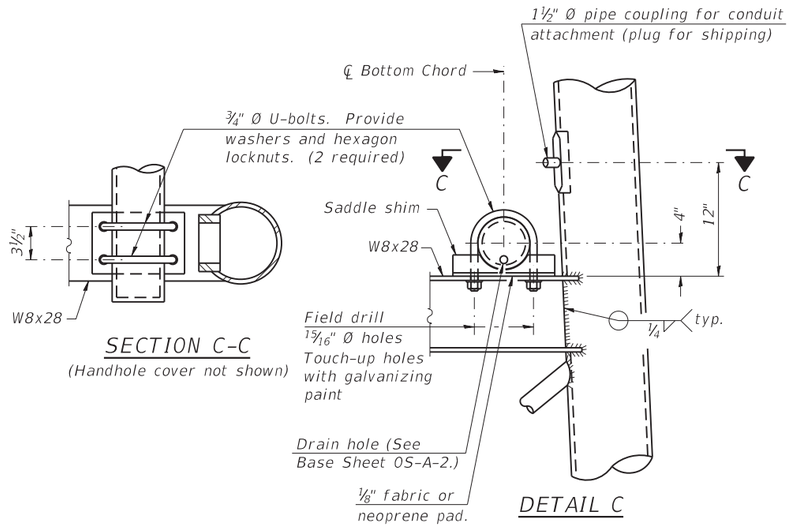

## POSITIONING PLATE(S)




## ANCHOR ROD DETAIL

Drilled Shaft Foundation

Anchor rods shall conform to ASTM F1554 Grade 105. Galvanize upper 12" minimum per AASHTO M232. No welding shall be permitted on rods.




## SECTION C-C

(Handhole cover not shown)

## DETAIL C

## TYPE I-A TRUSS
## 8" Ø PIPE SUPPORT FRAME DETAILS

0S-A-4A 2-17-2017

benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = oblaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – 8" DIA. PIPE SUPPORT FRAME DETAILS ALUMINUM TRUSS**
**STRUCTURE NO. 099-4666**
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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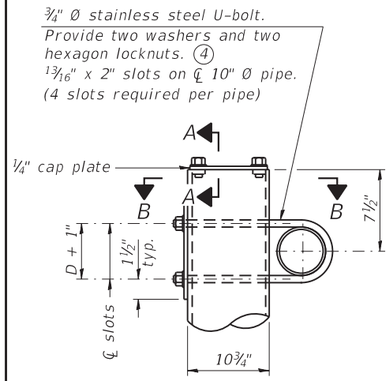
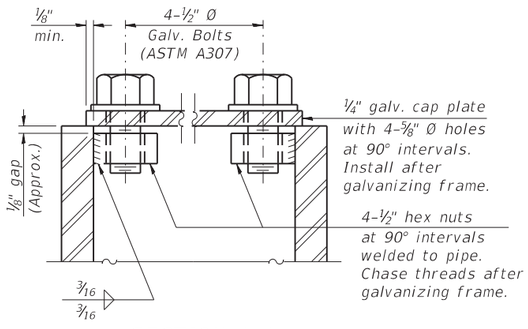
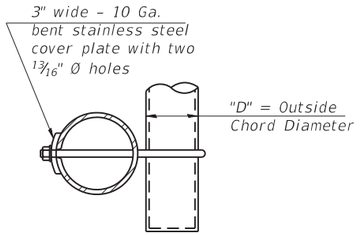



## DETAIL A

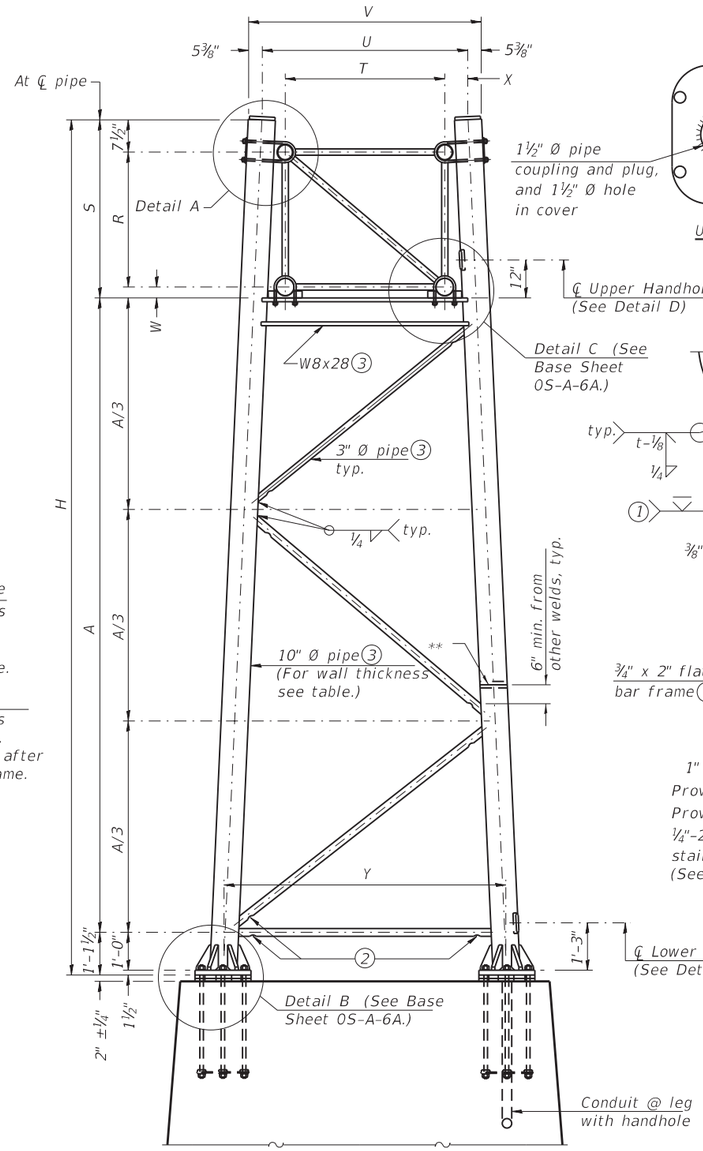



## SECTION A-A

As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.

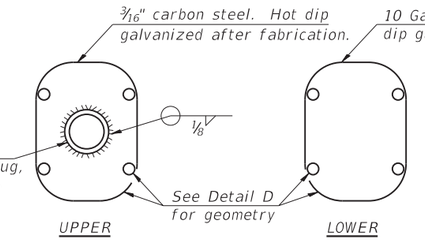



## SECTION B-B

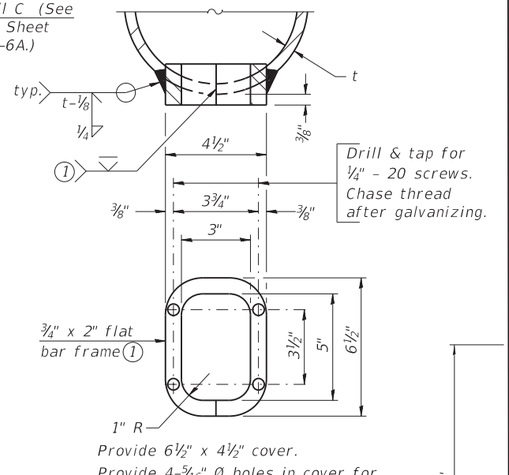



For Foundation Details, see base sheet 0S-F3 (Spread Footing) or 0S4-F3 (Drilled Shaft).

## SIDE ELEVATION

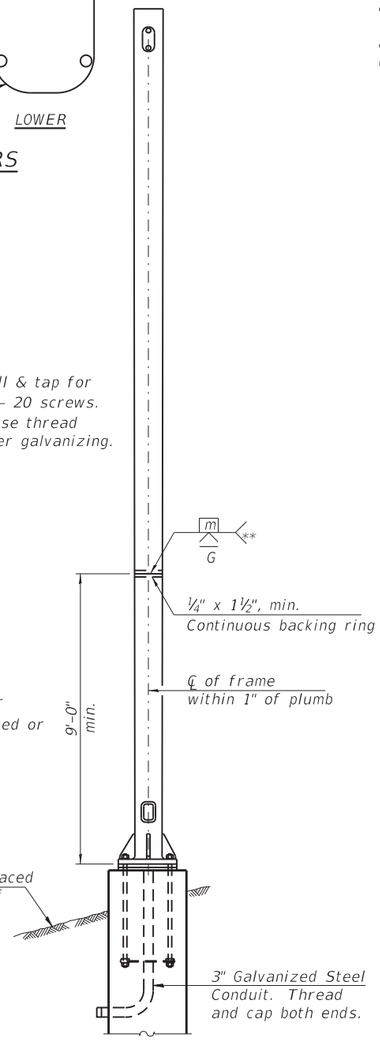



## HANDHOLE COVERS




Provide 6½" x 4½" cover.
Provide 4-5/16" Ø holes in cover for ¼"-20 round head hot dip galvanized or stainless steel machine screws.
(See cover details)

## DETAIL D




## END ELEVATION

Support Design Loads: See Base Sheet 0S-A-1 for design and loading criteria.
Load combinations checked include deadload plus:
a) 100% wind normal to sign, 20% parallel to sign
b) 60% wind normal to sign, 30% parallel to sign

1. In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500µ in or less.
2. Galvanizing vent holes of adequate size shall be provided on underside at each end of bracing pipes. Alternately, holes may be provided in wall of pipe column. All vent holes shall be drilled and de-burred, typ.
3. Steel pipe, plate, carbon steel handhole covers and rolled sections shall be hot dip galvanized after fabrication. Painting is not permitted. See Base Sheet 0S-A-1.
4. See General Notes for fasteners.
5. Dimensions shown are based on selection criteria in the Sign Structures Manual. Nonstandard applications must have dimensions verified or amended as appropriate.
6. "H" based on 15'-0" or actual sign height, whichever is greater.

| Truss Type | Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | R | S | T | U | V | W | X | Y |
| I-A | 4'-6" | 5'-5½" | 4'-0" | 5'-6" | 6'-4¾" | 4" | 9" | 8'-3" |
| II-A (5) | 5'-3" | 6'-3¼" | 4'-6" | 6'-1" | 6'-11¾" | 4¾" | 9½" | 8'-3" |
| | | | | | | | | |

## 10" Ø PIPE TRUSS SUPPORT FRAME

** One butt welded joint is allowed only on one post per support frame. If used, weld procedure must be pre-approved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.

| Structure Number | Station | Support | | Truss Type | Pipe Wall Thickness | H (6) | A |
|---|---|---|---|---|---|---|---|
| | | Left | Right | | | | |
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0S-A-6 2-17-2017

benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = oblaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – 10" DIA. PIPE SUPPORT FRAME FOR ALUMINUM TRUSS**
**STRUCTURE NO. 099-4666**
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | | ILLINOIS FED. AID PROJECT | | |

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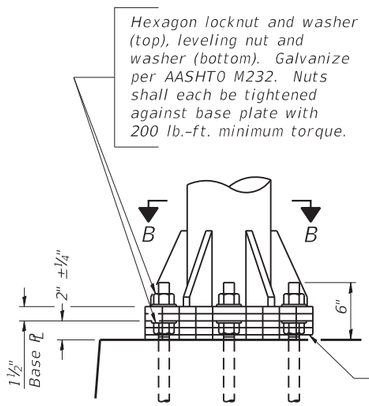
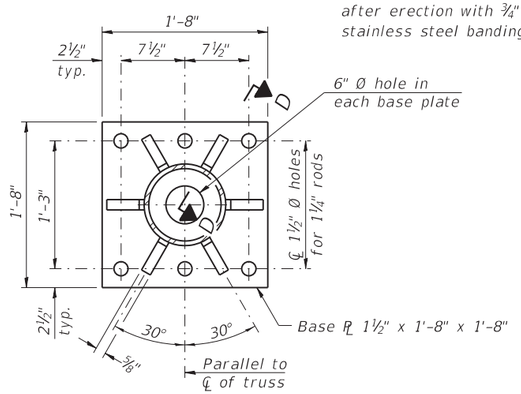
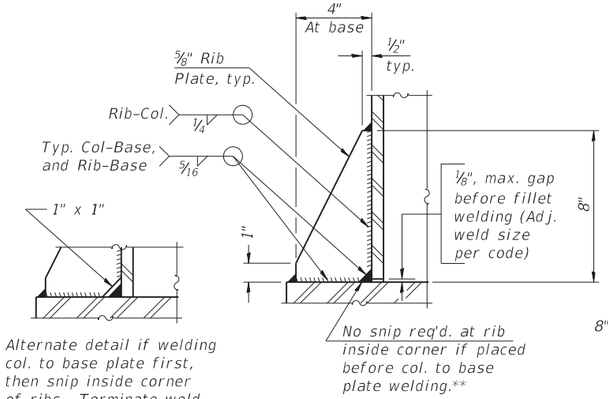



## DETAIL B

Ribs shall be cut to fit slope of pipe.

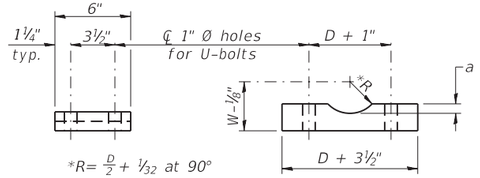



## SECTION B-B




** Alternate detail if welding col. to base plate first, then snip inside corner of ribs. Terminate weld on rib ¼" from snip.

## SECTION D-D



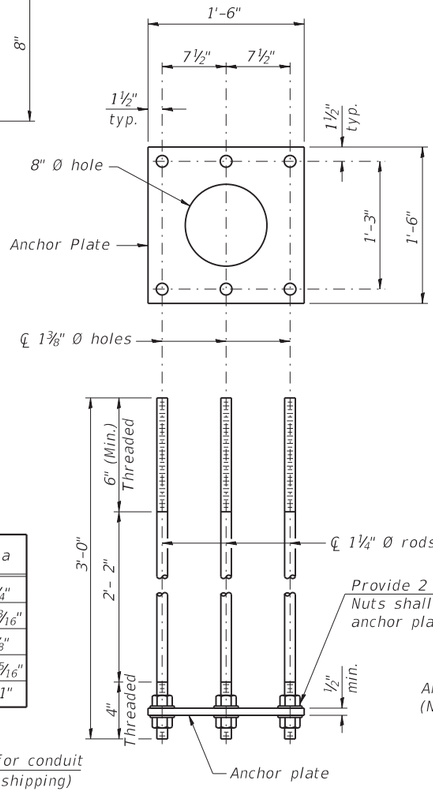

*R= D/2 + 1/32 at 90°

D = Outside Diameter of Chord.
For W, see Base Sheet OS-A-6.

## SADDLE SHIM DETAIL

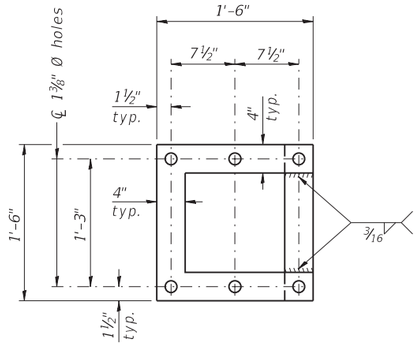
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

| Truss Chord Nominal Dia. | a |
|---|---|
| 5" | ¾" |
| 5½" | 13/16" |
| 6" | ⅞" |
| 6½" | 15/16" |
| 7" | 1" |

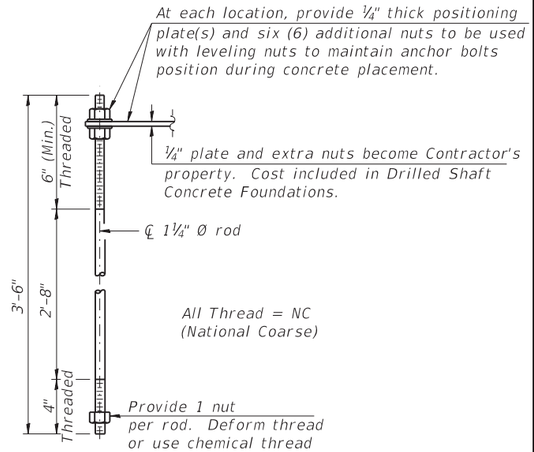



## ANCHOR ROD DETAIL

Spread Footing Foundation



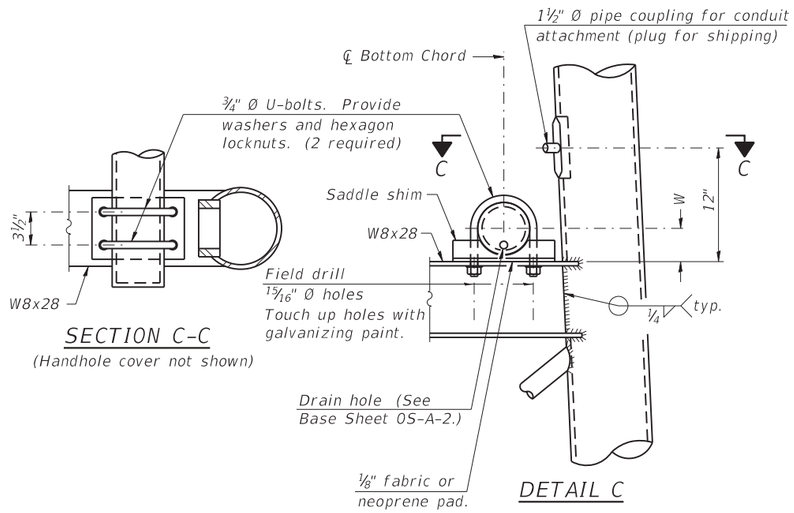

## POSITIONING PLATE(S)




## ANCHOR ROD DETAIL

Drilled Shaft Foundation

Anchor rods shall conform to ASTM F1554 Grade 105. Galvanize upper 12" minimum per AASHTO M232. No welding shall be permitted on rods.




## SECTION C-C

(Handhole cover not shown)

## DETAIL C

## 10" Ø PIPE SUPPORT FRAME DETAILS

OS-A-6A 2-17-2017

| | | | |
|---|---|---|---|
| benesch<br>Alfred Benesch & Company<br>35 W Wacker Drive, Suite 3300<br>Chicago, Illinois 60601<br>312-565-0450 Job No. 10740 | USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | | CHECKED - DTS | REVISED - |
| | PLOT SCALE = | DRAWN - AJB | REVISED - |
| | PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – 10" DIA. PIPE SUPPORT FRAME DETAILS ALUMINUM TRUSS**
**STRUCTURE NO. 099-4666**

SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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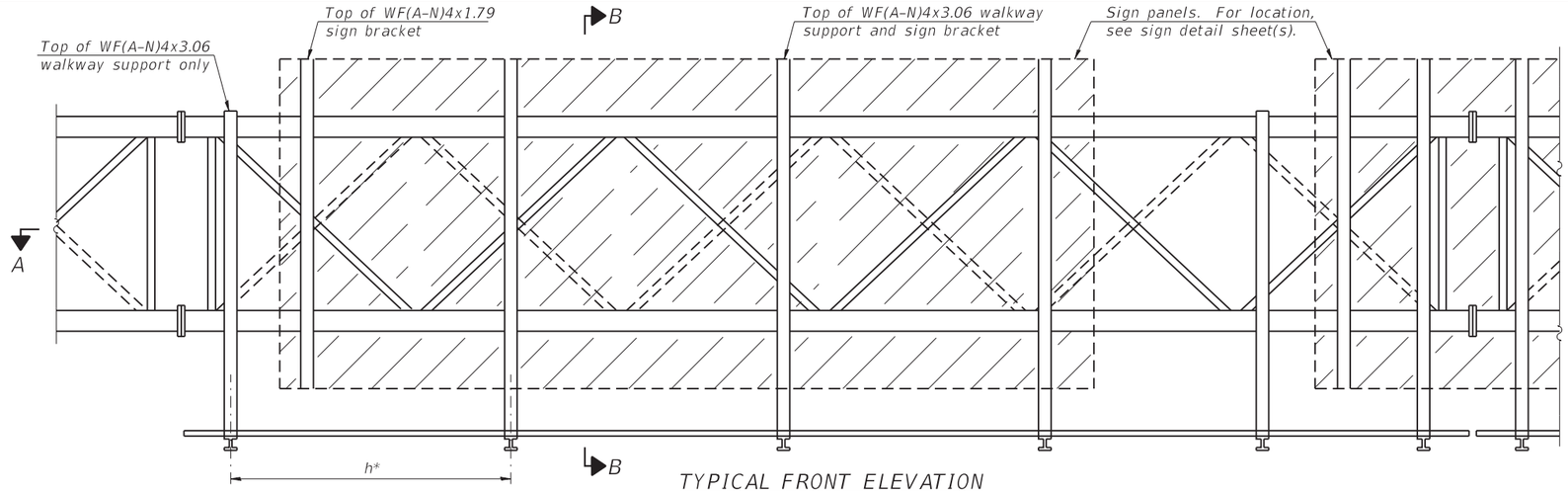
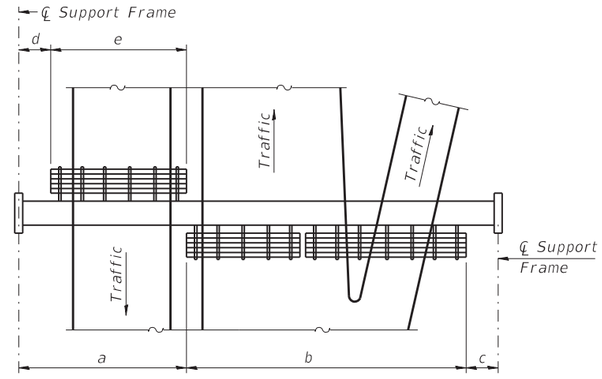


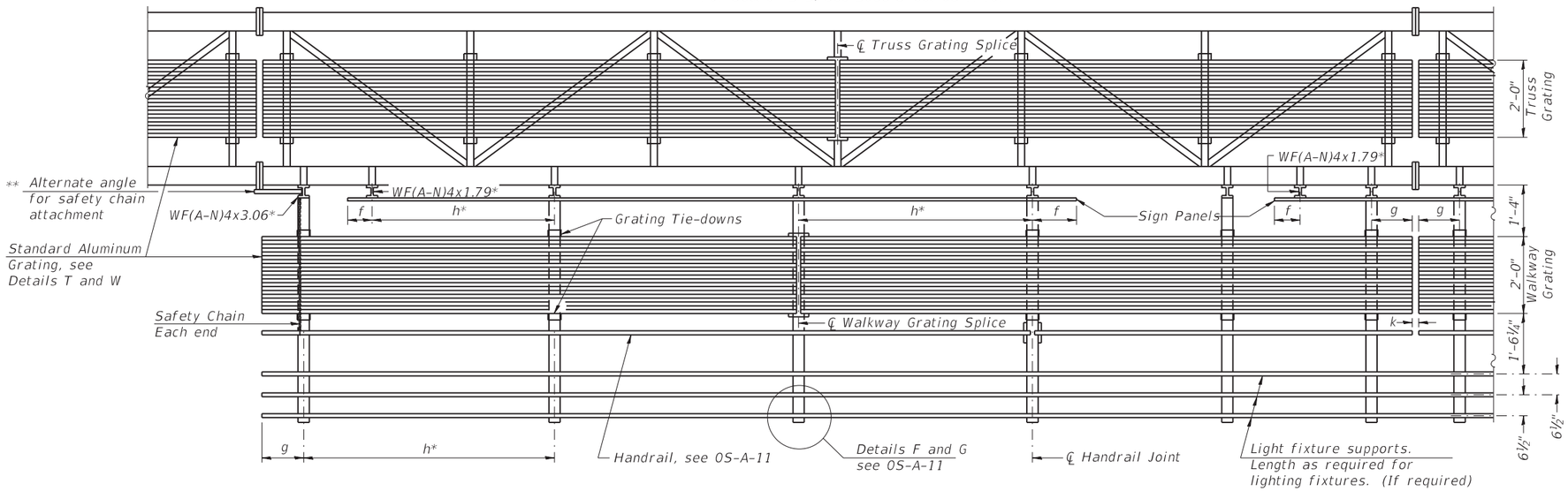

## TYPICAL FRONT ELEVATION

With lights and handrail omitted for clarity.
For Section B-B, see Base Sheet 0S-A-10.




## PLAN
## WALKWAY AND HANDRAIL SKETCH

(Road plan beneath truss varies)




## SECTION A-A

Handrail and walkway shall span a minimum of three brackets between splices and/or gap joints.
Place all sign and walkway brackets as close to panel points as practical.
Handrail joints, grating, and light support splices placed as needed.

## BRACKET TABLE

| WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6 | | |
|---|---|---|
| Sign Width | | Number Brackets Required |
| Greater Than | Less Than or Equal To | |
| | 8'-0" | 2 |
| 8'-0" | 14'-0" | 3 |
| 14'-0" | 20'-0" | 4 |
| 20'-0" | 26'-0" | 5 |
| 26'-0" | 32'-0" | 6 |

Notes:

* Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:

f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway grating to ℄ of nearest support bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)
k = 2" maximum gap between adjacent walkway grating sections and handrail ends

** If walkway bracket at safety chain location is behind sign, add angle to bracket, see Alternate Safety Chain Attachment on Base Sheet 0S-A-11.

For Details T and W, Section B-B and Grating Splice Details see Base Sheet 0S-A-10.
For Handrail Details see Base Sheet 0S-A-11.

| Structure Number | Station | a | b | c | d | e | Walkway Grating and Handrail Lengths |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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Truss grating to facilitate inspection shall run full length (center to center of support frames) ±12" on overhead trusses. Cost of truss grating is included in "Overhead Sign Structure".

Walkway and Truss Grating width dimensions are nominal and may vary ±½" based on available standard widths.

0S-A-9 2-17-2017

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|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – ALUMINUM WALKWAY DETAILS**
**STRUCTURE NO. 099-4666**
SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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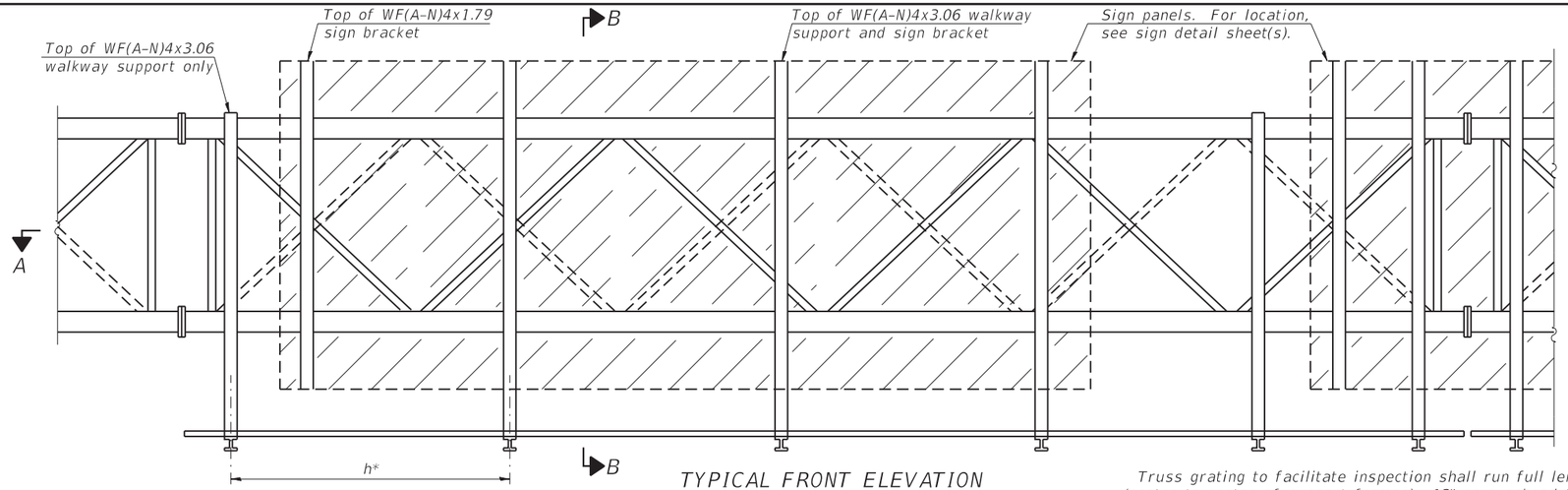
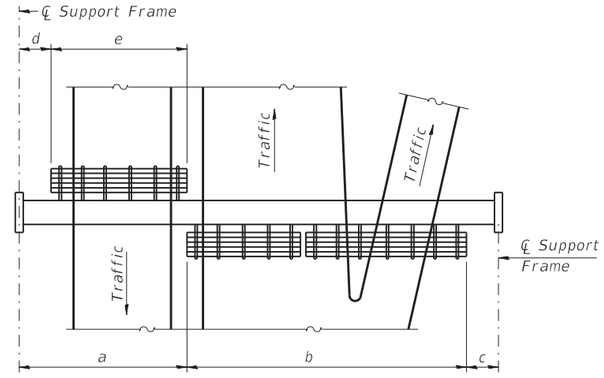



## TYPICAL FRONT ELEVATION

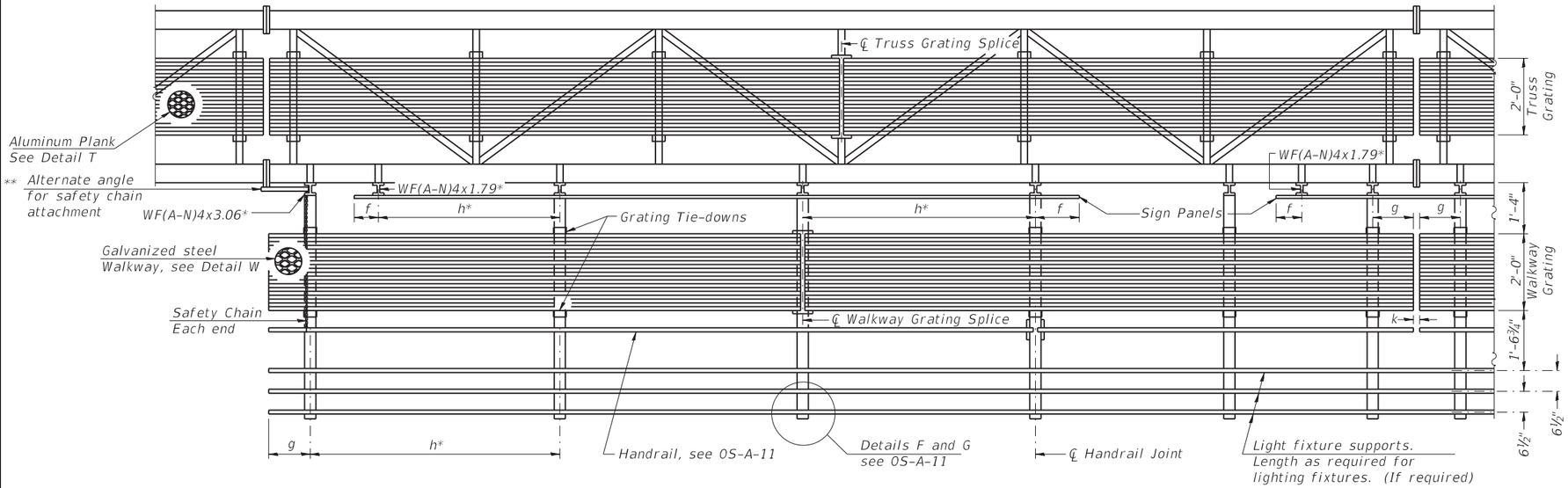
*With lights and handrail omitted for clarity.*
*For Section B-B, see Base Sheet 0S-A-10.*

*Truss grating to facilitate inspection shall run full length (center to center of support frames) ±12" on overhead trusses. Cost of truss grating is included in "Overhead Sign Structure".*




## PLAN
## WALKWAY AND HANDRAIL SKETCH

*(Road plan beneath truss varies)*




## SECTION A-A

*Handrail and walkway shall span a minimum of three brackets between splices and/or gap joints.*
*Place all sign and walkway brackets as close to panel points as practical.*
*Handrail joints, grating, and light support splices placed as needed.*

## BRACKET TABLE

| WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6 | | |
|---|---|---|
| Sign Width | | Number Brackets Required |
| Greater Than | Less Than or Equal To | |
| | 8'-0" | 2 |
| 8'-0" | 14'-0" | 3 |
| 14'-0" | 20'-0" | 4 |
| 20'-0" | 26'-0" | 5 |
| 26'-0" | 32'-0" | 6 |

*Note:*
*Details shown are considered equal alternatives to the Aluminum Walkway on Base Sheet 0S-A-9, and may be substituted by Contractor at no change in contract cost.*

*Walkway and Truss Grating width dimensions are nominal and may vary ±½" based on available standard widths.*

| Structure Number | Station | a | b | c | d | e | Walkway Grating and Handrail Lengths |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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*Notes:*
* *Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:*

*f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)*
*g = 12" maximum, 4" minimum (End of walkway grating to ℄ of nearest support bracket)*
*h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)*
*k = 2" maximum gap between adjacent walkway grating sections and handrail ends*

** *If walkway bracket at safety chain location is behind sign, add angle to bracket, see Alternate Safety Chain Attachment on Base Sheet 0S-A-11.*

*For Details T and W, Section B-B and Grating Splice Details see Base Sheet 0S-A-10.*
*For handrail details see base sheet 0S-A-11.*

0S-A-9S 2-17-2017

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| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – ALTERNATE WALKWAY DETAILS**
**STRUCTURE NO. 099-4666**

SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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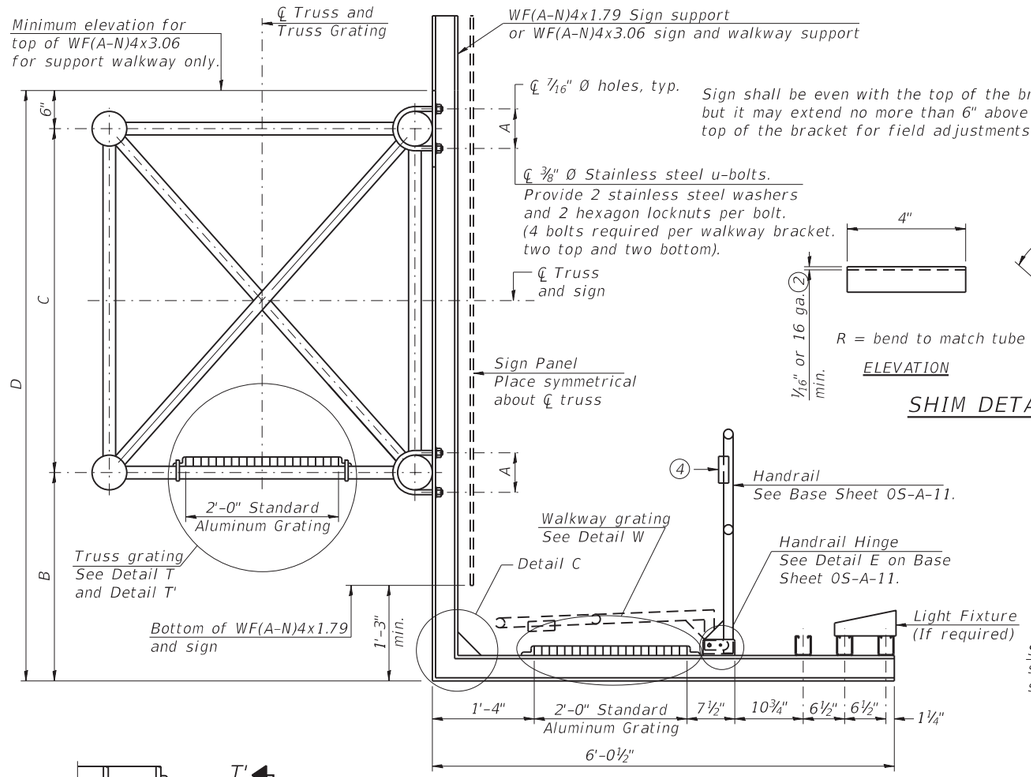
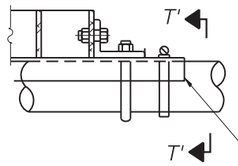



SECTION B–B



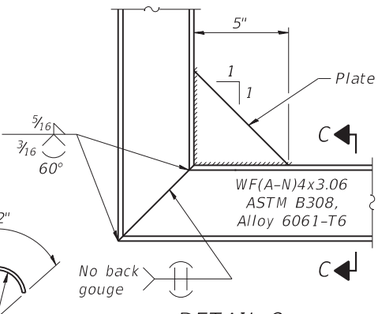

DETAIL T'

(Truss grating splice)

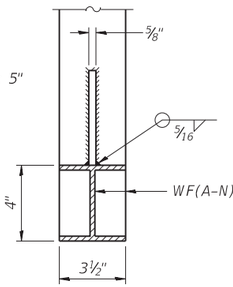
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



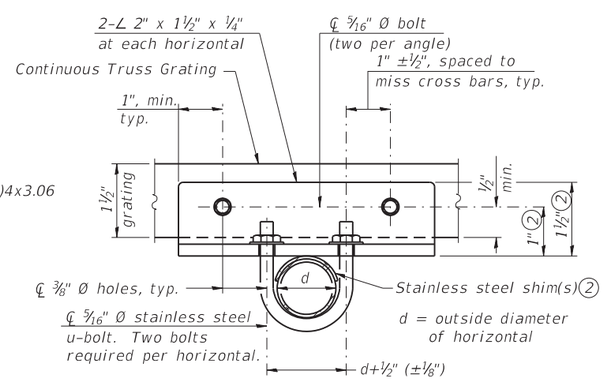

SHIM DETAIL



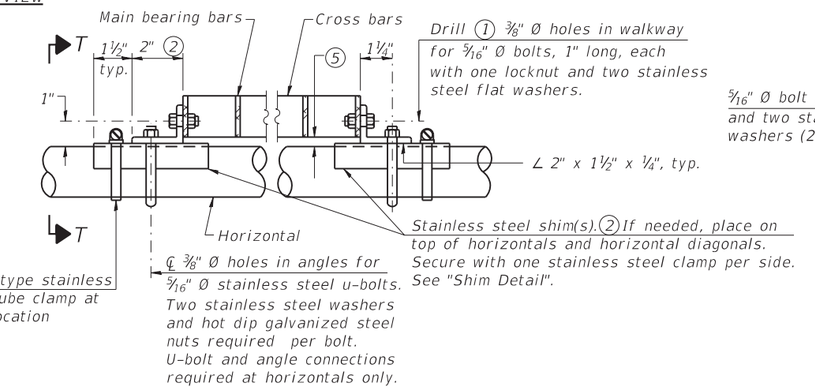

DETAIL C




SECTION C–C

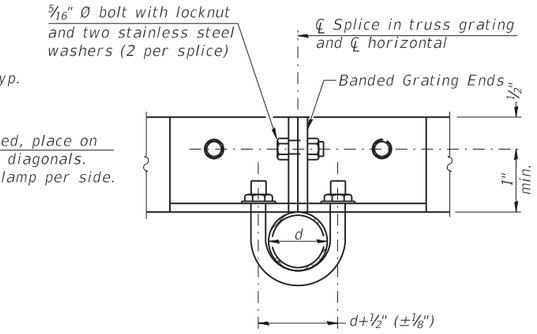



SECTION T–T

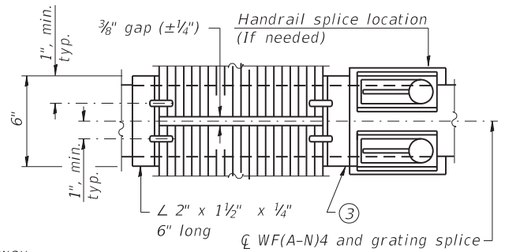



DETAIL T

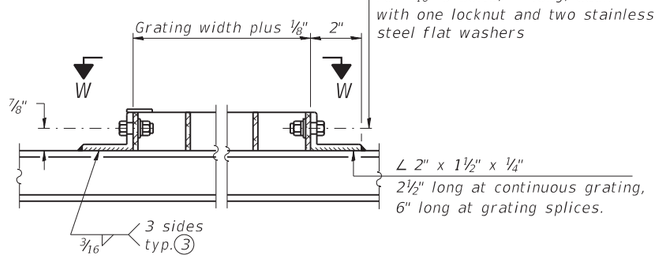
(Continuous Truss grating)




SECTION T'–T'

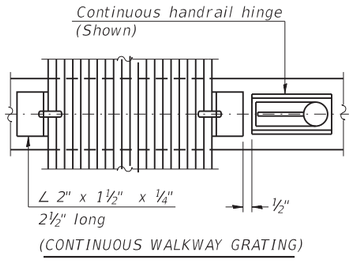



(AT WALKWAY GRATING SPLICE)




DETAIL W

(Walkway grating)




(CONTINUOUS WALKWAY GRATING)

SECTION W–W

## SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 Alloy 6061–T6.

Cross bars shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063–T5 or 6061–T6.

OR

Aluminum Grating with modified "t" sections for main bearing bars shall meet the following requirements:

Main bars shall conform to ASTM B221 Alloy 6061–T6 and have a minimum section modulus equal to 0.0705 $in.^3$ per bar, a depth of 1½", spaced on 1 3/16" centers.

Cross bars shall conform to ASTM B221 Alloy 6063–T5 or T–42 and spaced on 4" centers.

| Structure Number | Station | A | ⑥ B | C | ⑥ D |
|---|---|---|---|---|---|
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① Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.

② Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.

③ If Handrail Joint present, weld angle to WF(A–N)4 and ¼" extension bars. (See Base Sheet 0S–A–11.)

④ PL ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.

⑤ Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

⑥ Based on actual height of tallest sign given on 0S–A–1.

0S–A–10 2–17–2017

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| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – ALUMINUM WALKWAY DETAILS**
**STRUCTURE NO. 099–4666**
SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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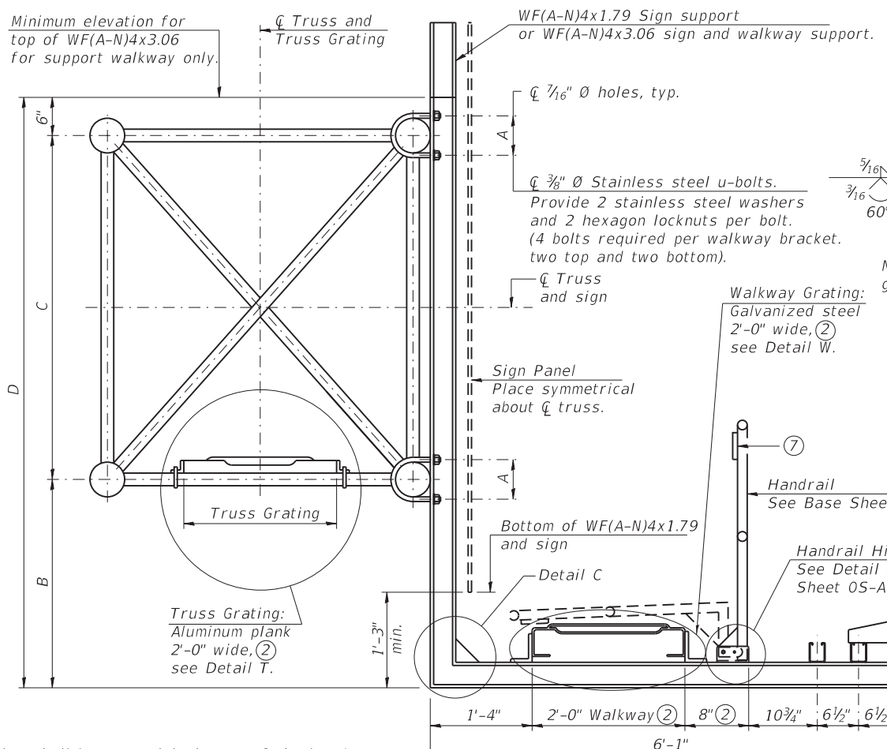
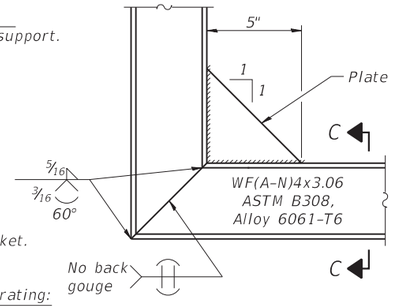
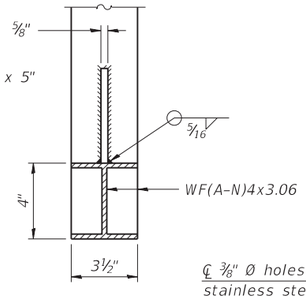



Sign shall be even wiyh the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.

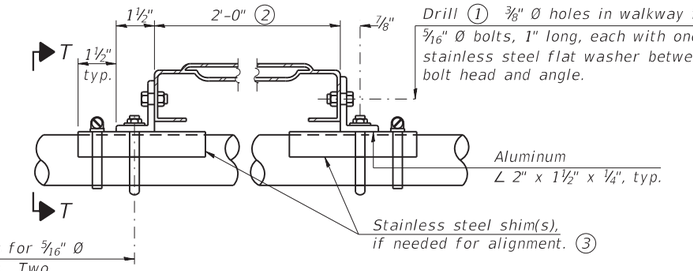
SECTION B-B




DETAIL C

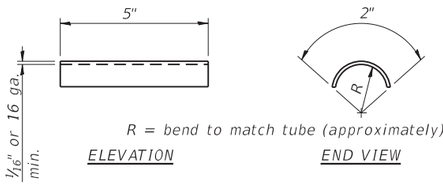



SECTION C-C

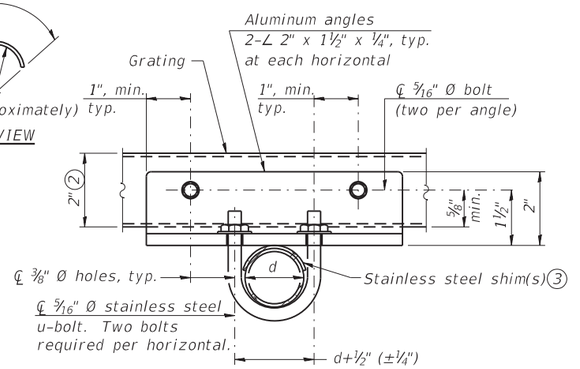



℄ 3/8" Ø holes in angles for 5/16" Ø stainless steel u-bolts. Two stainless steel washers and hot dip galvanized steel nuts required per bolt. U-bolt and angle connections required at horizontals only.

DETAIL T
(Truss grating at horizontal)

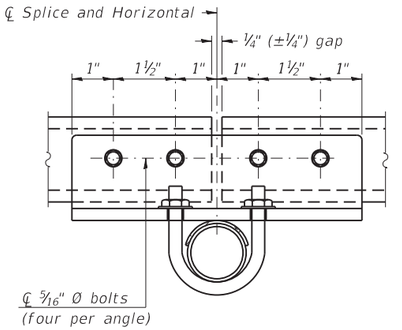



SHIM DETAIL




SECTION T-T
(Truss Grating Continuous)

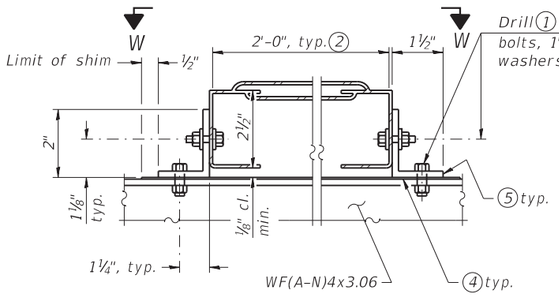
d = outside diameter of horizontal



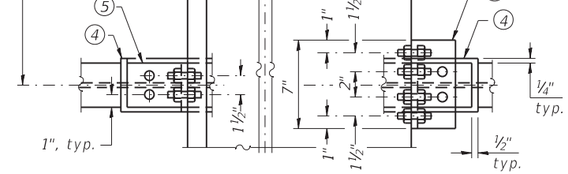

SECTION T-T
(Truss Grating Splice)

Alternate splice details and locations may be used subject to the Engineer's review and approval.

ALUMINUM TRUSS GRATING




DETAIL W
GALVANIZED STEEL WALKWAY GRATING




WALKWAY GRATING CONTINUOUS AT WALKWAY GRATING SPLICE

SECTION W-W

(1) Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.

(2) Perforated or expanded metal grating providing a skid resistant (non-serrated) surface and capable of supporting a 500 pound concentrated load with a 6'-0" clear span. Walkway and truss grating dimensions are nominal and may vary (width ±½", depth ±½") based on available standard sizes. Cut ends of grating shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.

(3) Stainless steel shims shall be placed under angles at horizontals and horizontal diagonals if needed to compensate for alignment variations and differences in horizontal diagonal pipe sizes beyond adjustment provided by angles. Secure with one stainless steel clamp per location, see "Shim Detail". Thicker shim plates may be used when needed subject to shims performing properly

(4) 1/16" (or 16 ga.) x 2½" x 4" stainless steel shim adhered to top of WF(A-N)4x3.06 beneath each galvanized angle. Adhesives for shims shall be suitable for materials joined and full exposure conditions.

(5) Galvanized steel ∠ 2" x 2" x ¼", 3½" long with continuous grating, 7" long at grating splice.

(6) Details shown are considered equal alternatives to the Aluminum Walkway on Base Sheet 0S-A-10 and may be substituted by Contractor at no change in contract cost.

(7) PL ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.

(8) Based on actual height of tallest sign given on 0S-A-1.

| Structure Number | Station | A | (8) B | C | (8) D |
|---|---|---|---|---|---|
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0S-A-10S 2-17-2017

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| | | |
|---|---|---|
| USER NAME = oblaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – ALTERNATE WALKWAY DETAILS**
**STRUCTURE NO. 099-4666**
SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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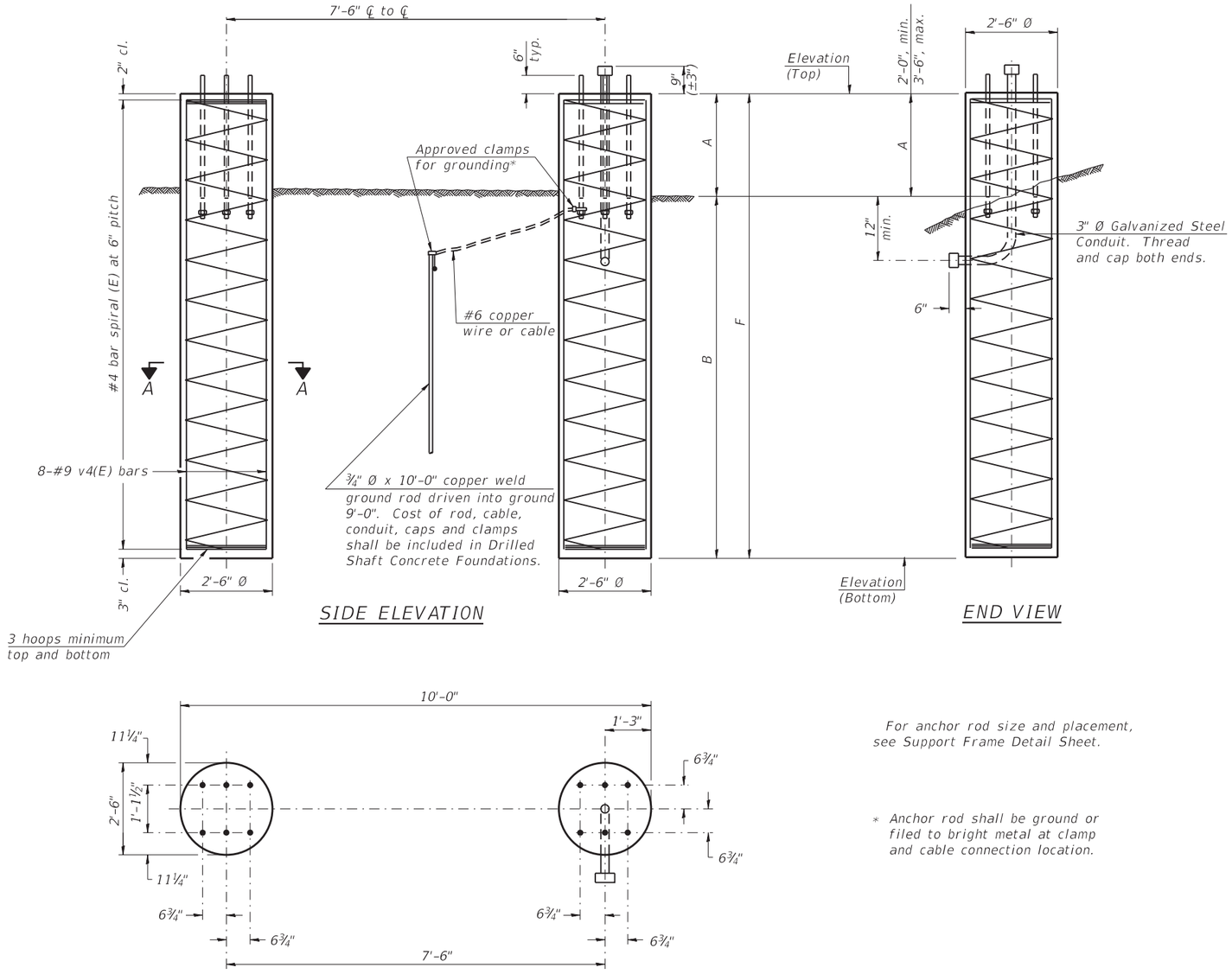



SIDE ELEVATION

END VIEW




PLAN

For anchor rod size and placement, see Support Frame Detail Sheet.

* Anchor rod shall be ground or filed to bright metal at clamp and cable connection location.

## BAR LIST - EACH FOUNDATION

| Bar | Number | Size | Length | Shape |
|---|---|---|---|---|
| v4(E) | 16 | #9 | F less 5" | —— |
| #4 bar spiral (E) - see Side Elevation | | | | |

NOTES:

The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

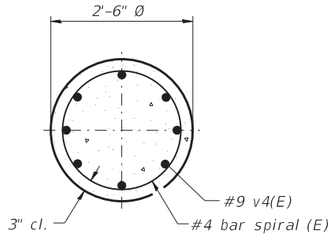
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.




SECTION A-A

## DETAILS FOR 8" Ø SUPPORT FRAME TYPE I-A TRUSS

| Structure Number | Station | | Left Foundation | | | | | Right Foundation | | | | | Class DS Concrete (Cu. Yds.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Elevation Top | Elevation Bottom | A | B | F | | Elevation Top | Elevation Bottom | A | B | F | |
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OS4-F2 2-17-2017


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| | | |
|---|---|---|
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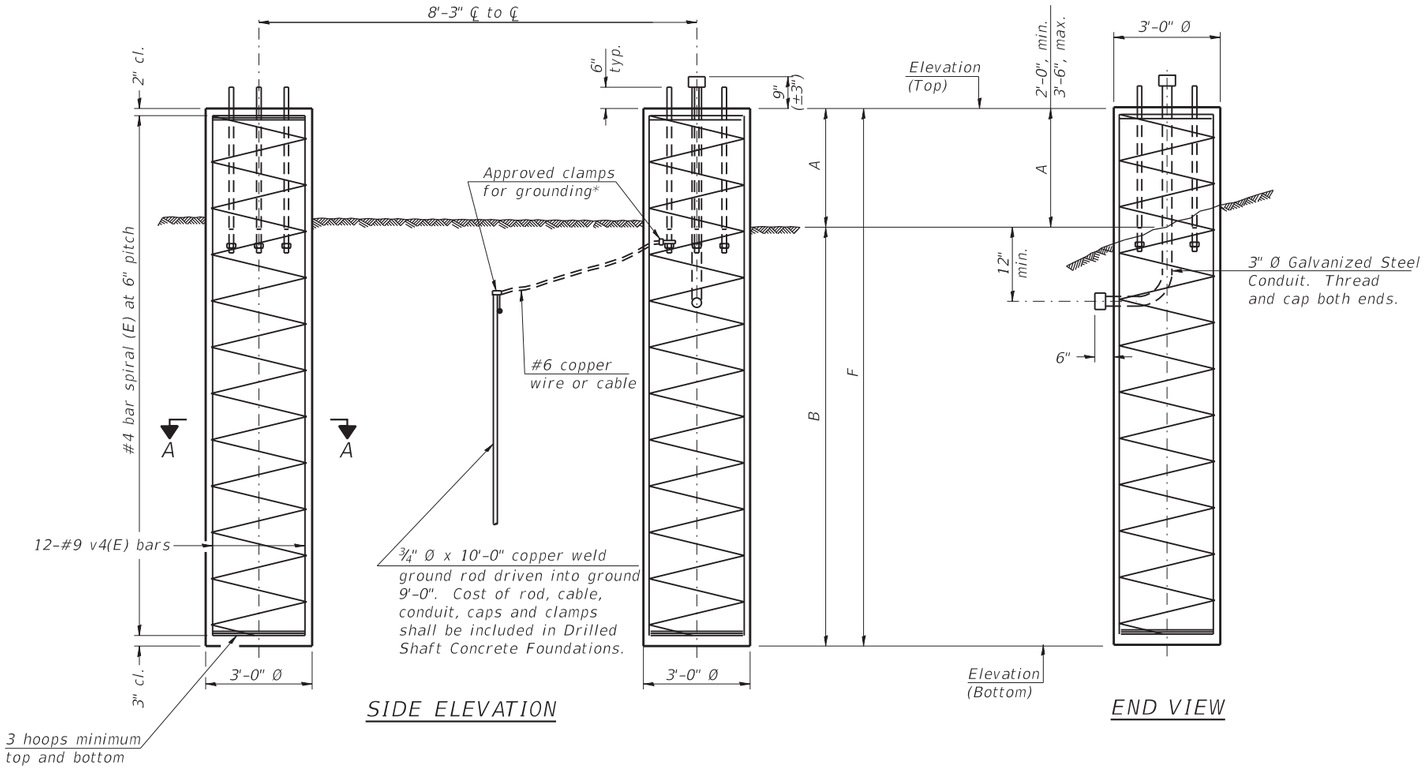
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

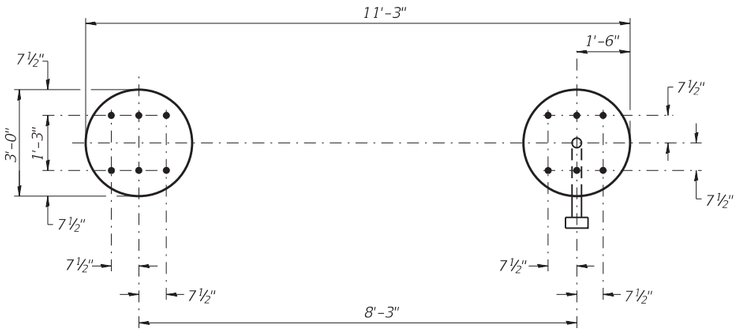
OVERHEAD SIGN STRUCTURE - FOUNDATION DETAILS (1 OF 2)
STRUCTURE NO. 099-4666
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |




SIDE ELEVATION

END VIEW




PLAN

## BAR LIST - EACH FOUNDATION

| Bar | Number | Size | Length | Shape |
|---|---|---|---|---|
| v4(E) | 24 | #9 | F less 5" | —— |
| #4 bar spiral (E) - see Side Elevation | | | | |

NOTES:

The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

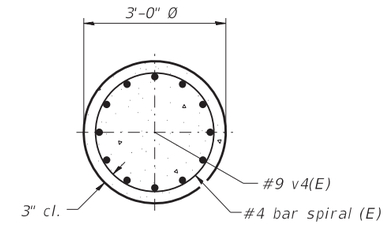
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.




SECTION A-A

For anchor rod size and placement, see Support Frame Detail Sheet.

* Anchor rod shall be ground or filed to bright metal at clamp and cable connection location.

## DETAILS FOR 10" Ø SUPPORT FRAME TYPE I-A or II-A TRUSS

| Structure Number | Station | | Left Foundation | | | | Right Foundation | | | | | Class DS Concrete (Cu. Yds.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Elevation Top | Elevation Bottom | A | B | F | Elevation Top | Elevation Bottom | A | B | F | |
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0S4-F3 2-17-2017

benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE - FOUNDATION DETAILS (2 OF 2)**
**STRUCTURE NO. 099-4666**
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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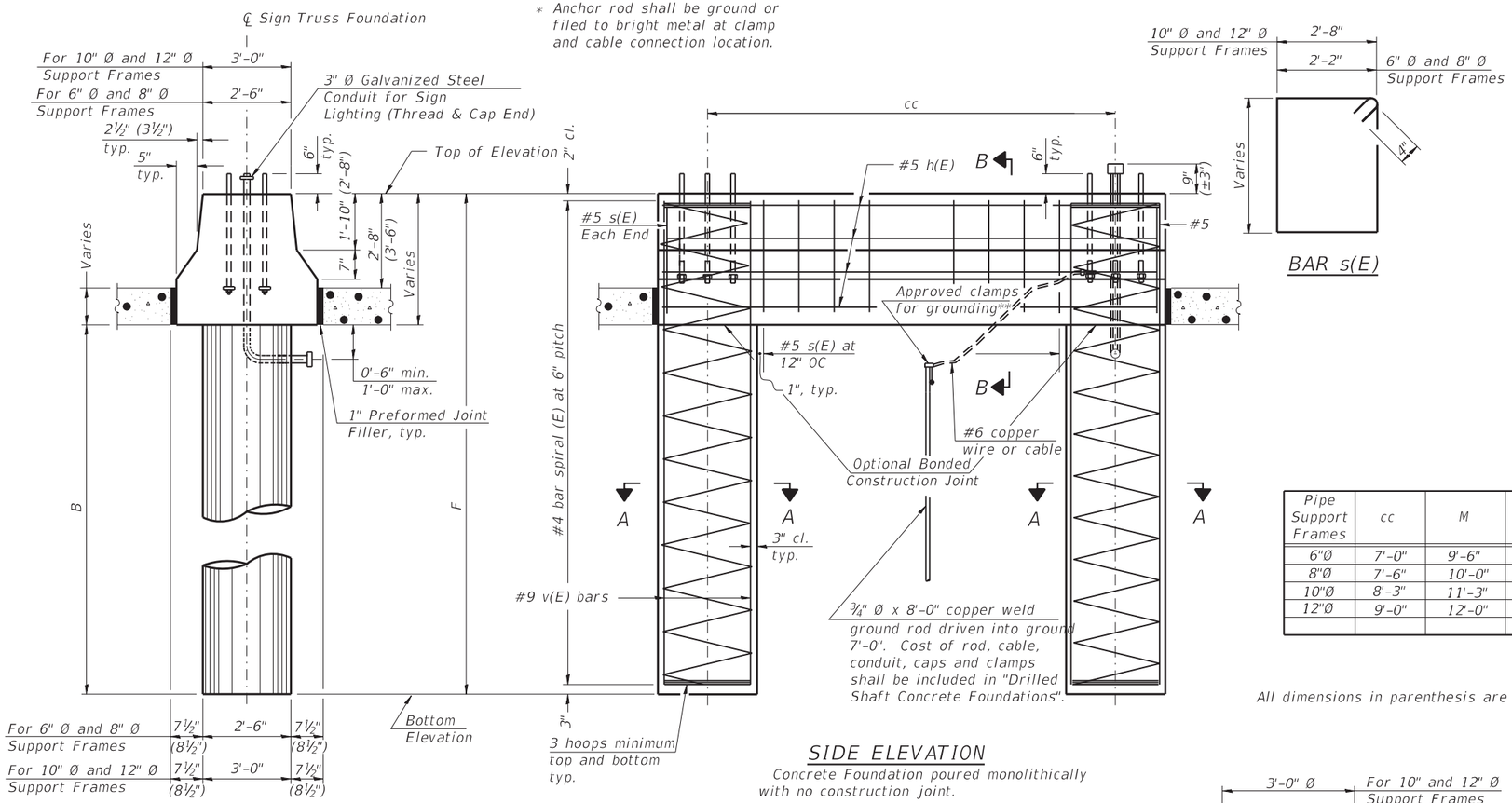
℄ Sign Truss Foundation

* Anchor rod shall be ground or filed to bright metal at clamp and cable connection location.




END VIEW




BAR s(E)

SIDE ELEVATION

Concrete Foundation poured monolithically with no construction joint.

NOTES:

The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

No sonotubes or decomposable forms shall be used below the lower conduit entrance.

Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.

| Pipe Support Frames | cc | M | a | a/2 |
|---|---|---|---|---|
| 6"Ø | 7'-0" | 9'-6" | 0'-11" | 5½" |
| 8"Ø | 7'-6" | 10'-0" | 1'-1½" | 6¾" |
| 10"Ø | 8'-3" | 11'-3" | 1'-3" | 7½" |
| 12"Ø | 9'-0" | 12'-0" | 1'-6" | 9" |
| | | | | |

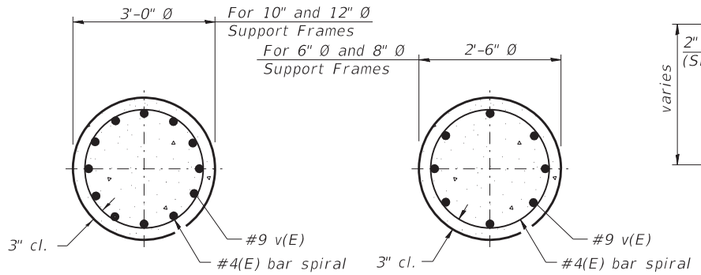
BAR LIST - EACH FOUNDATION

| Bar | Number | Size | Length | Shape |
|---|---|---|---|---|
| h(E) | 10 | #5 | M less 4" | —— |
| s(E) | Varies | #5 | Varies | □ |
| v(E) | 16 | #9 | F less 0'-5" | —— |
| v(E) | 24 | #9 | F less 0'-5" | —— |
| | | | | |
| #4(E) bar spiral _ see Side Elevation | | | | |

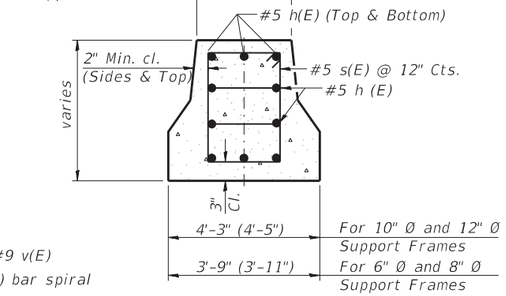
6" Ø and 8" Ø Support Frame

10" Ø and 12" Ø Support Frame

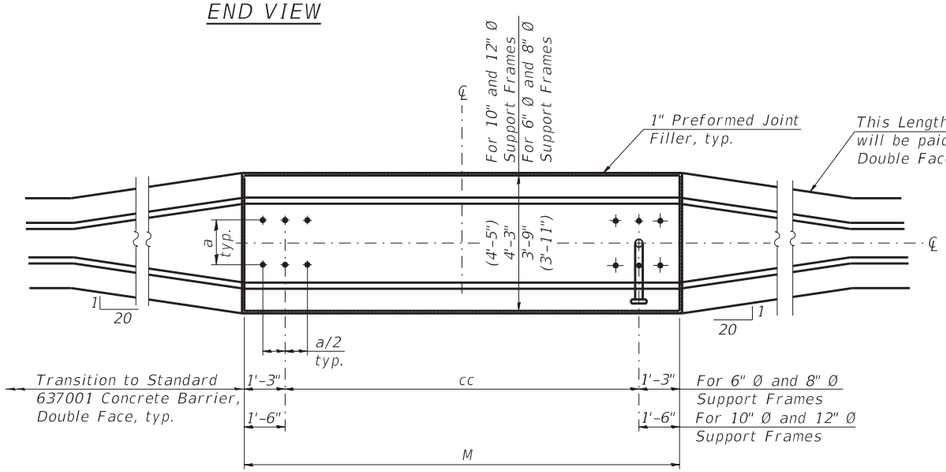
All dimensions in parenthesis are for 42" high barrier.




SECTION A-A




SECTION B-B




PLAN

| Structure Number | Station | Left Foundation | | | | Right Foundation | | | | Class DS Concrete (Cu. Yds.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Elevation Top | Elevation Bottom | B | F | Elevation Top | Elevation Bottom | B | F | |
| | | | | | | | | | | |
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OS4-MED 2-17-2017

benesch
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35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**OVERHEAD SIGN STRUCTURE – MEDIAN SUPPORT FOUNDATION DETAILS**
**STRUCTURE NO. 099-4666**
SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

MODEL: Default
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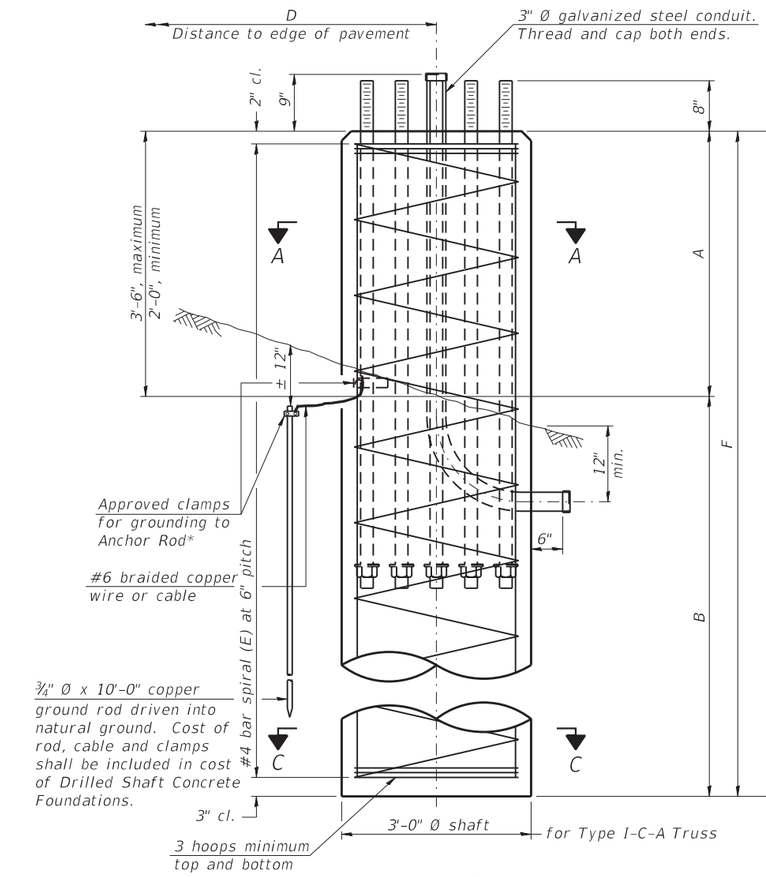
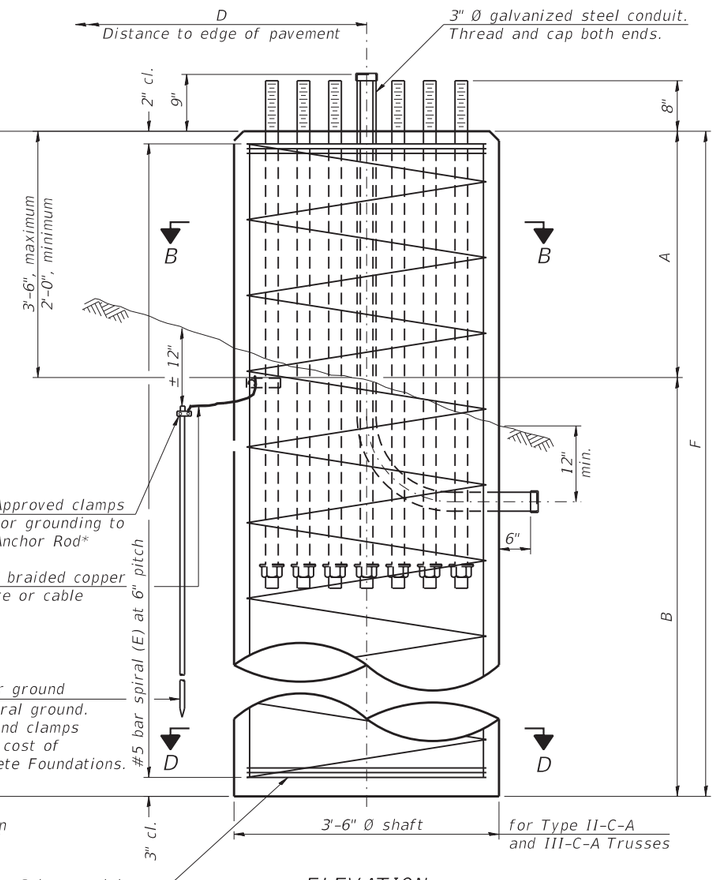
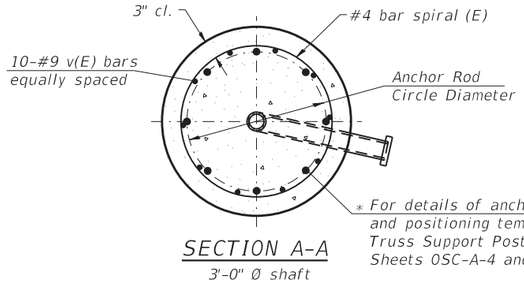
* Grind anchor rod to bright finish at ground clamp location before installing clamp.



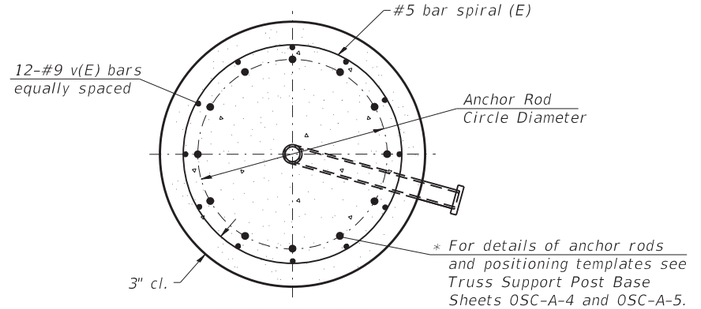

ELEVATION



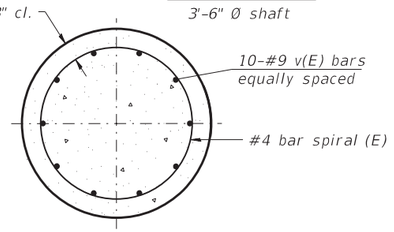

ELEVATION



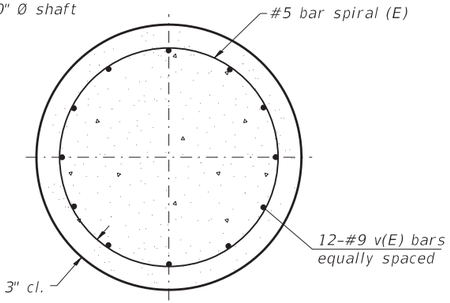

SECTION A-A
3'-0" Ø shaft




SECTION B-B
3'-6" Ø shaft




SECTION C-C
3'-0" Ø shaft




SECTION D-D
3'-6" Ø shaft

NOTES:

The foundation dimensions shown in the Foundation Design Table are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown in the Foundation Data Table will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

No sonotubes or decomposable forms shall be used below the lower conduit entrance. Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Concrete Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in "Drilled Shaft Concrete Foundation".

FOUNDATION DESIGN TABLE

| Truss Type | Post Base Sheet | Maximum Cantilever Length (ft) | Maximum Total Sign Area (sq ft) | Shaft Diameter (in) | "B" Depth (ft) | Anchor Rods | | Anchor Rod Circle Diameter (in) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | No. | Diameter (in) | |
| I-C-A | 0SC-A-4 | 25 | 170 | 3.0 | 16.0 | 8 | 2 | 22 |
| II-C-A | 0SC-A-5 | 30 | 170 | 3.5 | 17.0 | 12 | 2 | 30 |
| II-C-A | 0SC-A-5 | 30 | 340 | 3.5 | 21.5 | 12 | 2 | 30 |
| III-C-A | 0SC-A-5 | 35 | 170 | 3.5 | 19.0 | 12 | 2 | 30 |
| III-C-A | 0SC-A-5 | 35 | 250 | 3.5 | 22.5 | 12 | 2 | 30 |
| III-C-A | 0SC-A-5 | 35 | 400 | 3.5 | 26.5 | 12 | 2 | 30 |
| III-C-A | 0SC-A-5 | 40 | 400 | 3.5 | 32.0 | 12 | 2 | 30 |
| | | | | | | | | |

FOUNDATION DATA TABLE

| Structure Number | Station | Truss Type | Shaft Diameter | Elevation Top | Elevation Bottom | Qu | A | B | F | Class DS Concrete Cubic Yards |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
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OSC-A-9 2-17-2017

benesch
Alfred Benesch & Company
35 W Wacker Drive, Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = ablaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES – DRILLED SHAFT FOUNDATIONS DETAILS**
**STRUCTURE NO. 099-4666**
SHEET NO. 503 OF 550 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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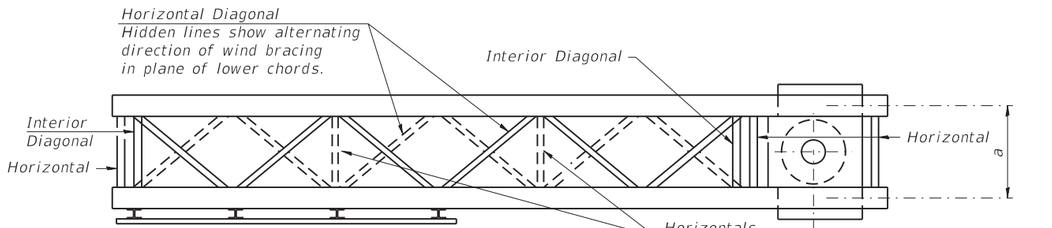
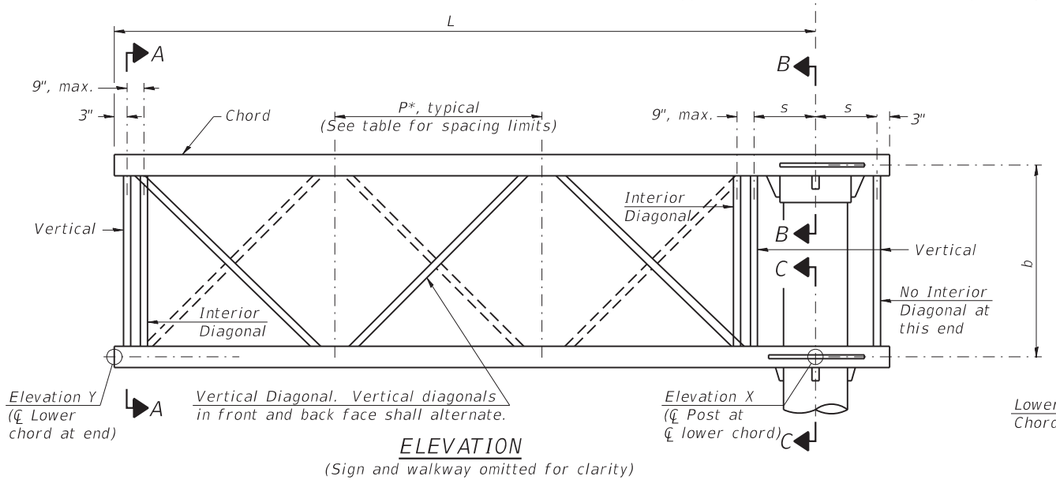



PLAN

(Walkway not shown)




ELEVATION

(Sign and walkway omitted for clarity)

TYPICAL TRUSS UNIT

For Section B-B and Section C-C, see Base Sheet 0SC-A-3.

Note:
There are twice as many horizontal diagonals as there are vertical diagonals.

TRUSS UNIT TABLE

| Truss Type | Dimension "a" | Dimension "b" | Dimension "s" | Limits for Panel Spacing (P)* | Up. & Low. Chord | | Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals | |
|---|---|---|---|---|---|---|---|---|
| | | | | | O.D. | Wall | O.D. | Wall |
| I-C-A | 24" | 54" | 16" | 36" min. to 48" max. | 5" | 5/16" | 2½" | 5/16" |
| II-C-A | 36" | 66" | 21" | 42" min. to 54" max. | 6½" | 5/16" | 3¼" | 5/16" |
| III-C-A (35' Max.) | 36" | 84" | 21" | 48" min. to 66" max. | 7" | ⅜" | 3½" | ⅜" |
| III-C-A (>35' to 40') | 36" | 84" | 21" | 48" min. to 66" max. | 8" | ⅜" | 3½" | ⅜" |

$*P = \frac{L-s-3"}{\#\ Panels}$

| Structure Number | Station | Truss Type | Design Length (L) | Number of Panels Per Unit | Panel Length (P)* |
|---|---|---|---|---|---|
| | I-55 NB Entrance Ramp B from SB DDI, 1201+85 | III-C-A | 40'-0" | | |
| | NB I-55, 306+00 | III-C-A | 35'-0" | | |
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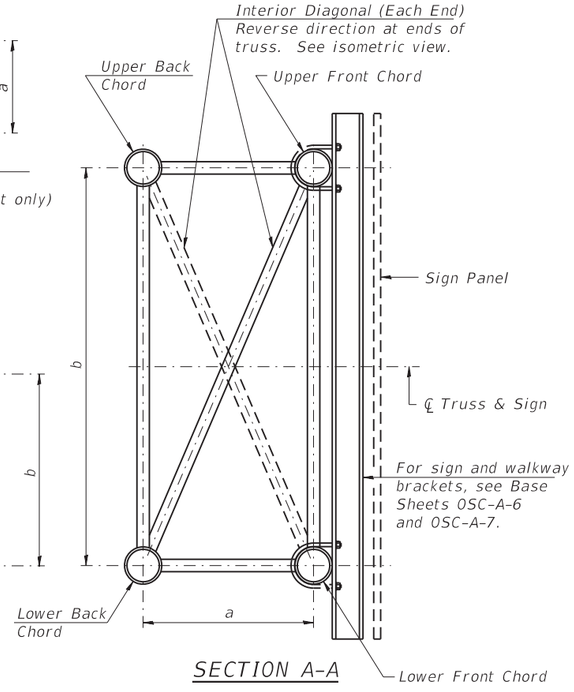
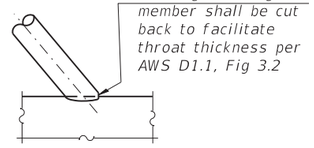
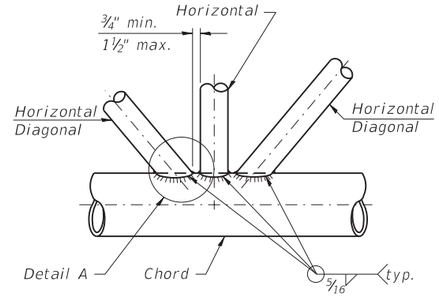


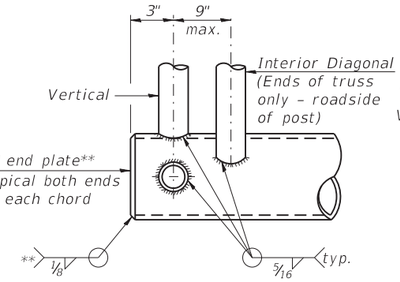

SECTION A-A




DETAIL A

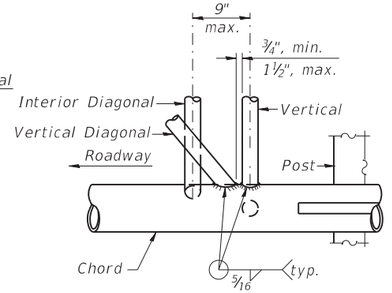



TRUSS INTERIOR JOIN DETAIL

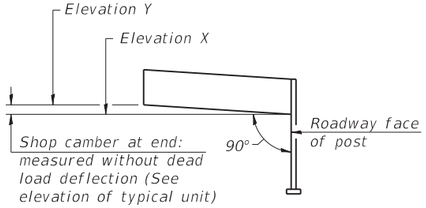



CANTILEVER END JOINT DETAIL

** Contractor may alternatively use standard aluminum drive-fit cap to close ends. ½" Ø Drain hole in end plate / drive-fit cap.




POST END JOINT DETAIL




CAMBER DIAGRAM

(For Fabrication Only)

SHOP CAMBER TABLE

| Unit Length (L) | Shop Camber at End |
|---|---|
| 15' | 1½" |
| 16'-17' | 1¾" |
| 18'-20' | 2" |
| 21'-22' | 2¼" |
| 23'-25' | 2½" |
| 26'-27' | 2¾" |
| 28'-30' | 3" |
| 31'-32' | 3¼" |
| 33'-35' | 3½" |
| 36'-37' | 4" |
| 38'-40' | 4½" |




ISOMETRIC VIEW

TYPICAL TRUSS UNIT

ASTM B221 Alloy 6061 Temper T6

0SC-A-2 2-17-2017

benesch
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Chicago, Illinois 60601
312-565-0450 Job No. 10740

| | | |
|---|---|---|
| USER NAME = oblaszczyk | DESIGNED - EO | REVISED - |
| | CHECKED - DTS | REVISED - |
| PLOT SCALE = | DRAWN - AJB | REVISED - |
| PLOT DATE = 2/26/2020 | CHECKED - DTS | REVISED - |

**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**

**CANTILEVER SIGN STRUCTURES – TRUSS DETAILS**
**STRUCTURE NO. 099-4666**

SHEET NO. S03 OF S50 SHEETS

| F.A.U. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 338 | 2018-075-R | WILL | $TOT | |
| | | CONTRACT NO. 62H15 | | |
| | ILLINOIS FED. AID PROJECT | | | |

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