CITY OF KOKOMO
HOWARD COUNTY, INDIANA

NORTH SIDE INTERCEPTOR RELIEF SEWER

Addendum No. 1
April 15, 2024

Bid Date: April 24, 2024 (**Revised**)

Bid Time: 10:00 am (local time)

Owner: City of Kokomo

Engineer: United Consulting
8440 Allison Pointe Boulevard, Suite 200
Indianapolis, Indiana 46250
Telephone: (317) 895-2585

The following items are a revision/clarification to the requirements of the Bidding Documents for this Project. The articles contained in this Addendum take precedence over the requirements of the previously published Bidding Documents. Where any article of the Specifications or any detail of the Drawings is modified or deleted by the article contained in the Addendum, the unaltered provisions of that article paragraph, subparagraph, or clause shall remain in effect.

The Bidder must acknowledge receipt of this Addendum by acknowledgement on the proposal form and by submitting a signed copy of the Addendum signature page. Failure to do so can be cause for bid rejection.

Item No. 1: Revision – The bid opening scheduled for Wednesday, April 17, 2024, has been rescheduled to Wednesday, April 24, 2024, at 10:00 a.m. local time. The location of the bid opening remains the same.

Item No. 2: Revision – The conflicting water service identified at STA 24+75 on Plan Sheet 5 (Keynote #2) will be relocated by others. The Contractor will be required to coordinate schedules in advance.

Item No. 3: Clarification – Contractor is not responsible for replacing existing landscaping. If planter areas are disturbed, Contractor is required to repair concrete and restore existing grade, topsoil, and seed. Future landscaping will be completed by others.

Item No. 4: Clarification – The City of Kokomo will temporarily remove and reinstall the overhead mast arms and traffic lights at the Apperson Way and Superior Street intersection to minimize overhead conflicts and benefit constructability through this intersection.

Item No. 5: Information – A copy of the geotechnical report by CTL Engineering, Inc. is included with this Addendum.

Item No. 6: Information – A copy of the approved IDEM Sanitary Sewer Construction permit is included with this Addendum.

<u>Item No. 7:</u> Information - A copy of the Pre-Bid Meeting Minutes has been included with this Addendum. These minutes are for informational purposes only and do not alter the Bidding Documents.

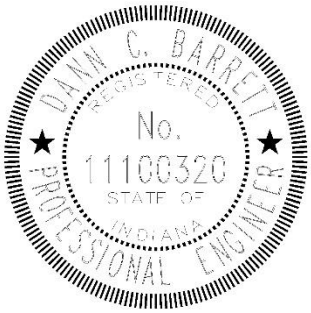
<u>Item No. 8</u>: Bidders to acknowledge receipt of this Addendum No. 1 by signing below and attaching the same with the bid package. Failure to do so can be cause for bid rejection.

_____
Contractor Name

_____ _____
Signature Date

_____
Title

This Addendum reviewed and approved by:



04/15/2024

Dann C. Barrett, P.E.
Reg. Engineer No. 11100320
State of Indiana
Addendum Certification

END OF ADDENDUM NO. 1

CTL Engineering, Inc.
1310 S. Franklin Road
Indianapolis, Indiana 46239
Phone: (317) 295-8650 • Fax: (317) 295-8395
www.ctleng.com

Consulting Engineers – Testing – Inspection Services – Analytical Laboratories

April 10, 2024

United Consulting
8440 Allison Pointe Blvd, Suite 200
Indianapolis, IN 46250

Attention: Mr. Dann Barrett, PE

Reference: Geotechnical Exploration
North Side Interceptor Relief Sewer Project
Kokomo, Indiana
CTL Project No.: 24050019IND

Dear Mr. Barrett:

In accordance with your authorization, CTL Engineering, Inc. has completed the geotechnical exploration on the above referenced site. The attached report includes the results of the field and laboratory testing, and support recommendations and soil parameters required for the design of the proposed sewer project and earth related phases of the project.

Thank you for the opportunity to be of service to you on this project. If you have any questions or need further information, please contact us at (317) 295-8650.

Sincerely,

CTL ENGINEERING, INC.

Shawn M. Marcum, PE
Senior Project Engineer

GEOTECHNICAL EXPLORATION

NORTH SIDE INTERCEPTOR RELIEF SEWER PROJECT
KOKOMO, INDIANA
CTL PROJECT NO.: 24050019IND

PREPARED FOR:

UNITED CONSULTING
8440 ALLISON POINTE BLVD, SUITE 200
INDIANAPOLIS, IN 46250

PREPARED BY:

CTL ENGINEERING, INC.
1310 S. FRANKLIN ROAD
INDIANAPOLIS, INDIANA 46239

APRIL 10, 2024

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I. PROJECT INFORMATION

The project involves construction of a new 24-inch relief sewer, which will be constructed along Superior Street and Union Street in Kokomo, Indiana. Table 1 below summarizes the invert elevations of the proposed sewer near the boring locations.

Table 1 –Borings Locations & Depths

Boring No.	Proposed Sewer Installation			Boring Depth (feet)	Description
	Top of Cast Elevation	Invert Elevation	Depth (feet)		
B-1	803	784	19	30	Downstream Connection
B-2	810	786	24	35	Superior/Union
B-3	808	786.3	21.7	30	Superior/Market
B-4	812	786.6	25.4	35	Superior/Apperson
B-5	801	787	14	25	Upstream Connection

Detailed structural plans were not provided at the time of preparation of this report. If the assumptions provided about the proposed improvements are incorrect, CTL should be provided the opportunity to review the recommendations contained within this geotechnical report.

II. SUBSURFACE EXPLORATION

Five test borings, designated as B-1 through B-4 and B-5A, were drilled along the alignment of the proposed sewer line to depths ranging between 23.1 feet to 28.8 feet. Additionally, and offset boring designated as B-5B was drilled near boring B-5A to a depth of 7 feet for the purpose of obtaining Undisturbed Soil Sample (Shelby Tube). Test boring B-5 was terminated at a depth of 7.5 feet due to a conflicting underground utility. The test borings were drilled at the approximate locations as shown on the attached Boring Location Plan in Appendix A.

The test borings were advanced with a truck mounted drilling rig utilizing hollow stem augers (HSA) between March 13th and March 18th, 2024. Standard Penetration tests were conducted using a 140-pound automatic hammer falling 30 inches to drive a 2-inch O.D. split barrel sampler for 18 inches.

Soil samples obtained from the drilling operation were preserved in glass jars. Recovered soil samples were visually classified in the field by the drilling crew. The recovered soil

samples were classified in the laboratory by a geotechnical engineer. Representative soil samples were tested for natural moisture content, pH, Atterberg Limits, grain size distribution and unconfined compressive strength.

Drilling, soil sampling and laboratory testing were performed following standard geotechnical engineering practices and current ASTM procedures. Results from field tests are shown on the enclosed Test Boring Records in Appendix B and laboratory test sheets in Appendix C.

The test boring locations were provided by United Consulting. The test borings were located in the filed by using a GeoXT handheld GPS system. Surface elevations of the test borings were estimated from county GIS mapping. Boring locations, coordinates and surface elevations shown on the Boring Location Map in Appendix A, Test Boring Records in Appendix B and Soil Profile in Appendix D should be considered approximate.

III. FINDINGS

A. Subsurface Conditions

Test boring B-1 encountered approximately 18 inches of crushed asphalt with concrete fill at the surface while test boring B-2 encountered 13 inches of full depth Hot-Mix Asphalt (HMA) pavement below the surface. Below the fill/pavement the test borings encountered medium stiff to stiff sandy lean clay (CL) soil to depths ranging between approximately 3 to 5.5 feet from the surface, underlain with stiff to hard sandy silty clay (CL) glacial till soils to depths ranging between approximately 12 to 17 feet. Below the glacial till, the test borings encountered medium dense to very dense granular soils classified as poorly graded sand with silt (SP-SM) and silty sand (SM) to depths of approximately 22 feet. Test boring B-1 then encountered very stiff sandy silty clay (CL) glacial till soil to a depth of 28 feet, underlying medium dense well-graded sand with silt (SW-SM) soil to the boring termination depth of 30 feet. Below the granular soils, Test boring B-2 encountered very stiff sandy silty clay (CL) glacial till soil to a depth of 32 feet, underlain by medium dense well-graded sand with silt (SW-SM) soil to boring termination depth of 35 feet. Standard Penetration Values (N-Values) of the soils ranged from 6 to more than 50 blows per foot (bpf). Natural moisture content values of the cohesive soils ranged from 9 to 22 percent.

Test borings B-3 and B-4 encountered 12 to 13 inches of HMA pavement underlain by crushed stone subbase. Below the pavement/subbase, the test borings encountered medium stiff to stiff sandy lean clay (CL) soil to depths ranging from approximately 3 to 5.5 feet from the surface, underlain by stiff to hard sandy silty

clay (CL) glacial till soils to a depth of approximately 28 feet in boring B-3 and approximately 33 feet in boring B-4. Below the glacial till soils, the test borings then encountered medium dense well-graded sand with silt (SW-SM) soil to the boring termination depths of 30 feet and 35 feet from existing grade. Cobbles and/or boulders were encountered in test boring B-4 at various depths. N-Values of these soils ranged from 6 to more than 50 bpf. Natural moisture content values of the cohesive soils ranged from 7 to 19 percent.

Test borings B-5 encountered 12 inches of HMA pavement underlain by crushed stone subbase. Below the pavement, the test boring then encountered very stiff sandy silty clay (CL) to a depth of approximately 3 feet, underlain by 2 feet of brick fill, followed by 2.5 feet of crushed stone and sand fill to the boring termination of 7.5 feet. Test boring B-5 was terminated at a depth of 7.5 feet due to conflicting underground utility.

Test boring B-5A encountered 18 inches of composite pavement of HMA over Portland Concrete Cement (PCC). Below the pavement, the test boring encountered poorly-graded sand with silt (SP-SM) soil to a depth of 2.5 feet, underlain by soft sandy lean clay (CL) soil to a depth of 4 feet, then very loose clayey sand (SC) to a depth of approximately 6 feet. Below the clayey sand, the test boring encountered soft to medium stiff lean clay with sand (CL) soil to a depth of approximately 11 feet from the surface, underlain by stiff to very stiff sandy silty clay (CL) glacial till soil to a depth of 24.5 feet. The test boring then encountered medium dense poorly graded sand (SP) soil to the boring termination depths of 25 feet from the existing grade. N-Values of these soils ranged from 3 to 24 bpf. Natural moisture content values of the cohesive soils ranged from 9 to 22 percent.

The cohesive soils exhibited Liquid Limit (LL) values ranging from 19 to 28 percent and Plasticity Index (PI) values of 7 to 10 percent. The pH values of the subgrade soils ranged from 7.0 to 7.7. Detailed information of soil type and standard penetration values are shown in the Test Boring Records in Appendix B and laboratory test results in Appendix C.

B. Groundwater

Groundwater levels were recorded during and after completion of drilling operations as shown on the attached Test Boring Records in Appendix B and summarized below in Table 2. It should be noted that groundwater levels recorded during this subsurface exploration are generally not a reliable indication of long-term groundwater levels. Perched water may be encountered at various depths across the site. Fluctuations in the groundwater level can occur with seasonal and weather conditions and the pool level in the nearby Wildcat Creek.

Table 2 – Summary of Groundwater Depths

Boring No.	Boring Depth (feet)	Groundwater Depth (feet		Cave-in Depth (feet)
		During Drilling	At Completion	
B- 1	30.0	Dry	15.0	20.0
B- 2	35.0	14.0	20.0	22.7
B- 3	30.0	22.0	12.0	20.0
B- 4	35.0	26.0	19.0	21.7
B- 5A	25.0	22.0	11.0	13.0

IV. DISCUSSIONS AND RECOMMENDATIONS

Based upon the preceding discussion as well as the subsurface information obtained from the field and laboratory testing, the following recommendations are provided.

A. Excavations

The proposed structure inverts are anticipated to be approximately 14 to 25 feet (El 784± to EL 787±) below the existing grade (El 800± to EL 810±). Temporary retention systems, trench boxes or other shielding systems may be necessary for installation of the proposed sewer pipes. The temporary shoring systems may be designed using the estimated soil parameters provided below in Table 3 for this project along the recommendations provided in the following paragraphs.

Table 3 – Estimated Soil Parameters for Shoring Design

Soil Parameters	Materials Type				
	Sandy Silty Clay (CL-ML)	Glacial Till Sandy Silty Clay (CL-ML)	Lean Clay (CL)	Clayey Sand (SC-SM)	Sands (SP-SM, SW-SM and SM)
Total Unit Weight, pcf	120	130	120	120	125
Cohesion, psf	50	50	50	0	0
Angle of Internal Friction, Degrees	22	25	21	27	32
At Rest Pressure, K_o	0.63	0.58	0.64	0.55	0.47
Active Pressure, K_a	0.45	0.41	0.47	0.38	0.31
Passive Pressure, K_p	2.20	2.46	2.12	2.66	3.25
Approx. depths below existing grade, Feet	0 ~ 5.5	3.0 ~ 33	6 ~ 11	4 ~ 6	12 ~ 35

1. Care should be taken while excavating adjacent to existing structures and utilities so as not undermine the existing support. The effect of the excavation on the adjacent structures should be considered. Depending upon the type of foundation system of nearby structures, underpinning may be required.

2. Nearby structures and other surface supported features should be monitored on a daily basis to evaluate the effect of the excavation and any dewatering. Results of the monitoring should be provided to the Structural Engineer on a daily basis. The Structural Engineers should determine acceptable limits of lateral and vertical deflections prior to excavation. In the event that excessive lateral or vertical movement is noted, the Structural Engineers should be notified immediately.

3. Excavations in excess of 5 feet in depth should be sloped and/or shored according to OSHA requirements. Excavation for the sewer may be laid back at a rate no steeper than 2:1 (H:V). Excavations extending below 5 feet or below the groundwater table should be shored or shielded using a trench box system, sheet piling, soldier pile and lagging system, or equivalent shoring system for maintaining the excavations and surrounding area in a safe condition. The temporary shoring systems may be designed using the estimated soil parameters provided below in Table 3. Design of the temporary shoring system should also take into account the influence of loads which will be applied adjacent to the

excavation such as dead and live loads from structures, vehicular/construction traffic loading, and loading due to stockpiled material. Care should be taken while excavating adjacent to existing structures or roadways so as not to undermine the existing soil support.

4. Cobbles, boulders and miscellaneous debris are anticipated to be present within the subsurface soils at these sites which could make installation of sheet piling difficult. Sheet piling may need to be relocated and re-driven if large cobbles, boulders or debris are encountered.

5. Undercut soils, if any, should be replaced with granular engineered fill such as pit-run sand and gravel or crushed stone (e.g., INDOT No. 53) and should be compacted to 98 percent of the material's standard Proctor maximum dry density (MDD) as determined by ASTM D 698. All foundation bearing surfaces should be observed and approved by the Geotechnical Engineer.

6. The groundwater level should be lowered at least 3 feet below the base of excavations using wells, well points, or sumps. The dewatering system should be designed and installed by a specialty dewatering contractor. Please refer to Table 2 for groundwater elevations encountered at the test boring locations. Fluctuations in the groundwater level can occur with seasonal and weather conditions and the pool level in the nearby Wildcat Creek. Additionally, perched groundwater may be encountered at isolated locations which are capable of producing significant amounts of water into excavations.

B. Groundwater Control

It is anticipated that groundwater will be encountered during site excavations. The amount of water will depend of the thickness of the granular zones encountered, which vary across the site. The groundwater level appeared to be at approximately El 790± during the field exploration. Temporary dewatering during excavation and construction will be required. Design of the dewatering system is beyond our scope of work. An experienced Dewatering Contractor familiar with projects of similar scope and size should design, install and monitor the dewatering system for any proposed excavation where water will likely be encountered.

The temporary dewatering should be performed continuously and should begin prior to general excavation, so that the water level is lowered and the subgrade materials do not become disturbed during excavation. In addition, dewatering should be continued until the excavations are backfilled to a minimum of 3 feet above the groundwater levels that are encountered during construction, so that

hydrostatic forces do not lift the structures and also to permit proper placement of backfill material.

In addition to the general dewatering, discontinuous granular seams or layers may have to be drained by pumping or bailing from isolated sumps. Alternatively, water from these isolated zones may be piped or otherwise directed to the general dewatering system. The need for and the extent of these additional dewatering measures would have to be determined during construction.

The dewatering system should be carefully designed so that adjacent wells, structures, buildings, roadways and excavated slopes are not adversely affected by the operation. The pumping rate should be calculated and screen sizes determined. Pumped water should be disposed in a legal manner.

C. Pipe Support (Open-Cut Method)

1. The subgrade for pipe support will vary along the proposed sewer alignments. The soils at this site, in their native conditions, would generally be expected to provide adequate support for the sewer pipe. Very stiff to hard sandy silty clay soils and very dense poorly graded sand with silt soils are anticipated. Cohesive soils exposed to standing water can swell and soften. In addition, silt and fine sand soils can easily become disturbed by construction activities, particularly in the presence of water. In such an event, it is recommended that a minimum of 6 inches be over excavated, and that this over excavation be backfilled with coarse angular gravel. The gravel will provide uniform support for the pipe, can be utilized in the dewatering process, and can act as a mudmat to protect the soils from disturbance by water and construction activities.

2. Groundwater is anticipated to be encountered in excavations depending on the depth and location of the excavation. Seepage water trapped in the upper soil layers could also be encountered depending upon time of construction and amount of precipitation. Dewatering can be accomplished as recommended above in section IV.B.

3. On-site excavated soils (except soils containing more than 5 percent organic matter, soils containing concentrations of debris and cobbles greater than 3 inches) are considered suitable for use for backfill provided proper moisture content is maintained during placement. A portion of the excavated soils may exhibit natural moisture content above the optimum moisture. Such soils may require air-drying and/or chemical modification for re-use. Additional fill, if required, may consist of sandy silt, sand and gravel materials, flowable fill, or as otherwise directed by the Engineer.

4. If the excavated material is used in place of flowable fill, the backfill material should be placed in layers not exceeding 8 inches in loose lift thickness, with each layer compacted to meet the appropriate requirements listed below, or as otherwise specified by the Engineer. The engineered fill should not be placed in a frozen condition or over a frozen subgrade.

    - Trenches within the influence zone of roadways, sidewalks, houses or any structures should be compacted to 100 percent of the material's standard Proctor maximum dry density (MDD) as determined by ASTM D 698 to reduce the potential risk for settlement of the fill beneath the surface supported features.

    - Trenches in existing lawn areas and areas outside the influence line for support of any structures or pavement should be compacted to at least the density of the surrounding ground but not less than 90 percent of the material's standard Proctor maximum dry density (MDD) as determined by ASTM D 698, or as otherwise specified by the Engineer.

5. Pipe installation, trench width, bedding and backfill compaction should be performed in accordance with applicable project codes.

D. Pipe Support (Trenchless Installation Method)

Trenchless installation may be used on this project in some locations. Below are preliminary recommendations regarding the trenchless installation methods.

1. Stiff to hard cohesive glacial soils and medium dense to very dense granular soils along with cobbles and possible boulders should be expected for trenchless and/or bore and jack method of pipe installations. Groundwater is expected during the trenchless operation in deep excavations as summarized in Table 2. Dewatering can be accomplished as recommended above in section IV.B.

2. Placement of the proposed pipes and/or casings may require horizontal directional drilling or bore and jack machines capable of extending the casings into stiff to hard cohesive glacial till soils and medium dense to very dense granular soils with the chance of encountering cobbles and/or boulders. Please refer to the attached Test Boring Records in Appendix B and Soil Profile in Appendix D.

3. Trenchless installation should have minimal effect on surface settlements of the existing roadways and surface features provided that all boreholes are cased

during installation. Soil subsidence could occur if boreholes are left uncased due to the cohesionless nature of the underlying soils within and above the proposed casings in some locations. Also, pumps should be appropriately sized to limit fine soil migration during boring. Excessive pumping and loss of fines may result in settlement of roadways and other surface supported features.

4. The recommendations contained in this report are based on the results of the soil borings taken at specific locations and at the time designated on the boring logs. It must be noted that soil conditions can vary between boring locations significantly and the nature and extent of these variations may not become evident until construction is underway. Variation in soil conditions between borings should be expected.

E. Seismic Considerations

The subsurface conditions at this site meet the requirements for Site Class D based on the 2012 IBC and Table 20.3-1 of 2010 ASCE 7 Chapter 20. Given a Site Class D, and the geographic location of the project site, the design parameters listed below may be used. Additional seismic coefficients, if needed, can found in Appendix E of this report.

Site Class D

PGA_M = 0.090g S_S = 0.123g S_{DS} = 0.132g S_1 = 0.0.072g S_{D1} = 0.116g

F. Site Preparation and Earthwork

1. Excavation into the underlying soils may be accomplished using conventional excavation equipment capable of excavating hard glacial till soils. Cobbles and/or boulders may be encountered within the excavations.

2. During earthwork operations, care should be taken to provide adequate drainage on the exposed soils. Absorption of heavy rainfall, accumulations of water and construction traffic may result in softening of these soils, hence, severely weakening the strength of the subgrade soils.

3. Fill material imported for the project should consist of INDOT B borrow and/or sand and gravel material. Topsoil, organically contaminated material and/or soils with Liquid Limit of more than 50 percent are not suitable for use as fill. Additionally, soils with a maximum dry weight of less than 100 pounds per cubic foot should not be used in the upper 12 inches of the subgrade beneath

sidewalks and paving areas. All fill material should be tested, inspected and approved by the Engineer.

4. Fill supporting structures or pavements should be compacted to 100 percent of the material's standard Proctor maximum dry density (MDD) as determined by ASTM D 698. A reduced percentage of compaction can be used in lawn or grass areas. The engineered fill should not be placed in a frozen condition or over a frozen subgrade.

5. Depending upon the time of construction and seasonal amount of precipitation, ponding and/or perched water may be encountered in some locations. In such an event, water should be diverted through trenches and removed using construction sump pumps or otherwise as suggested by the Contractor and approved by the Engineer.

6. Temporary excavations in excess of 5.0 feet in depth should be sloped, braced and/or shored according to OSHA requirements. Temporary excavations should be sloped at a rate no steeper than 2:1 Horizontal to Vertical (H:V). Open excavations left for more than 24 hours and/or excavations exposed to rain may result in slope failures. All excavations should be monitored during construction by the Contractor.

V. CONCLUDING REMARKS

The evaluations, conclusions, and recommendations in this report are based on our interpretation of the field and laboratory data obtained during the exploration, our understanding of the project and our experience with similar sites and subsurface conditions using generally accepted geotechnical engineering practices. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates drilled, they are not necessarily representative of the subsurface conditions between boring locations or subsurface conditions during other seasons of the year.

During the design process, it is recommended that CTL work with the project designers to confirm that these geotechnical recommendations are properly incorporated into the final plans and specifications, and to assist with establishing criteria for the construction observation and testing. CTL is not responsible for independent conclusions, opinions and recommendations made by others based on the data and the recommendations provided in this report.

The report was prepared by CTL Engineering, Inc. (Consultant) solely for the use of the Client in accordance with an executed contract. The Client's use of or reliance on this report is limited by the terms and conditions of the contract and by the qualifications and limitations stated in the report. It is also acknowledged that the Client's use of and reliance of this report is limited for reasons which include actual site conditions that may change with time; hidden conditions, not discoverable within the scope of the assessment, may exist at the site; and the scope of the exploration may have been limited by time, budget and other constraints imposed by the Client.

Neither the report, nor its contents, conclusions or recommendations are intended for the use of any party other than the Client. Consultant and the Client assume no liability for any reliance placed on this report by such party. The rights of the Client under contract may not be assigned to any person or entity, without the consent of the Consultant which consent shall not be unreasonably withheld.

This geotechnical report does not address the environmental conditions of the site. The Consultant is not responsible for consequences or conditions arising from facts that were concealed, withheld, or not fully disclosed at the time the assessment was conducted.

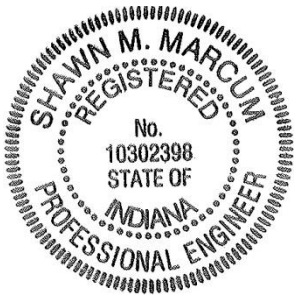
To the fullest extent permitted by law, the Consultant and Client agree to indemnify and hold each other, and their officers and employees harmless from and against claims, damages, losses and expenses arising out of unknown or concealed conditions. Furthermore, neither the Consultant nor its employees shall be liable to the Owner in an amount in excess of the available professional liability insurance coverage of the Consultant. In addition, Client and Consultant agree neither shall be liable for any special, indirect or consequential damages of any kind or nature.

The Consultant's services have been provided consistent with its professional standard of care. No other warranties are made, either expressed or implied.

Sincerely,

CTL ENGINEERING, INC.

Shawn M. Marcum, PE
Senior Geotechnical Engineer



Syed Ahmad Husain
Staff Geotechnical Engineer

APPENDIX A

BORING LOCATION PLAN

LEGEND

Test Borings

BORING LOCATION PLAN

Source: Google Earth		**Date** 3/22/2024	Geotechnical Exploration United Consulting North Side Interceptor Relief Sewer Project Kokomo, Indiana		
CTL ENGINEERING	***CTL ENGINEERING, INC.*** GEOTECHNICAL ENGINEERS TESTING * INSPECTION LABORATORY SERVICES	**Scale** None			
		Drawn By SAH	**Reviewed By** SM	**Page** 1 of 1	**Project No.** 24050019IND

APPENDIX B

TEST BORING RECORDS

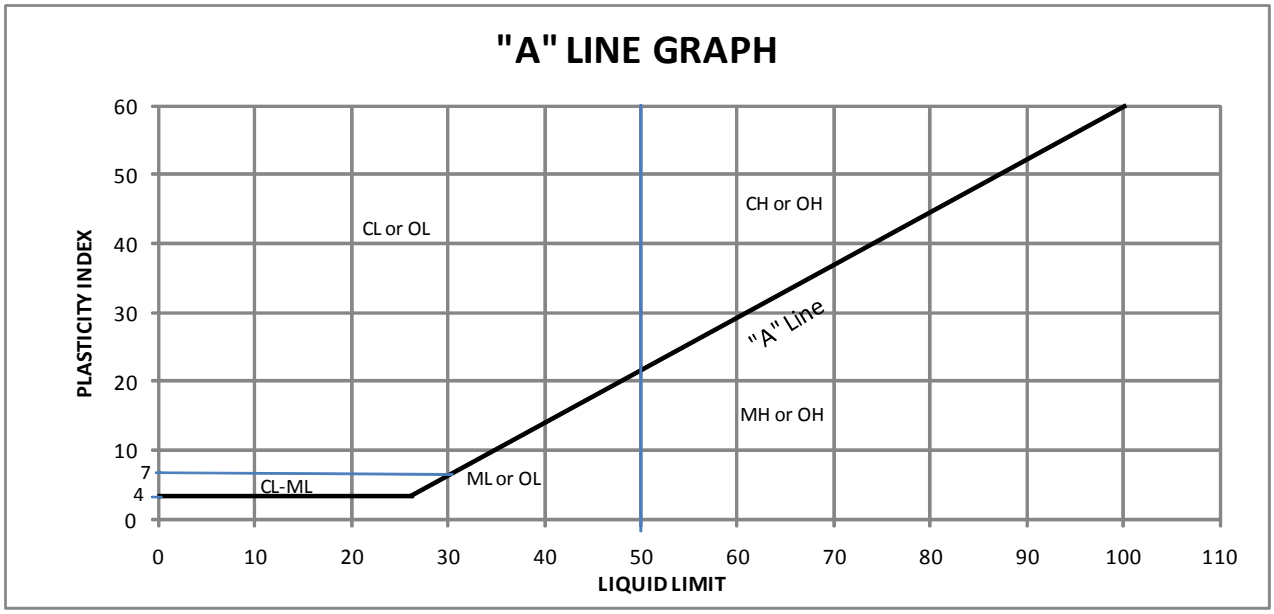
SOIL DESCRIPTIONS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM

ASTM D 2487 and D 2488

Major Division			Group Symbol	Letter Symbol	Group Name*
Coarse Grained Soils Less Than 50 Percent Passing the # 200 Sieve	Gravel - Percent GRAVEL > percent SAND	Gravel with < 5% Fines		GW	Well Graded GRAVEL
				GP	Poorly Graded GRAVEL
		Gravel with Between 5 and 15% Fines		GW-GM	Well Graded GRAVEL with silt
				GW-GC	Well Graded Gravel with clay
				GP-GM	Poorly Graded GRAVEL with silt
				GP-GC	Poorly Graded GRAVEL with clay
		Gravel with ≥ 15% Fines		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	Sand - Percent SAND ≥ percent GRAVEL	Sand with < 5% Fines		SW	Well Graded SAND
				SP	Poorly Graded SAND
		Sand with Between 5 and 15% Fines		SW-SM	Well Graded SAND with silt
				SW-SC	Well Graded SAND with clay
				SP-SM	Poorly Graded SAND with silt
				SP-SC	Poorly Graded SAND with clay
		Sand with ≥ 15% Fines		SM	Silty SAND
				SC	Clayey SAND
Fine Grained Soils 50 percent or more Passing the # 200 Sieve	SILT and CLAY	Liquid Limit Less Than 50		ML	SILT
				CL	Lean CLAY
				CL-ML	SILTY CLAY
				OL	Organic SILT, CLAY, or SILTY CLAY
		Liquid Limit 50 or Greater		MH	Elastic SILT
				CH	Fat CLAY
				OH	Organic SILT or CLAY
Highly Organic Soils				PT	Peat

* Additional Modifiers			
	Coarse Grained Soils	with silt or clay	5 to 12 % Silt or Clay by weight
		Silty or Clayey	more than 12 % Silt or Clay by weight
	Fine Grained Soils	with sand or gravel	15 to 29 % Sand or Gravel by weight
		Sandy or Gravelly	30 % or more Sand or Gravel by weight

"A" LINE GRAPH



SOIL DESCRIPTION

NON-COHESIVE SOIL DESCRIPTION	STANDARD PENETRATION BLOWCOUNTS PER FOOT (BPF)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	Over 50

COHESIVE SOIL DESCRIPTION	STANDARD PENETRATION BLOWCOUNTS PER FOOT (BPF)
Very Soft	0 - 1
Soft	2 - 4
Medium Stiff	5 - 8
Stiff	9 - 15
Very Stiff	16 - 30
Hard	Over 30

GRADATION COMPONENT	SIZE
Boulders	Larger than 8"
Cobbles	8" - 3"
Gravel	Passing 3" Retained on #4
Sand	Passing #4 Retained on #200
Silt	0.075 mm to 0.005 mm
Clay	Smaller than 0.005 mm

COMPONENT MODIFIERS	SIZE
Traces	0 - 10%
Little	11 - 20%
Some	21 - 35%
And	36 - 50%

MOISTURE TERMS	DESCRIPTION
Dry	Powdery
Damp	Below Plastic
Moist	Above Plastic Limit & Below Liquid Limit
Wet	Above Liquid Limit

CTL ENGINEERING INC

TEST BORING RECORD

CLIENT : United Consulting
PROJECT : North Side Interceptor Relief Sewer Project
LOCATION : Kokomo, Indiana
PROJECT NO. : 24050019IND

BORING NO.: **B-1**
SHEET 1 OF 2
DATE STARTED : 03-14-24
DATE COMPLETED : 03-14-24

Boring Elevation: 804 Feet
Latitude : 40.484854
Longitude -86.130619
Boring Depth : 30.0 Feet
Station:
Offset :
Line :

Boring Method : HSA
Rig Type : B-57 Truck
Casing Diameter : 3.25" I.D.
Core Size : ---

Hammer : Automatic
Hammer Efficiency: 84.4%
Driller : B. Vogel
Temperature : 60° F
Weather : Overcast/Rain

GROUNDWATER: ▼ Encountered at Dry ▼ At completion 15.0' Caved in at 20.0'

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
802.5		**CRUSHED ASPHALT and CONCRETE** (18")	1.5										
		Brown, Moist, Medium Stiff, **SANDY SILTY CLAY (CL-ML)** (Visual)		SS-1	2 3 3	6	89	22					
	5			SS-2	2 3 5	8	0						
798.5			5.5										
		(Small sand seam encountered during drilling at 10 feet)		SS-3	6 8 9	17	100	9					
	10	Brown, Moist, Very Stiff to Hard, **SANDY SILTY CLAY (CL-ML)** with Traces of Gravel **(TILL)** (As Lab 1)		SS-4	6 8 13	21	100	11					
				SS-5	50/5"		104	12					
	▼ 15												
787.0			17.0										
		Gray, Wet, Dense, **POORLY GRADED SAND with SILT (SP-SM)** (Visual)		SS-6	38 25 17	42	78	10					
	20												

Continued on next page

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting

BORING NO.: **B-1**

PROJECT : North Side Interceptor Relief Sewer Project

SHEET 2 OF 2

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
782.0			22.0										
	25	Gray, Moist, Very Stiff, **SANDY SILTY CLAY (CL-ML) (TILL)** (As Lab 1)		SS-7	5 7 14	21	100	11	144.4	8.0 @ 15.0%	21	14	7
776.0			28.0										
774.0	30	Gray, Wet, Medium Dense, **WELL GRADED SAND with SILT (SW-SM)** (As Lab 3)	30.0	SS-8	1 2 11	13	56	17					
		Bottom of Boring at 30 feet Boring backfilled according to Aquifer Protection Guidelines											
	35												
	40												
	45												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	- Hollow Stem Auger	SS	- Split Spoon Sample	*	- Hand Penetrometer
SFA	- Solid Flight Auger	ST	- Shelby Tube Sample	LL	- Liquid Limit
RC	- Rock Coring	CR	- Rock Core Sample	PL	- Plastic Limit
MD	- Mud Drilling	BS	- Bag Sample	PI	- Plasticity Index
WD	- Wash Drilling	AC	- Auger Cuttings	SPT	- Standard Penetration Test
HA	- Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting
PROJECT : North Side Interceptor Relief Sewer Project
LOCATION : Kokomo, Indiana
PROJECT NO. : 24050019IND

BORING NO.: **B-2**
SHEET 1 OF 2
DATE STARTED : 03-13-24
DATE COMPLETED : 03-13-24

Boring Elevation: 810 Feet
Latitude : 40.485535
Longitude -86.130148
Boring Depth : 35.0 Feet
Station:
Offset :
Line :

Boring Method : HSA
Rig Type : B-57 Truck
Casing Diameter : 3.25" I.D.
Core Size : ---

Hammer : Automatic
Hammer Efficiency: 84.4%
Driller : B. Vogel
Temperature : 60° F
Weather : Sunny

GROUNDWATER: ▼ Encountered at 14.0' ▼ At completion 20.0' Caved in at 22.7'

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
808.9		**ASPHALT CONCRETE** (13")	1.1										
		Brown, Moist, Stiff, **SILTY CLAY (CL-ML)** (Lab 2)		SS-1	8 4 6	10	67	21			22	15	7
807.0			3.0										
	5			SS-2	3 5 7	12	89	11					
		Brown, Moist, Stiff, **SANDY SILTY CLAY (CL-ML) (TILL)** (As Lab 1)		SS-3	7 6 8	14	78	11					
	10			SS-4	5 6 7	13	11						
798.0			12.0										
	15	Gray, Wet, Medium Dense, **WELL GRADED SAND with SILT (SW-SM)** (As Lab 3)		SS-5	6 7 10	17	78	13					
793.0			17.0										
	20	Gray, Wet, Medium Dense, **SILTY SAND (SM)** (Visual)		SS-6	10 13 10	23	100	15					

Continued on next page

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting

BORING NO.: **B-2**

PROJECT : North Side Interceptor Relief Sewer Project

SHEET 2 OF 2

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
788.0		Gray, Wet, Medium Dense, **SILTY SAND (SM)** (Visual)	22.0										
				SS-7	7 15 10	25	100	11					
	25												
		Gray, Moist, Very Stiff, **SANDY SILTY CLAY (CL-ML) (TILL)** (As Lab 1)											
				SS-8	9 8 8	16	100	12	135.3	3.8 @ 15.0%			
	30												
778.0			32.0										
		Brown, Wet, Medium Dense, **WELL GRADED SAND with SILT (SW-SM)** (Lab 3)											
				SS-9	5 6 15	21	100	10			NP	NP	NP
775.0	35	**Bottom of Boring at 35 feet**	35.0										
		Boring backfilled according to Aquifer Protection Guidelines											
	40												
	45												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting
PROJECT : North Side Interceptor Relief Sewer Project
LOCATION : Kokomo, Indiana
PROJECT NO. : 24050019IND

BORING NO.: **B-3**
SHEET 1 OF 2
DATE STARTED : 03-15-24
DATE COMPLETED : 03-15-24

Boring Elevation: 810 Feet
Latitude : 40.485560
Longitude -86.128678
Boring Depth : 30.0 Feet
Station:
Offset :
Line :

Boring Method : HSA
Rig Type : B-57 Truck
Casing Diameter : 3.25" I.D.
Core Size : ---

Hammer : Automatic
Hammer Efficiency: 84.4%
Driller : B. Vogel
Temperature : 50° F
Weather : Sunny

GROUNDWATER: ▼ Encountered at 22.0' ▼ At completion 12.0' Caved in at 20.0'

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
809.0		**ASPHALT CONCRETE** (12")	1.0										
808.5		**CRUSHED STONE BASE** (6")	1.5	SS-1	2 5 3	8	56	19					
		Brown, Moist, Medium Stiff, **SANDY SILTY CLAY (CL-ML)** (As Lab 2)		SS-2	2 3 3	6	11						
804.5	5		5.5	SS-3	0 3 8	11	100	10					
	10			SS-4	8 9 11	20	100	9					
		Brown to Gray, Moist, Stiff to Very Stiff, **SANDY SILTY CLAY (CL-ML) (TILL)** (As Lab 1)		SS-5	3 6 8	14	100	10					
	15												
	20			SS-6	11 14 15	29	100	10					

Continued on next page

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling	AC - Auger Cuttings	SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : United Consulting

BORING NO.: **B-3**

PROJECT : North Side Interceptor Relief Sewer Project

SHEET 2 OF 2

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
	25	Brown to Gray, Moist, Stiff to Very Stiff, **SANDY SILTY CLAY (CL-ML) (TILL)** (As Lab 1)		SS-7	3 5 8	13	100	12	141.8	6.2 @ 15.0%			
782.0			28.0										
780.0	30	Brown, Wet, Medium Dense, **WELL GRADED SAND with SILT (SW-SM)** (As Lab 3)		SS-8	6 8 8	16	100	8					
		Bottom of Boring at 30 feet	30.0										
	35	Boring backfilled according to Aquifer Protection Guidelines											
	40												
	45												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting
PROJECT : North Side Interceptor Relief Sewer Project
LOCATION : Kokomo, Indiana
PROJECT NO. : 24050019IND

BORING NO.: **B-4**
SHEET 1 OF 2
DATE STARTED : 03-15-24
DATE COMPLETED : 03-15-24

Boring Elevation: 810 Feet
Latitude : 40.485550
Longitude -86.127240
Boring Depth : 35.0 Feet
Station:
Offset :
Line :

Boring Method : HSA
Rig Type : B-57 Truck
Casing Diameter : 3.25" I.D.
Core Size : ---

Hammer : Automatic
Hammer Efficiency: 84.4%
Driller : B. Vogel
Temperature : 50° F
Weather : Sunny

GROUNDWATER: ▼ Encountered at 26.0' ▼ At completion 19.0' Caved in at 21.7'

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
809.0		**ASPHALT CONCRETE** (12")	1.0										
808.6		**CRUSHED STONE BASE** (4")	1.4										
		Brown, Moist, Stiff, **SANDY SILTY CLAY (CL-ML)** (As Lab 1)		SS-1	6 4 6	10	100	12					
807.0			3.0										
	5			SS-2	5 8 17	25	11						
				SS-3	4 14 15	29	100	9					
	10			SS-4	15 30 28	58	100	8					
		Brown to Gray, Damp, Very Stiff to Hard, **SANDY SILTY CLAY (CL-ML)** with Traces of Gravel **(TILL)** (Lab 4)											
	15			SS-5	15 12 12	24	100	7			19	13	6
				SS-6	10 17 16	33	100	8					
	20												

Continued on next page

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling	AC - Auger Cuttings	SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : United Consulting

BORING NO.: **B-4**

PROJECT : North Side Interceptor Relief Sewer Project

SHEET 2 OF 2

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
788.0			22.0										
	25	Gray, Moist, Stiff to Very Stiff, **SANDY SILTY CLAY (CL-ML)** with Traces Gravel in SS-8 **(TILL)** (As Lab 1)		SS-7	4 5 8	13	89	11	143.6	6.9 @ 15.0%			
	30			SS-8	4 10 20	30	89	9					
777.0			33.0										
		Brown, Wet, Medium Dense, **WELL GRADED SAND with SILT (SW-SM)** (As Lab 3)		SS-9	5 6 12	18	100	11					
775.0	35	**Bottom of Boring at 35 feet**	35.0										
		Boring backfilled according to Aquifer Protection Guidelines											
	40												
	45												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting
PROJECT : North Side Interceptor Relief Sewer Project
LOCATION : Kokomo, Indiana
PROJECT NO. : 24050019IND

BORING NO.: **B-5**
SHEET 1 OF 1
DATE STARTED : 03-15-24
DATE COMPLETED : 03-15-24

Boring Elevation: 800 Feet
Latitude : 40.485567
Longitude -86.125855
Boring Depth : 7.5 Feet
Station:
Offset :
Line :

Boring Method : HSA
Rig Type : B-57 Truck
Casing Diameter : 3.25" I.D.
Core Size : ---

Hammer : Automatic
Hammer Efficiency: 84.4%
Driller : B. Vogel
Temperature : 52° F
Weather : Sunny

GROUNDWATER: ▼ Encountered at Dry ▼ At completion Dry ▨ Caved in at 5.0'

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
799.0		**ASPHALT CONCRETE** (12")	1.0										
798.5		**CRUSHED STONE BASE** (6")	1.5		6								
		Brown, Moist, Very Stiff, **SANDY SILTY CLAY (CL-ML)** with Traces of Gravel **(FILL)**		SS-1	8	17	100	6					
797.0		(Visual)	3.0		9								
		BRICK (FILL)			28								
		(Visual)		SS-2	1	1	33						
795.0	5		5.0		0								
		CRUSHED STONE with SAND (FILL)		SS-3	50/3"		56						
		(Visual)											
792.5			7.5										
		Bottom of Boring at 7.5 feet											
		Boring terminated at 7.5 feet due to conflicting underground utilities											
	10	Boring backfilled according to Aquifer Protection Guidelines											
	15												
	20												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting
PROJECT : North Side Interceptor Relief Sewer Project
LOCATION : Kokomo, Indiana
PROJECT NO. : 24050019IND

BORING NO.: **B-5A**
SHEET 1 OF 2
DATE STARTED : 03-18-24
DATE COMPLETED : 03-18-24

Boring Elevation: 800 Feet
Latitude : 40.485568
Longitude -86.125934
Boring Depth : 25.0 Feet
Station:
Offset :
Line :

Boring Method : HSA
Rig Type : B-57 Truck
Casing Diameter : 3.25" I.D.
Core Size : ---

Hammer : Automatic
Hammer Efficiency: 84.4%
Driller : B. Vogel
Temperature : 32° F
Weather : Snow

GROUNDWATER: ▼ Encountered at 22.0' ▼ At completion 11.0' Caved in at 13.0'

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
798.8		**ASPHALT CONCRETE** (14")	1.2										
798.5		**CEMENT CONCRETE** (4")	1.5										
		Brown, Damp, Loose, **POORLY GRADED GRAVEL with SILT (GP-GM) (FILL)** (Visual)			7								
797.5			2.5	SS-1	6 4	10	67	9					
		Brown, Moist, Soft, **SANDY SILTY CLAY (CL-ML)** (As Lab 2)	4.0		2								
796.0				SS-2	2 2	4	22	13					
	5	Brown, Damp, Very Loose, **CLAYEY SAND (SC)** (Visual)			2								
794.0			6.0										
					0								
				SS-3	0 3	3	44	13					
		Gray to Brown, Moist, Soft to Medium Stiff, **LEAN CLAY with SAND (CL)** (Lab 5)			2								
				SS-4	2 3	5	100	22					
	10												
789.0 ▽			11.0										
				SS-5	2 2 7	9	100	12					
	15	Gray, Moist, Stiff to Very Stiff, **SANDY SILTY CLAY (CL-ML) (TILL)** (As Lab 1)											
				SS-6	4 6 9	15	100	10					
	20												

Continued on next page

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting

BORING NO.: **B-5A**

PROJECT : North Side Interceptor Relief Sewer Project

SHEET 2 OF 2

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
		Gray, Moist, Stiff to Very Stiff, **SANDY SILTY CLAY (CL-ML) (TILL)** (As Lab 1)			8								
775.5			24.5	SS-7	9	24	56	19					
775.0	25	Gray, Wet, Medium Dense, **POORLY GRADED SAND (SP)** (Visual)	25.0		15								
		Bottom of Boring at 25 feet											
		Boring backfilled according to Aquifer Protection Guidelines											
	30												
	35												
	40												
	45												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling	AC	Auger Cuttings	SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : United Consulting
PROJECT : North Side Interceptor Relief Sewer Project
LOCATION : Kokomo, Indiana
PROJECT NO. : 24050019IND

BORING NO.: **B-5B**
SHEET 1 OF 1
DATE STARTED : 03-18-24
DATE COMPLETED : 03-18-24

Boring Elevation: 800 Feet
Latitude : 40.485568
Longitude -86.125936
Boring Depth : 7.0 Feet
Station:
Offset :
Line :

Boring Method : HSA
Rig Type : B-57 Truck
Casing Diameter : 3.25" I.D.
Core Size : ---

Hammer : Automatic
Hammer Efficiency: 84.4%
Driller : B. Vogel
Temperature : 32° F
Weather : Snow

GROUNDWATER: Encountered at Dry At completion Dry Caved in at 7.0'

Stratum Elevation	Sample Depth	SOIL/MATERIAL DESCRIPTION	Stratum Depth	Sample Number	SPT per 6"	SPT per 12" (N)	Recovery (%)	Moisture Content (%)	Total Unit Weight (pcf)	Unconfined Compression (ksf)	Atterberg Limits LL	PL	PI
798.8		**ASPHALT CONCRETE** (14")	1.2										
798.4		**CEMENT CONCRETE** (4")	1.6										
		Blank drill to 5 feet (Refer to boring B-5A for soil description)											
795.0	5		5.0										
		Brown Moist, **LEAN CLAY with SAND (CL)** (Lab 5)		ST-1			63	22	124.7	1.8 @ 15.0%	28	18	10
793.0		**Bottom of Boring at 7 feet** Boring backfilled according to Aquifer Protection Guidelines	7.0										
	10												
	15												
	20												

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling	AC - Auger Cuttings	SPT - Standard Penetration Test
HA - Hand Auger		

APPENDIX C

LABORATORY TESTING

Summary of Classification Test Results
Grain Size Distribution Curves
Unconfined Compressive Strength Test Results
Summary of Special Laboratory Test Results

Lab No.	Boring No.	Latitude	Longitude	Sample No.	Depth	Soil Classification	ASTM Group	Grain Size Distribution (%)				WC	LL	PL	PI	Max. Dry Density (pcf)	Optimum Moisture Content (%)	CBR (%)		
								Gravel	Sand	Silt	Clay							90%	95%	100%
Lab 1	B-1	40.48485	-86.13061	SS-7	23.5-25.0	SANDY SILTY CLAY	CL-ML	2.8	35.0	33.3	28.9	11	21	14	7					
Lab 2	B-2	40.48553	-86.13014	SS-1	1.1-2.6	SANDY SILTY CLAY	CL-ML	0.2	31.1	36.6	32.0	21	22	15	7					
Lab 3	B-2	40.48553	-86.13014	SS-9	33.5-35.0	WELL-GRADED SAND with SILT	SW-SM	8.9	81.7	6.9	2.5	10	NP	NP	NP					
Lab 4	B-4	40.48555	-86.12724	SS-5	13.5-15.0	SANDY SILTY CLAY	CL-ML	4.4	39.5	34.7	21.3	7	19	13	6					
Lab 5	B-5B	40.48556	-86.12593	ST-1	5.0-7.0	LEAN CLAY with SAND	CL	2.1	26.6	43.2	28.1	22	28	18	10					

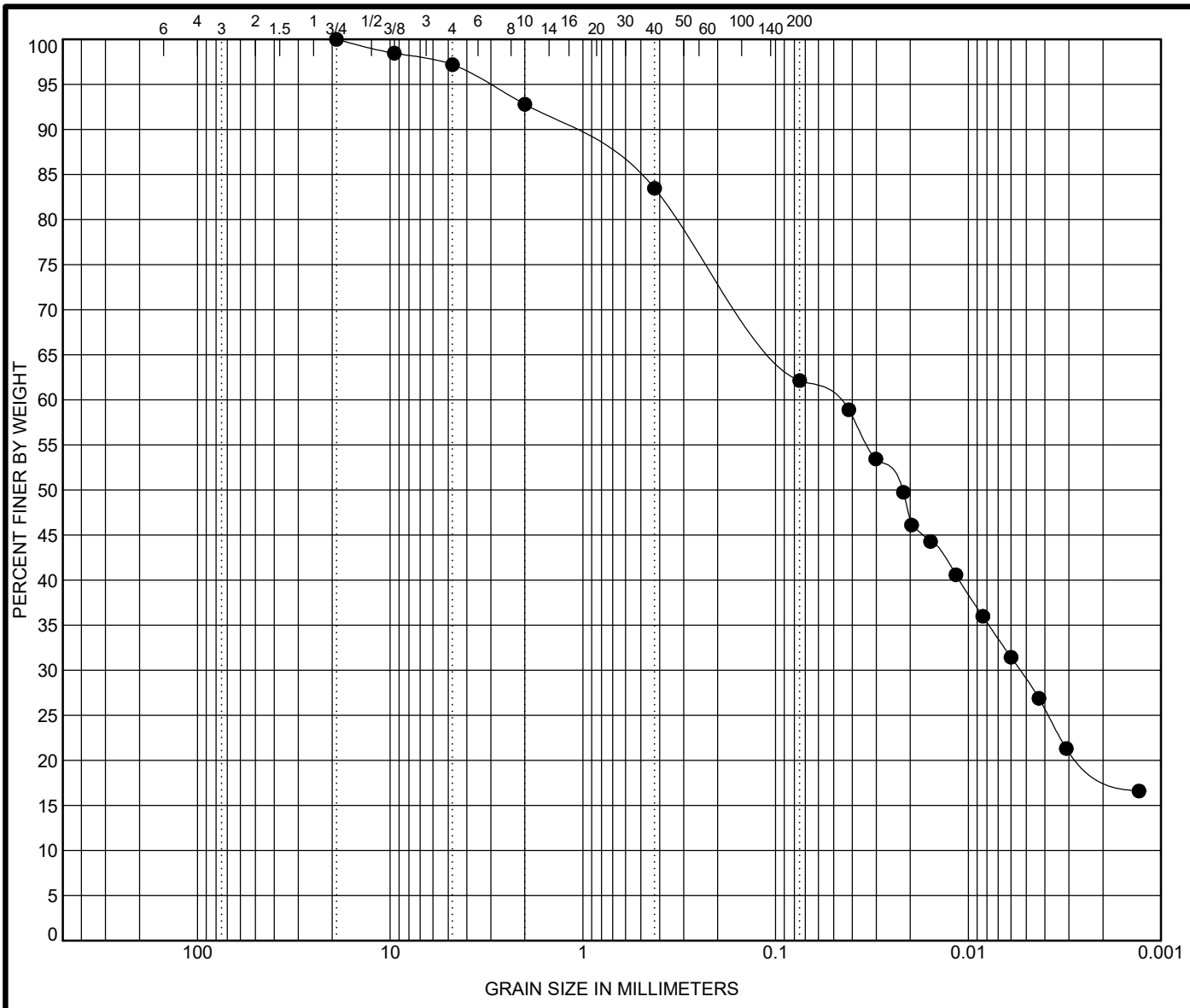
CTL Engineering, Inc.
Phone: 317-295-8650

SUMMARY OF CLASSIFICATION TEST RESULTS

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

Project No.: 24050019IND



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Boring No.	B-1	Classification	MC	LL	PL	PI	Cc	Cu
Sample	SS-7	SANDY SILTY CLAY	11.1	21	14	7		
Depth	23.5-25.0	CL-ML						
Latitude	40.484854	Lab 1						
Longitude	-86.130619							

Fine material soaking time	Minutes	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
		19	0.051	0.022	0.005		2.8	35.0	33.2	28.9

Remarks

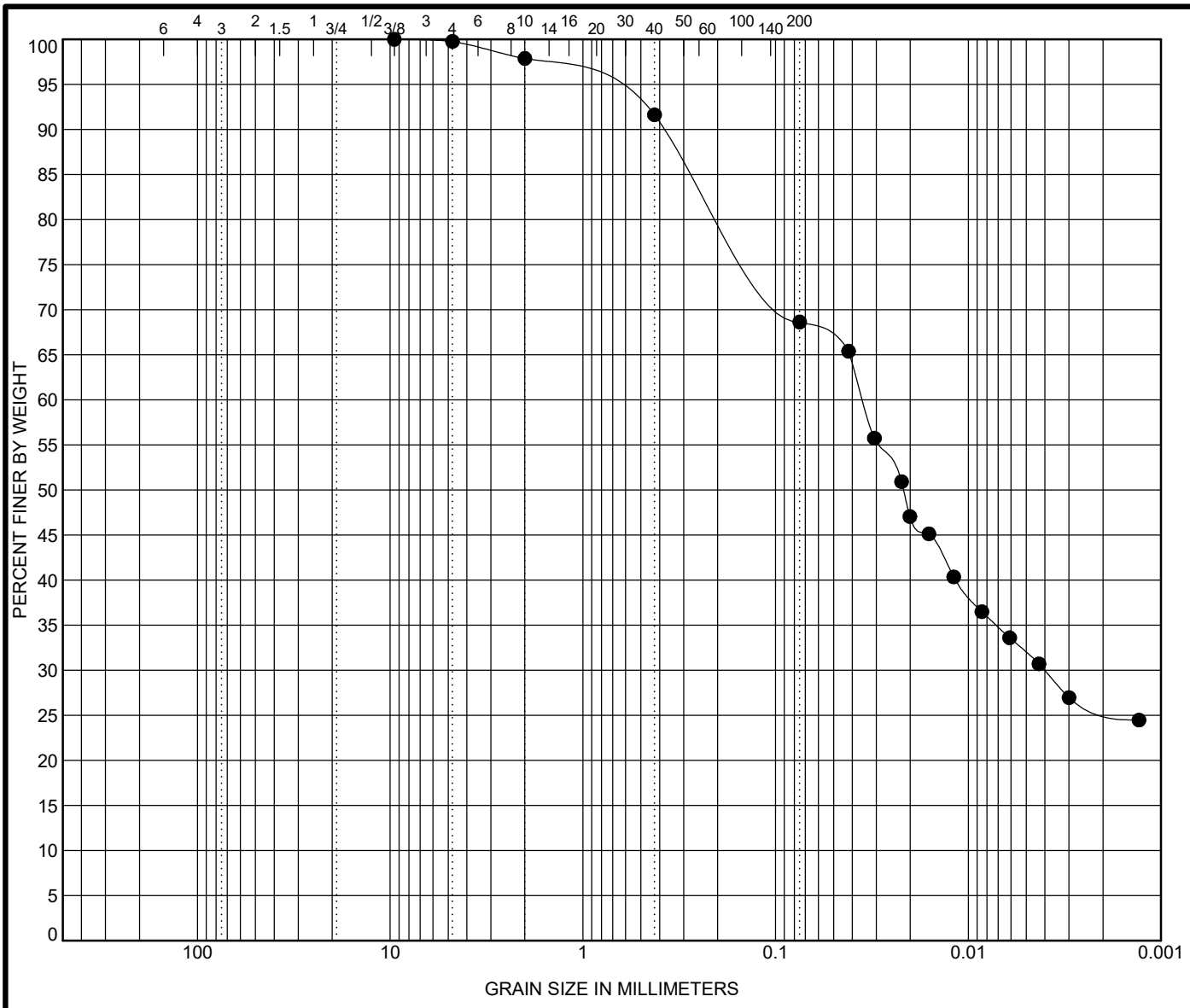
CTL ENGINEERING
CTL Engineering, Inc.
Phone: 317-295-8650

GRAIN SIZE DISTRIBUTION

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

CTL Project No.: 24050019IND



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Boring No.	B-2	Classification	MC	LL	PL	PI	Cc	Cu
Sample	SS-1	SANDY SILTY CLAY	21.4	22	15	7		
Depth	1.1-2.6	CL-ML						
Latitude	40.485535	Lab 2						
Longitude	-86.130148							

Fine material soaking time	Minutes	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
		9.525	0.035	0.022	0.004		0.2	31.1	36.7	32.0

Remarks

CTL ENGINEERING

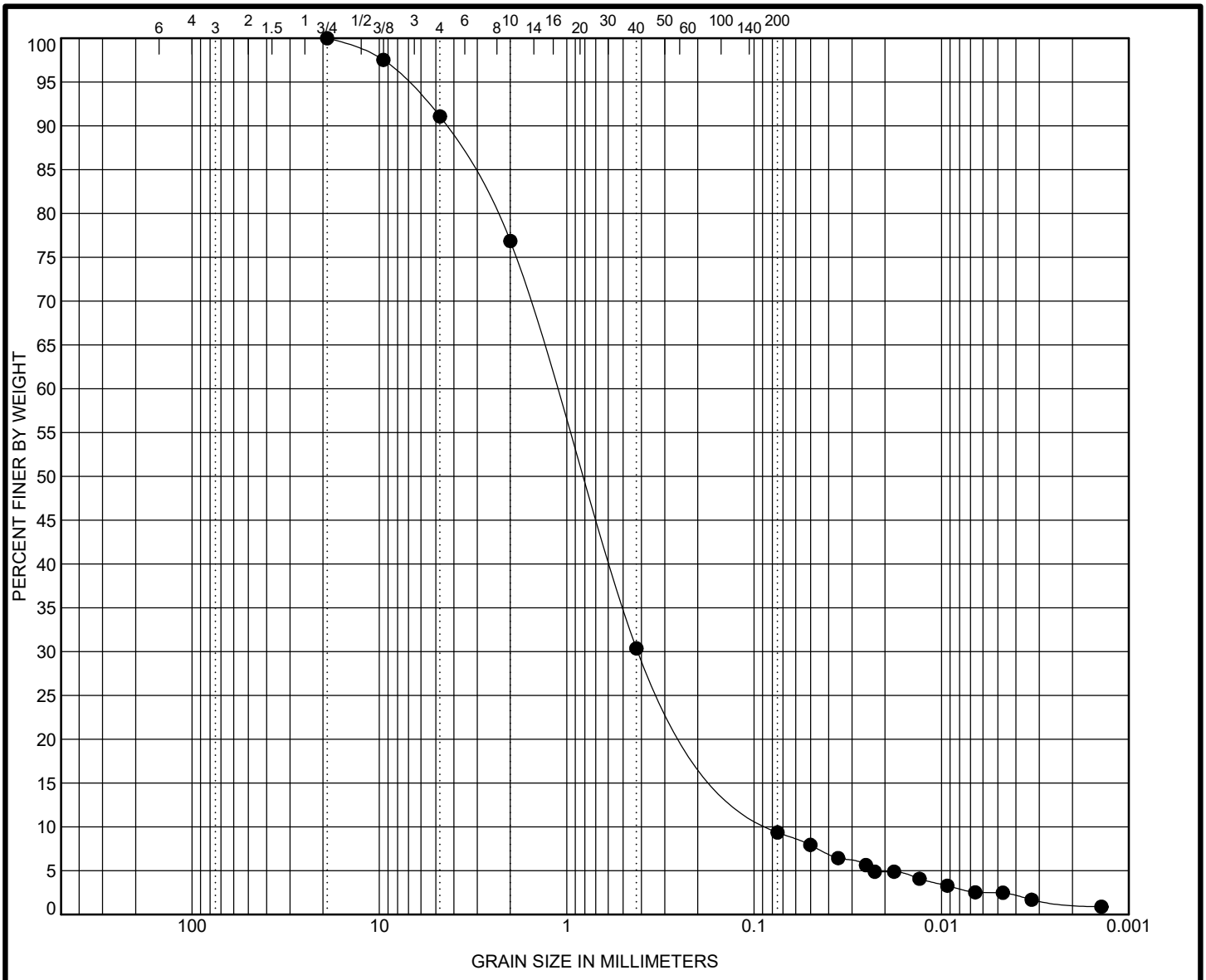
CTL Engineering, Inc.
Phone: 317-295-8650

GRAIN SIZE DISTRIBUTION

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

CTL Project No.: 24050019IND



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Boring No.	B-2	Classification	MC	LL	PL	PI	Cc	Cu
Sample	SS-9	WELL-GRADED SAND with SILT	10.4	NP	NP	NP	1.89	14.43
Depth	33.5-35.0	SW-SM						
Latitude	40.485535	Lab 3						
Longitude	-86.130148							

Fine material soaking time	Minutes	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
		19	1.141	0.817	0.412	0.079	8.9	81.7	6.9	2.5

Remarks

CTL ENGINEERING
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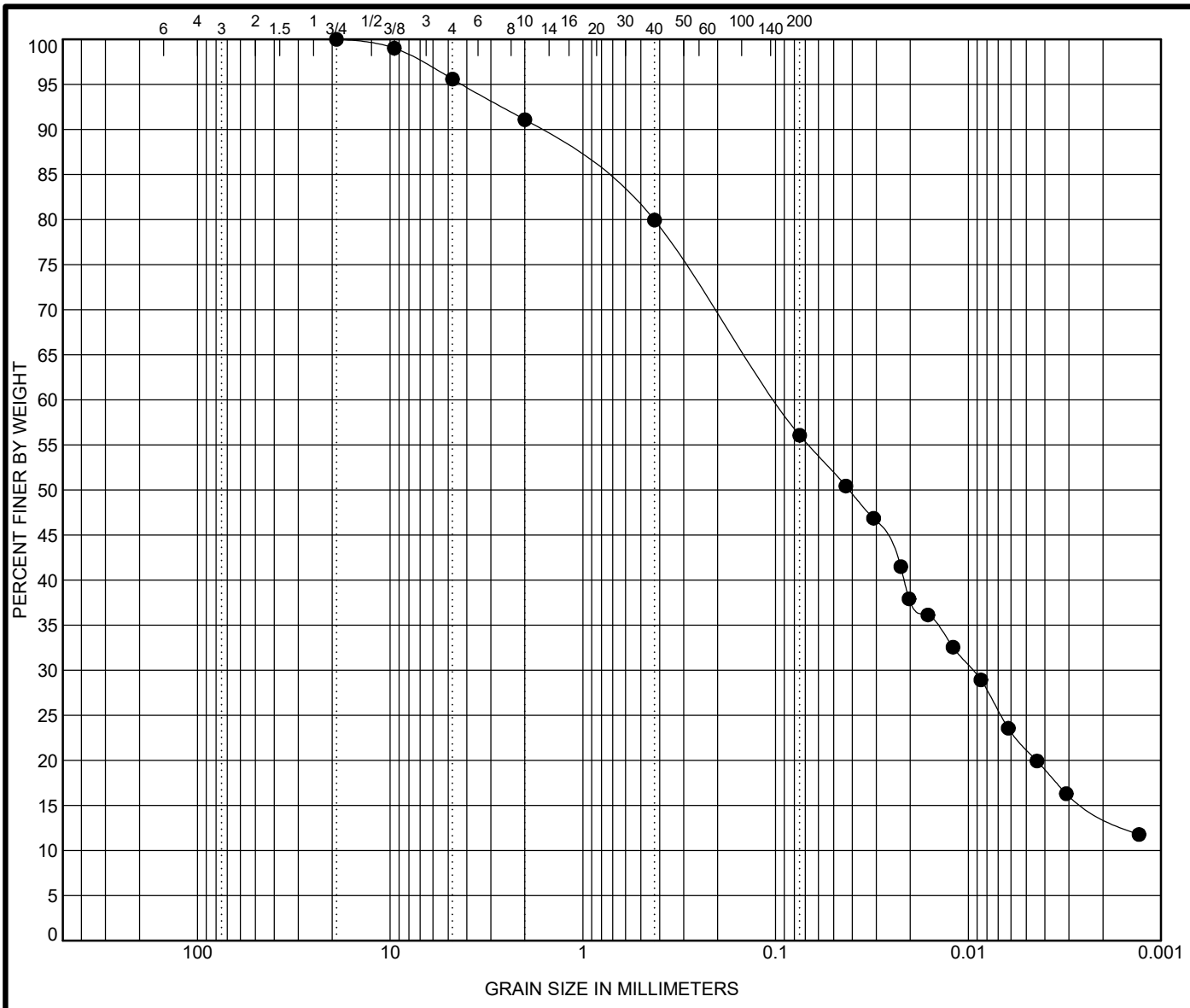
Phone: 317-295-8650

GRAIN SIZE DISTRIBUTION

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

CTL Project No.: 24050019IND



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Boring No.	B-4	Classification	MC	LL	PL	PI	Cc	Cu
Sample	SS-5	SANDY SILTY CLAY	7.2	19	13	6		
Depth	13.5-15.0	CL-ML						
Latitude	40.485550	Lab 4						
Longitude	-86.127240							

Fine material soaking time	Minutes	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
		19	0.1	0.041	0.009		4.4	39.5	34.8	21.3

Remarks

CTL ENGINEERING

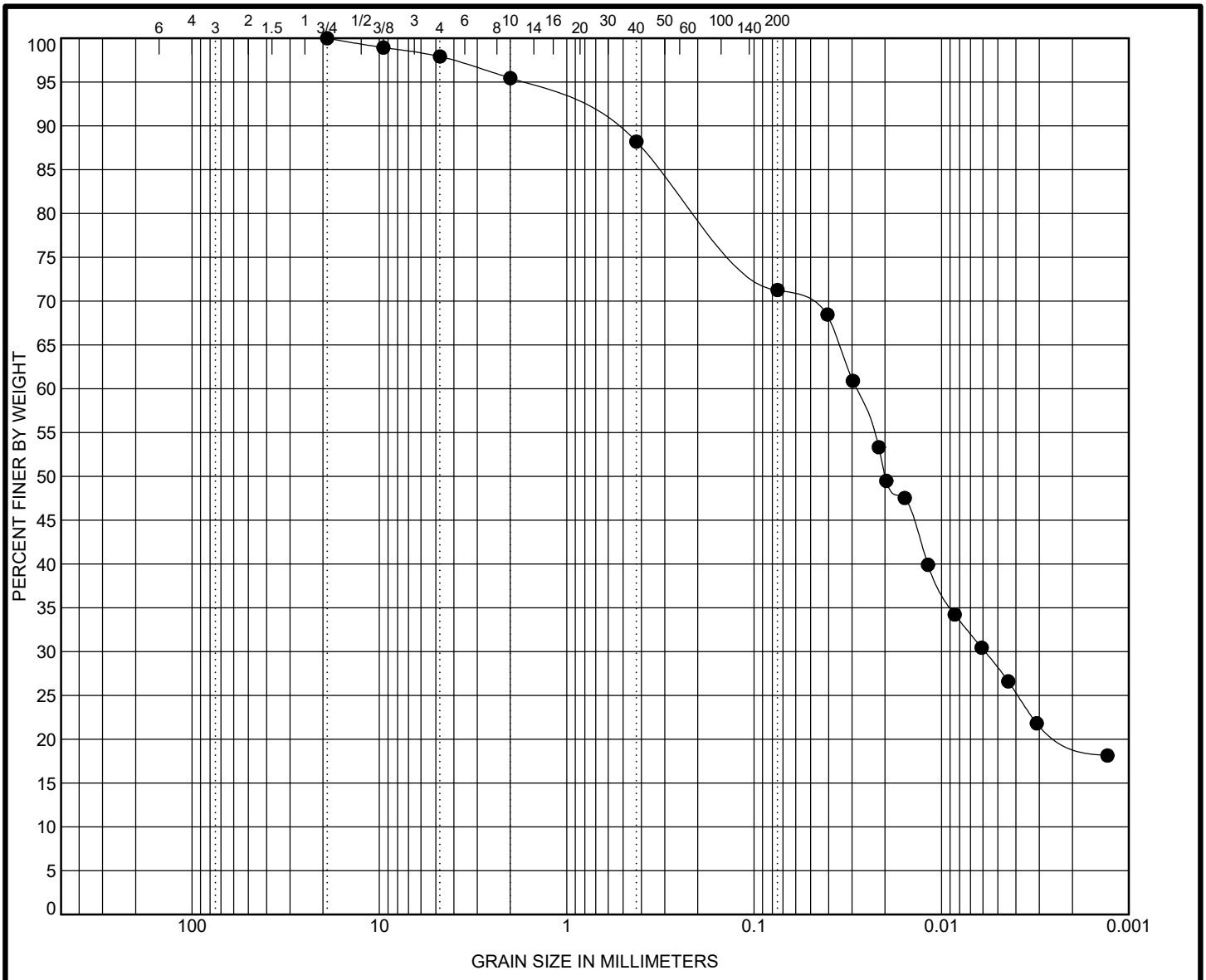
CTL Engineering, Inc.
Phone: 317-295-8650

GRAIN SIZE DISTRIBUTION

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

CTL Project No.: 24050019IND



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Boring No.	B-5B	Classification	MC	LL	PL	PI	Cc	Cu
Sample	ST-1	LEAN CLAY with SAND	21.8	28	18	10		
Depth	5.0-7.0	CL						
Latitude	40.485568	Lab 5						
Longitude	-86.125936							

Fine material soaking time	Minutes	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
		19	0.029	0.02	0.006		2.1	26.6	43.2	28.1

Remarks

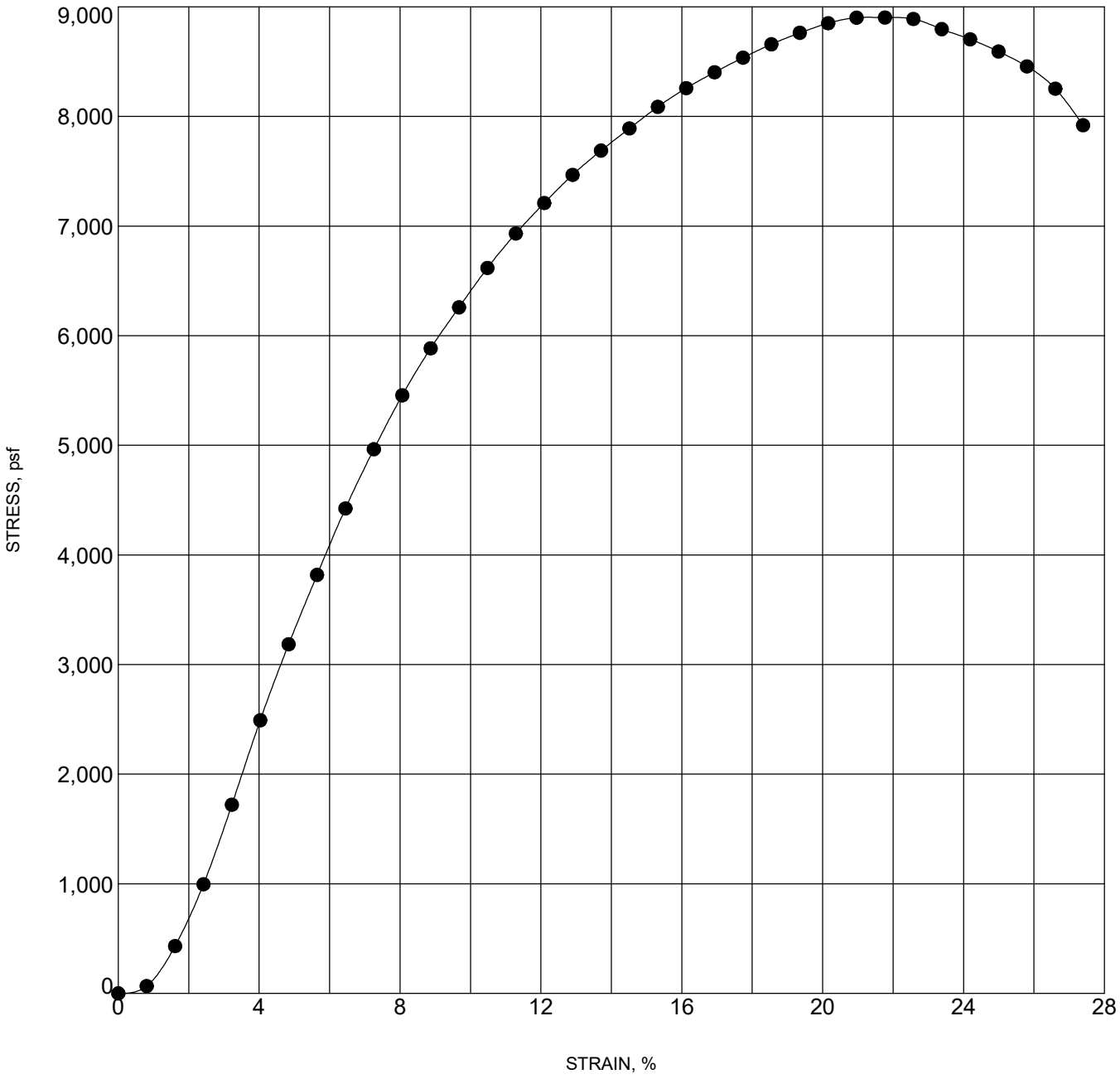
CTL ENGINEERING
CTL Engineering, Inc.
Phone: 317-295-8650

GRAIN SIZE DISTRIBUTION

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

CTL Project No.: 24050019IND



Boring Information		Test Results	
Boring No.	**B-1**	Natural Moisture Content (%)	**11.1**
Sample	**SS-7**	Natural Wet Density, pcf	**144.4**
Depth	**23.5 - 25.0**	Natural Dry Density, pcf	**129.9**
Latitude	**40.484854**	Unconfined Compression Strength, psf	**8010**
Longitude	**-86.130619**	Failure Strain (%)	**15.0**
		SOIL DESCRIPTION	**SANDY SILTY CLAY (CL-ML)**

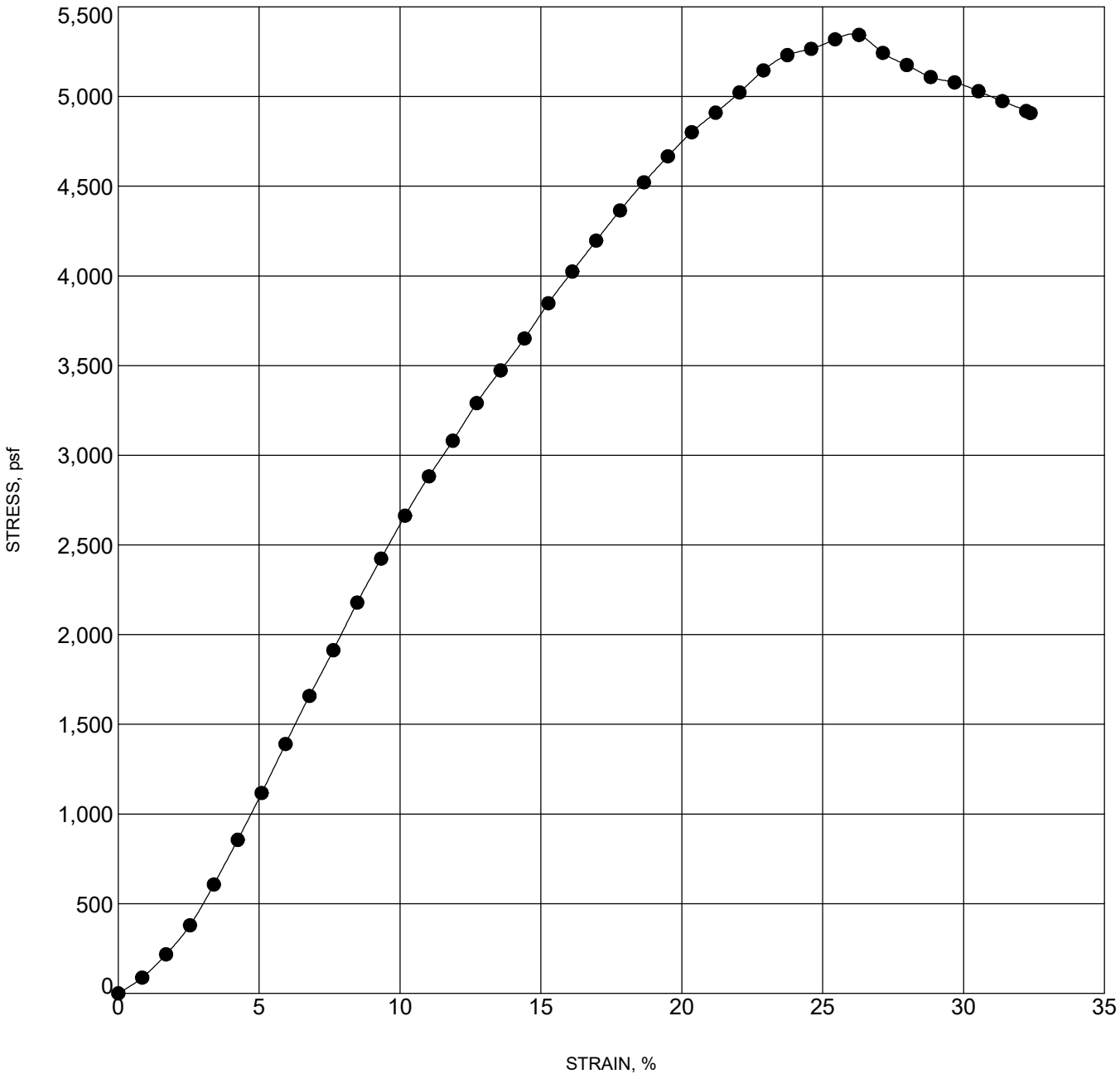
CTL Engineering, Inc.
Phone: 317-295-8650

UNCONFINED COMPRESSIVE STRENGTH

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

Project No.: 24050019IND



Boring Information		Test Results	
Boring No.	**B-2**	Natural Moisture Content (%)	**11.6**
Sample	**SS-8**	Natural Wet Density, pcf	**135.3**
Depth	**28.5 - 30.0**	Natural Dry Density, pcf	**121.3**
Latitude	**40.485535**	Unconfined Compression Strength, psf	**3786**
Longitude	**-86.130148**	Failure Strain (%)	**15.0**
		SOIL DESCRIPTION	**SANDY SILTY CLAY (CL-ML)**

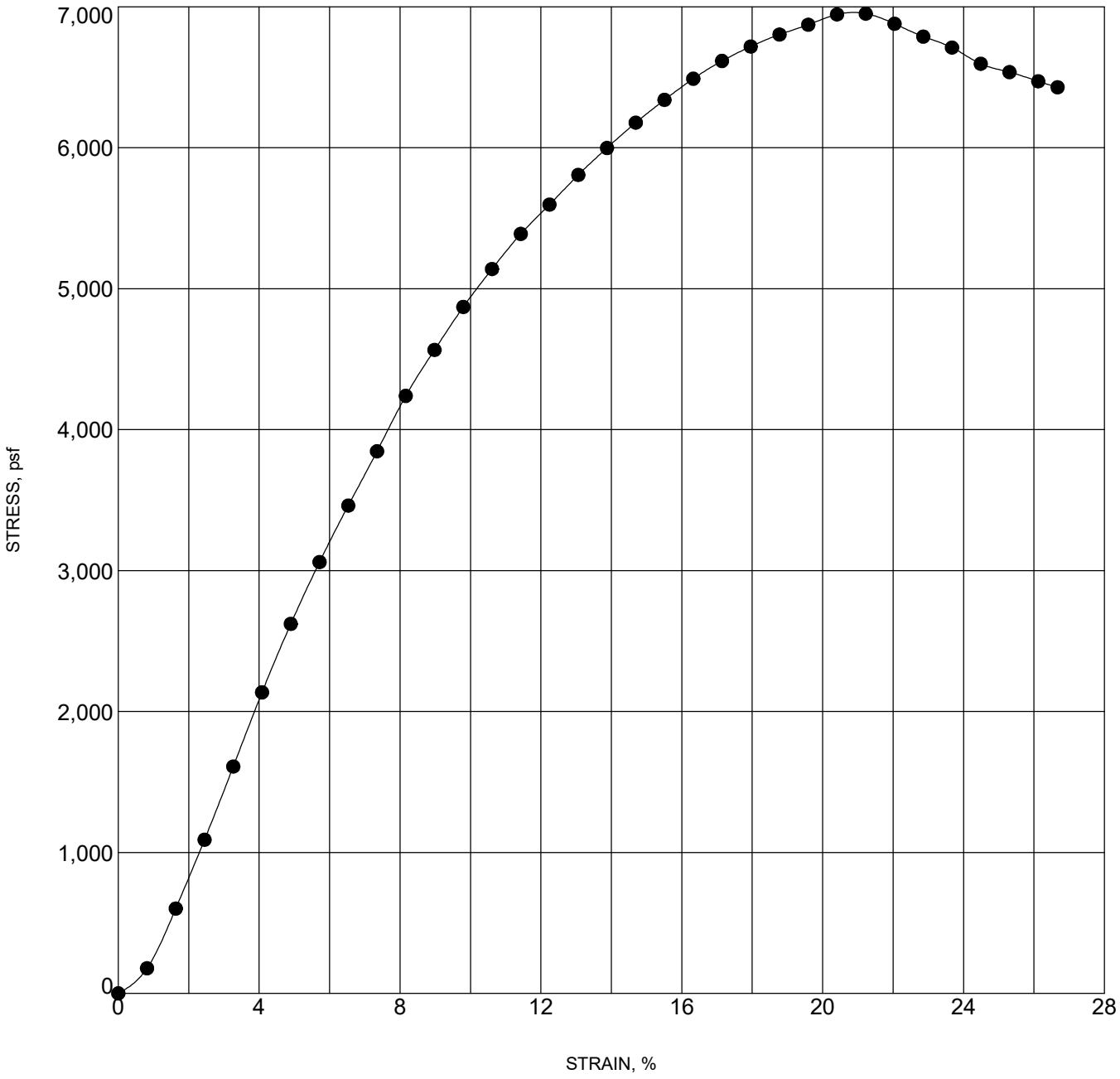
CTL Engineering, Inc.
Phone: 317-295-8650

UNCONFINED COMPRESSIVE STRENGTH

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

Project No.: 24050019IND



Boring Information		Test Results	
Boring No.	**B-3**	Natural Moisture Content (%)	**11.6**
Sample	**SS-7**	Natural Wet Density, pcf	**141.8**
Depth	**23.5 - 25.0**	Natural Dry Density, pcf	**127.1**
Latitude	**40.485560**	Unconfined Compression Strength, psf	**6239**
Longitude	**-86.128678**	Failure Strain (%)	**15.0**
		SOIL DESCRIPTION	**SANDY SILTY CLAY (CL-ML)**

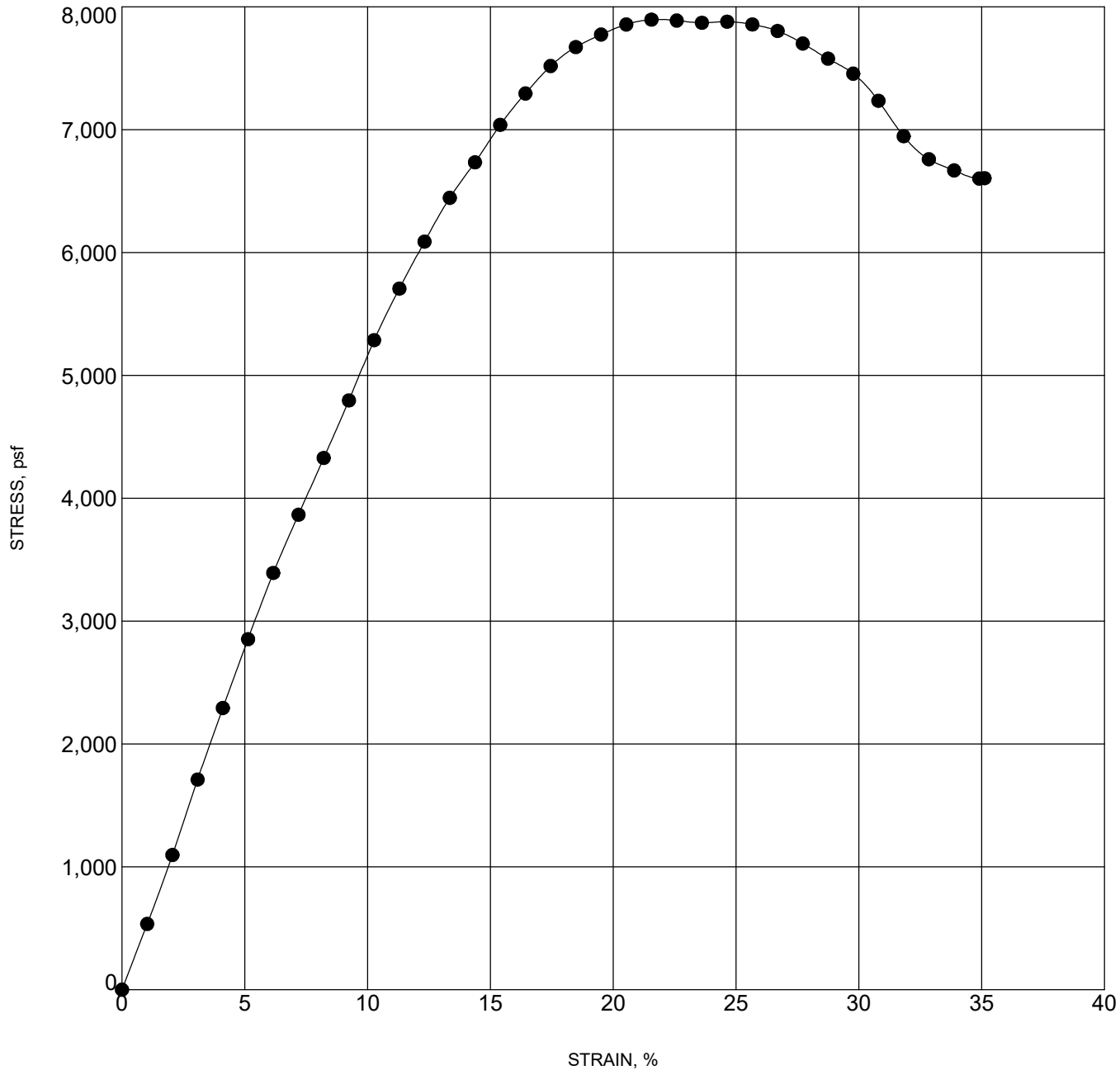
CTL Engineering, Inc.
Phone: 317-295-8650

UNCONFINED COMPRESSIVE STRENGTH

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

Project No.: 24050019IND



Boring Information		Test Results	
Boring No.	**B-4**	Natural Moisture Content (%)	**11.1**
Sample	**SS-7**	Natural Wet Density, pcf	**143.6**
Depth	**23.5 - 25.0**	Natural Dry Density, pcf	**129.3**
Latitude	**40.485550**	Unconfined Compression Strength, psf	**6921**
Longitude	**-86.127240**	Failure Strain (%)	**15.0**
		SOIL DESCRIPTION	**SANDY SILTY CLAY (CL-ML)**

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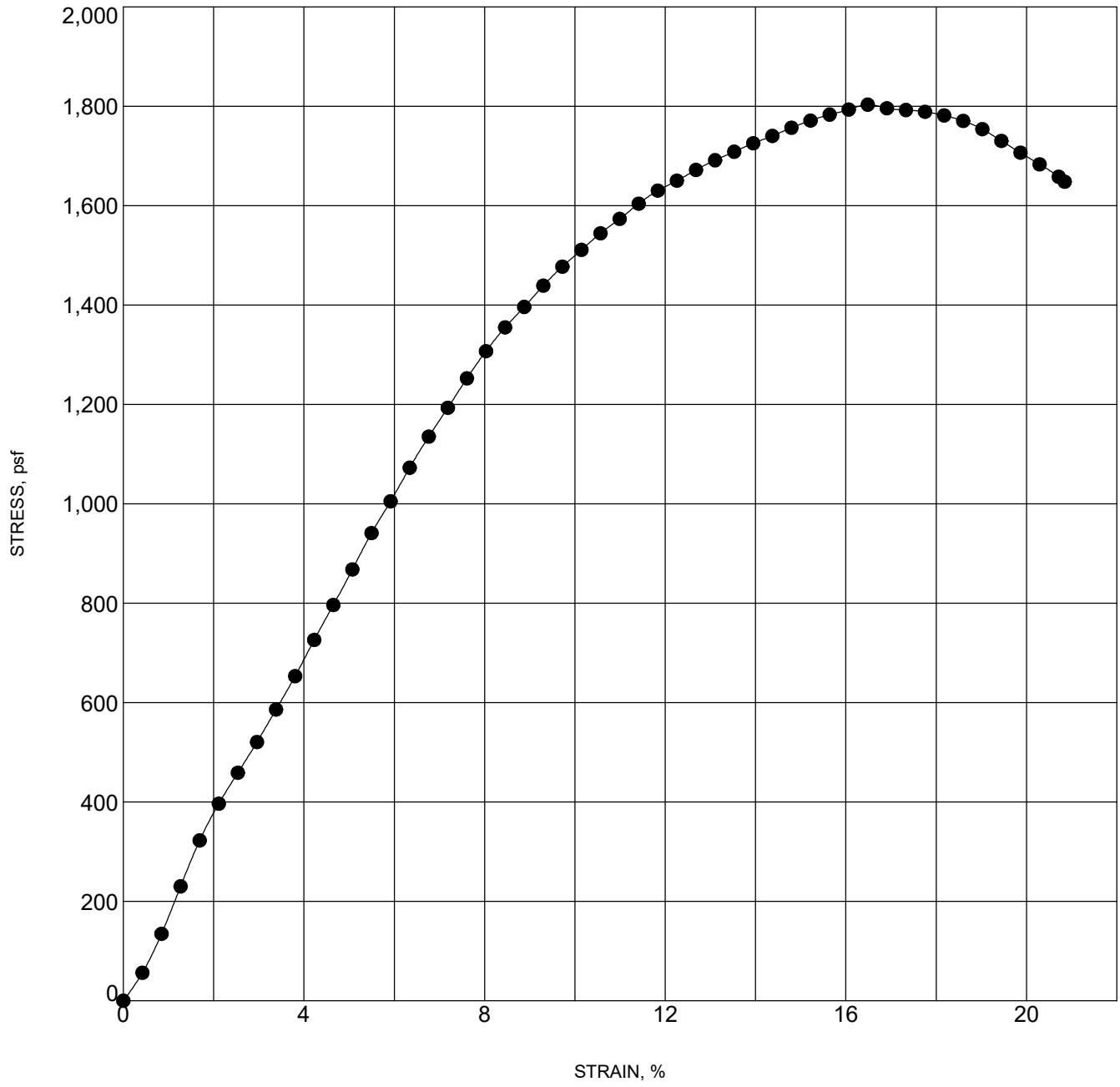
UNCONFINED COMPRESSIVE STRENGTH

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

Project No.: 24050019IND



Boring Information		Test Results	
Boring No.	**B-5B**	Natural Moisture Content (%)	**21.8**
Sample	**ST-1**	Natural Wet Density, pcf	**124.7**
Depth	**5.0 - 7.0**	Natural Dry Density, pcf	**102.4**
Latitude	**40.485568**	Unconfined Compression Strength, psf	**1764**
Longitude	**-86.125936**	Failure Strain (%)	**15.0**
		SOIL DESCRIPTION	**LEAN CLAY with SAND (CL)**

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UNCONFINED COMPRESSIVE STRENGTH

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

Project No.: 24050019IND

Boring No.	Latitude	Longitude	Sample No.	Depth	Moisture Content (%)	Wet Density (pcf)	Dry Density (pcf)	Unconfined Compression (psf)	Failure Strain (%)	Loss on Ignition (%)	Calcium Carbonate (%)	pH
B-1	40.484854	-86.130619	SS-1	1.0-2.5	21.8							
B-1	40.484854	-86.130619	SS-3	6.0-7.5	9.1							
B-1	40.484854	-86.130619	SS-4	8.5-10.0	11.1							
B-1	40.484854	-86.130619	SS-5	13.5-13.9	11.9							
B-1	40.484854	-86.130619	SS-6	18.5-20.0	10.3							
B-1	40.484854	-86.130619	SS-7	23.5-25.0	11.1	144.4	129.9	8010	15.0			7.2
B-1	40.484854	-86.130619	SS-8	28.5-30.0	17.1							
B-2	40.485535	-86.130148	SS-1	1.1-2.6	21.4							7.3
B-2	40.485535	-86.130148	SS-2	3.5-5.0	10.5							
B-2	40.485535	-86.130148	SS-3	6.0-7.5	10.9							
B-2	40.485535	-86.130148	SS-5	13.5-15.0	13.3							
B-2	40.485535	-86.130148	SS-6	18.5-20.0	15.1							
B-2	40.485535	-86.130148	SS-7	23.5-25.0	10.9							
B-2	40.485535	-86.130148	SS-8	28.5-30.0	11.6	135.3	121.3	3786	15.0			
B-2	40.485535	-86.130148	SS-9	33.5-35.0	10.4							7.0
B-3	40.485560	-86.128678	SS-1	1.0-2.5	18.9							
B-3	40.485560	-86.128678	SS-3	6.0-7.5	9.8							
B-3	40.485560	-86.128678	SS-4	8.5-10.0	9.4							
B-3	40.485560	-86.128678	SS-5	13.5-15.0	9.5							
B-3	40.485560	-86.128678	SS-6	18.5-20.0	9.5							
B-3	40.485560	-86.128678	SS-7	23.5-25.0	11.6	141.8	127.1	6239	15.0			
B-3	40.485560	-86.128678	SS-8	28.5-30.0	8.3							
B-4	40.485550	-86.127240	SS-1	1.0-2.5	12.0							
B-4	40.485550	-86.127240	SS-3	6.0-7.5	9.0							
B-4	40.485550	-86.127240	SS-4	8.5-10.0	7.8							
B-4	40.485550	-86.127240	SS-5	13.5-15.0	7.2							7.1
B-4	40.485550	-86.127240	SS-6	18.5-20.0	8.4							
B-4	40.485550	-86.127240	SS-7	23.5-25.0	11.1	143.6	129.3	6921	15.0			
B-4	40.485550	-86.127240	SS-8	28.5-30.0	9.0							
B-4	40.485550	-86.127240	SS-9	33.5-35.0	11.1							
B-5	40.485567	-86.125855	SS-1	1.0-2.5	6.4							
B-5A	40.485568	-86.125934	SS-1	1.5-3.0	9.3							
B-5A	40.485568	-86.125934	SS-2	3.5-5.0	12.5							
B-5A	40.485568	-86.125934	SS-3	6.0-7.5	13.0							

CTL ENGINEERING
CTL Engineering, Inc.
Phone: 317-295-8650

SUMMARY OF SPECIAL LABORATORY TEST RESULTS

Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

CTL Project No.: 24050019IND

Boring No.	Latitude	Longitude	Sample No.	Depth	Moisture Content (%)	Wet Density (pcf)	Dry Density (pcf)	Unconfined Compression (psf)	Failure Strain (%)	Loss on Ignition (%)	Calcium Carbonate (%)	pH
B-5A	40.485568	-86.125934	SS-4	8.5-10.0	22.4							
B-5A	40.485568	-86.125934	SS-5	13.5-15.0	11.9							
B-5A	40.485568	-86.125934	SS-6	18.5-20.0	10.4							
B-5A	40.485568	-86.125934	SS-7	23.5-25.0	18.6							
B-5B	40.485568	-86.125936	ST-1	5.0-7.0	21.8	124.7	102.4	1764	15.0			7.7

CTL Engineering, Inc.
Phone: 317-295-8650

SUMMARY OF SPECIAL LABORATORY TEST RESULTS

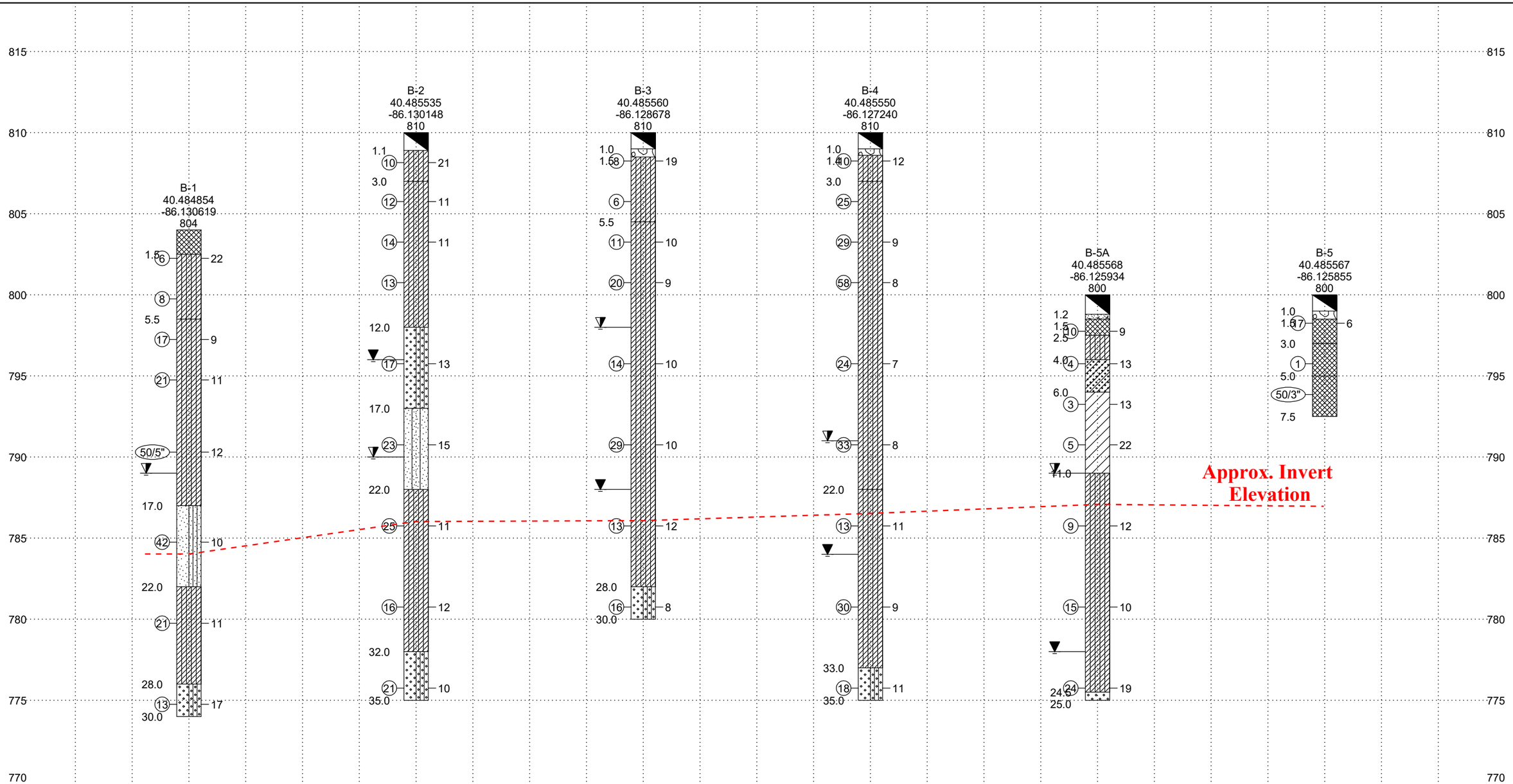
Project: North Side Interceptor Relief Sewer Project

Location: Kokomo, Indiana

CTL Project No.: 24050019IND

APPENDIX D

SOIL PROFILE



LEGEND

- FILL
- SILTY CLAY
- SAND WITH SILT_POORLY GRADED
- SAND WITH SILT_WELL GRADED
- ASPHALT CONCRETE
- SILTY SAND
- GRAVEL_POORLY GRADED
- CONCRETE
- CLAYEY SAND
- LEAN CLAY
- SAND_POORLY GRADED
- GROUND WATER DURING DRILLING
- GROUND WATER AT COMPLETION OF DRILLING
- GROUND WATER AT "N" HOURS AFTER COMPLETION
- W MOISTURE CONTENT IN PERCENT (w)
- (N) STANDARD PENETRATION IN BLOWS PER FOOT (N)

CTL Engineering, Inc.
1310 S. Franklin Rd.
Indianapolis, Indiana 46239
Phone: 317-295-8650
Website: www.ctleng.com

SOIL PROFILE

Scale: As Shown	United Consulting North Side Interceptor Relief Sewer Project Kokomo, Indiana	
Date: 4/8/24		
Drawn By: SAH		
Reviewed By: SM	Project No.: 24050019IND	Page: 1 of 1

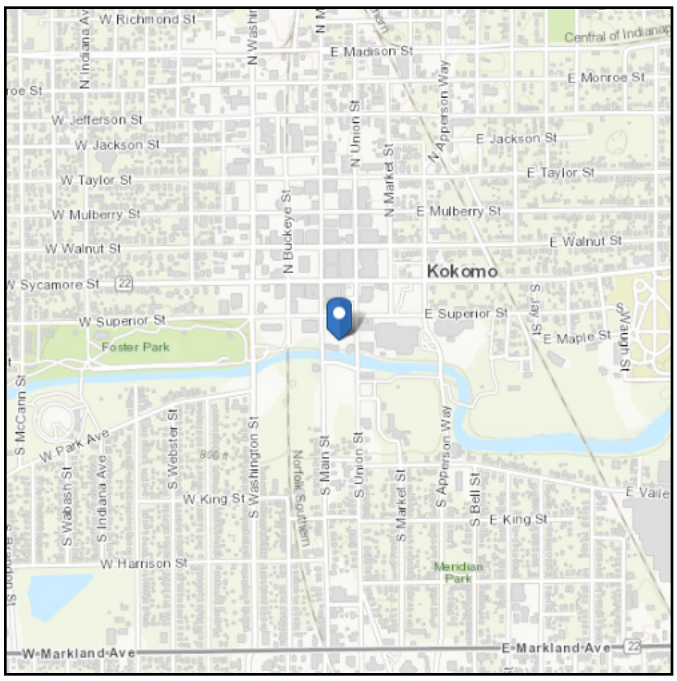
APPENDIX E

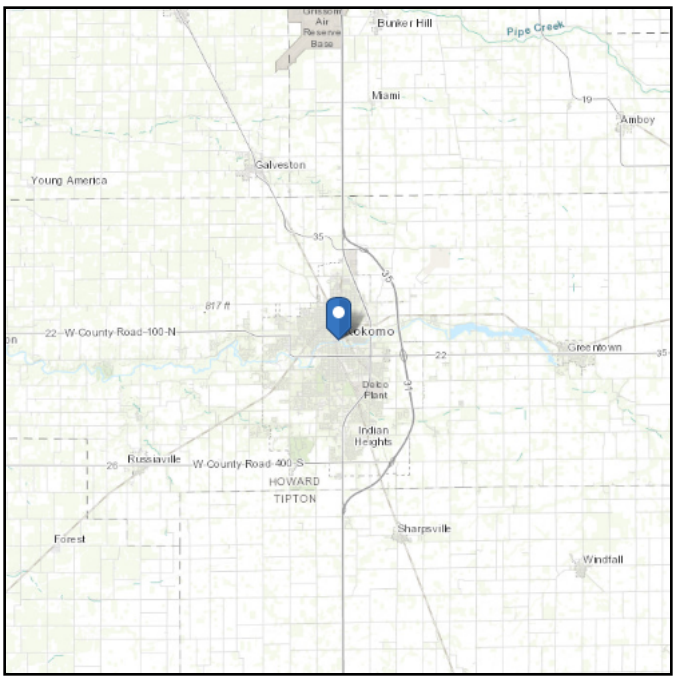
SEISMIC COEFFICIENTS

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Latitude:**	40.484854
Risk Category:	II	**Longitude:**	-86.130619
Soil Class:	D - Stiff Soil	**Elevation:**	802.2225003364736 ft (NAVD 88)





Seismic

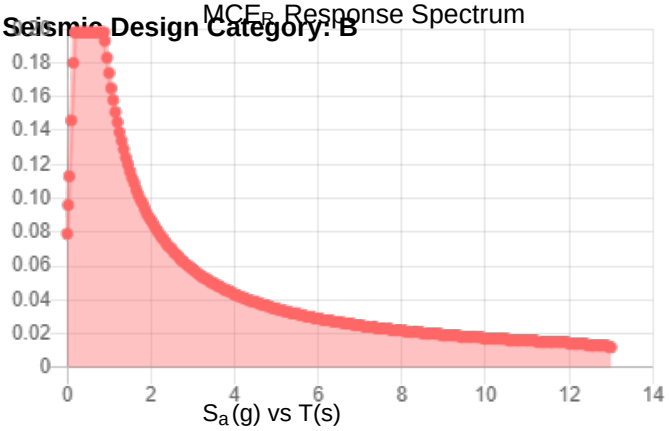
Site Soil Class: D - Stiff Soil

Results:

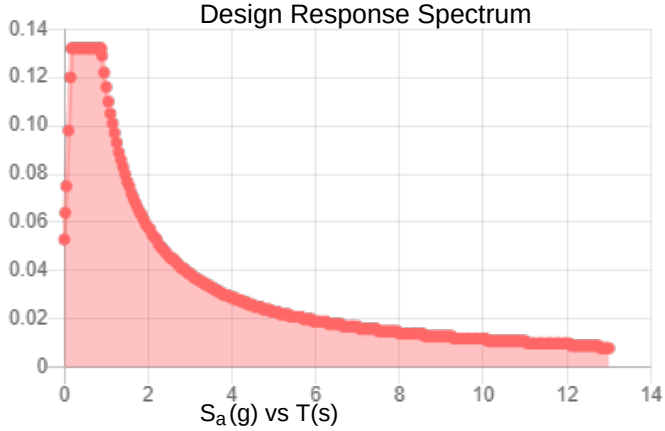
S_S :	0.123	S_{D1} :	0.116
S_1 :	0.072	T_L :	12
F_a :	1.6	PGA :	0.056
F_v :	2.4	PGA_M :	0.09
S_{MS} :	0.198	F_{PGA} :	1.6
S_{M1} :	0.174	I_e :	1
S_{DS} :	0.132		

Seismic Design Category: B

MCE_R Response Spectrum



Design Response Spectrum



Data Accessed: Mon Apr 08 2024

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We Protect Hoosiers and Our Environment.
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Eric J. Holcomb
Governor

Brian C. Rockensuess
Commissioner

April 12, 2024

VIA ELECTRONIC MAIL

Mr. Jon Pyke, Engineering Department Head
City of Kokomo
100 South Union Street
Kokomo, Indiana 46901

Dear Mr. Pyke:

Re: 327 IAC 3 Construction
Permit Application
North Side Interceptor Relief Sewer
Permit Approval No. 25361
Kokomo, Indiana
Howard County

The application, plans and specifications, and supporting documents for the above-referenced project have been reviewed and processed in accordance with rules adopted under 327 IAC 3. Enclosed is the Construction Permit (Approval No. 25361), which applies to the construction of the above-referenced sanitary sewer system to be located south and east of the intersection of Union Street and Superior Street in Kokomo.

Please review the enclosed permit carefully and become familiar with its terms and conditions. In addition, it is imperative that the applicant, consulting architect/engineer (A/E), inspector, and contractor are aware of these terms, conditions, and reporting and testing requirements.

It should be noted that any person affected or aggrieved by the agency's decision in authorizing the construction of the above-referenced facility may, within fifteen (15) days from date of mailing, appeal this permit by filing a request with the Office of Environmental Adjudication for an adjudicatory hearing in accordance with IC 4-21.5-3-7 and IC 13-15-6. The procedure for appeal is outlined in more detail in Part III of the attached construction permit.

Plans and specifications were prepared by United Consulting, certified by Dann C. Barrett, P.E., and submitted for review on March 13, 2024, with additional information submitted on April 9, 2024.

Any questions concerning this permit may be addressed to Robert Synko, P.E., of our staff, at 317/232-8658, or rssynko@idem.in.gov.

Sincerely,

Kevin D. Czerniakowski

Kevin D. Czerniakowski, P.E.
Section Chief
Facility Construction and
Engineering Support Section
Office of Water Quality

Project No. M-26236
Enclosures
cc: Howard County Health Department
Dann Barrett, P.E., United Consulting

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AUTHORIZATION FOR CONSTRUCTION OF
SANITARY SEWER SYSTEM
UNDER 327 IAC 3

DECISION OF APPROVAL

The City of Kokomo, in accordance with the provisions of IC 13-15 and 327 IAC 3 is hereby issued a permit to construct a sanitary sewer system to be located south and east of the intersection of Union Street and Superior Street in Kokomo. The permittee is required to comply with requirements set forth in Parts I, II and III hereof. The permit is effective pursuant to IC 4-21.5-3-4(d). If a petition for review and a petition for stay of effectiveness are filed pursuant to IC 13-15-6, an Environmental Law Judge may be appointed for an adjudicatory hearing. The force and effect of any contested permit provision may be stayed at that time.

NOTICE OF EXPIRATION DATE

Authorization to initiate construction of this sanitary sewer system shall expire at midnight one year from the date of issuance of this construction permit. In order to receive authorization to initiate construction beyond this date, the permittee shall submit such information and forms as required by the Indiana Department of Environmental Management. It is requested that this information be submitted sixty (60) days prior to the expiration date to initiate construction. This permit shall be valid for a period of five (5) years from the date below for full construction completion.

Issued on April 12, 2024, for the Indiana Department of Environmental Management.

Kevin D. Czerniakowski

Kevin D. Czerniakowski, P.E.
Section Chief
Facility Construction and
Engineering Support Section
Office of Water Quality

SANITARY SEWER SYSTEM DESCRIPTION

The proposed project will catch flows upstream of the existing 30-inch diameter north side interceptor relief sewer. To do this, flows will be diverted from an existing 84-inch diameter combined sewer, routed through the proposed relief sewer, then discharged at the proposed downstream point west of Union Street. This is being done based on modelling of the existing system for new industry being developed near the northeast sector of the City. No new flows are proposed as part of this project.

The upstream connection point on the existing 84-inch diameter combined sewer will be approximately 1,200 feet east of the intersection of Union and Superior Streets. The downstream connection is an existing manhole and 42-inch sewer located approximately 270 feet west of the intersection of Union and Superior Streets.

PROPOSED SEWER CONSTRUCTION:

- About 400 feet of 24-inch diameter PVC (ASTM F679, PS 75) sanitary sewer
- About 760 feet of 24-inch diameter PVC (AWWA C900, DR-21) sanitary sewer
- About 270 feet of 36-inch diameter PVC (AWWA C900, DR-21) sanitary sewer
- About 70 feet of 36-inch diameter PVC (ASTM F679, PS 75) sanitary sewer

Inspection during construction and maintenance of the new sanitary sewer will be provided by the City of Kokomo. Wastewater treatment will be provided by Kokomo Wastewater Treatment Plant.

CONDITIONS AND LIMITATIONS TO THE AUTHORIZATION FOR CONSTRUCTION OF SANITARY SEWERS

During the period beginning on the effective date of this permit and extending until the expiration date, the permittee is authorized to construct the above-described sanitary sewer system. Such construction shall conform to all provisions of State Rule 327 IAC 3 and the following specific provisions:

PART I

SPECIFIC CONDITIONS AND LIMITATIONS TO THE CONSTRUCTION PERMIT

Unless specific authorization is otherwise provided under the permit, the permittee shall comply with the following conditions:

1. Any local permits required for this project, along with easement acquisition, shall be obtained before construction is initiated.

2. If pollution or nuisance conditions are created, immediate corrective action will be taken by the permittee.

3. The separation of sanitary sewers from water mains and drinking water wells must comply with 327 IAC 3-6-9.

4. All gravity sewer pipe must be leak tested using either a hydrostatic test or air test in accordance with 327 IAC 3-6-19(d). If using a hydrostatic test, the rate of exfiltration or infiltration shall not exceed 200 gallons per inch of pipe diameter per linear mile per day. Air test shall be as prescribed.

5. The results of the gravity sewer leakage test on the completed sewer shall be submitted to this office within three months of completion of construction.

6. Deflection tests must be performed on all flexible* pipe after the final backfill has been in place at least 30 days. No pipe shall exceed a vertical deflection of 5%. Deflection test results shall be submitted with the infiltration/exfiltration test results. (*The following are considered nonflexible pipes: vitrified clay pipe, concrete pipe, ductile iron pipe, cast iron pipe, asbestos cement pipe.)

7. Manholes shall be air tested in accordance with ASTM C1244, Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test. The manhole test results shall be submitted with the gravity sewer leakage test results.

Failure to submit test results within the allotted time-period or failure to meet guidelines as set forth in the above conditions could be subject to enforcement proceedings as provided by 327 IAC 3-5-3.

PART II

GENERAL CONDITIONS

1. No significant or material changes in the scope of the plans or construction of this project shall be made unless the following provisions are met:

    a. Request for permit modification is made 60 days in advance of the proposed significant or material changes in the scope of the plans or construction;

    b. Submit a detailed statement of such proposed changes;

    c. Submit revised plans and specifications including a revised design summary; and

    d. Obtain a revised construction permit from this agency.

2. This permit may be modified, suspended, or revoked for cause including, but not limited to the following:

    a. Violation of any term or conditions of this permit:

    b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.

3. Nothing herein shall be construed as guaranteeing that the proposed sanitary sewer system shall meet standards, limitations or requirements of this or any other agency of state or federal government, as this agency has no direct control over the actual construction and/or operation of the proposed project.

PART III

NOTICE OF RIGHT TO ADMINISTRATIVE REVIEW

Anyone wishing to challenge this construction permit must do so by filing a Petition for Administrative Review with the Office of Environmental Adjudication (OEA), and serving a copy of the petition upon IDEM. The requirements for filing a Petition for Administrative Review are found in IC 4-21.5-3-7, IC 13-15-6-1 and 315 IAC 1-3-2. A summary of the requirements of these laws is provided below.

A Petition for Administrative Review must be filed with the Office of Environmental Adjudication (OEA) within fifteen (15) days of the issuance of this notice (eighteen (18) days if notice was received by U.S. Mail), and a copy must be served upon IDEM. Addresses are:

Director
Office of Environmental Adjudication
Indiana Government Center North
Room 103
100 North Senate Avenue
Indianapolis, Indiana 46204

Commissioner
Indiana Department of Environmental Management
Indiana Government Center North
Room 1301
100 North Senate Avenue
Indianapolis, Indiana 46204

The petition must contain the following information:

1. The name, address and telephone number of each petitioner.
2. A description of each petitioner's interest in the permit.
3. A statement of facts demonstrating that each petitioner is:
    a. a person to whom the order is directed;
    b. aggrieved or adversely affected by the permit; or
    c. entitled to administrative review under any law.
4. The reasons for the request for administrative review.
5. The particular legal issues proposed for review.
6. The alleged environmental concerns or technical deficiencies of the permit.
7. The permit terms and conditions that the petitioner believes would be appropriate and would comply with the law.
8. The identity of any persons represented by the petitioner.
9. The identity of the person against whom administrative review is sought.
10. A copy of the permit that is the basis of the petition.
11. A statement identifying petitioner's attorney or other representative, if any.

Failure to meet the requirements of the law with respect to a Petition for Administrative Review may result in a waiver of the Petitioner's right to seek administrative review of the permit. Examples are:

1. Failure to file a Petition by the applicable deadline;
2. Failure to serve a copy of the Petition upon IDEM when it is filed; or
3. Failure to include the information required by law.

If Petitioner seeks to have a permit stayed during the administrative review, he or she may need to file a Petition for a Stay of Effectiveness. The specific requirements for such a Petition can be found in 315 IAC 1-3-2 and 315 IAC 1-3-2.1.

Pursuant to IC 4-21.5-3-17, OEA will provide all parties with notice of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action. Those who are entitled to notice under IC 4-21.5-3-5(b) and would like to obtain notices of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action without intervening in the proceeding must submit a written request to OEA at the address above.

More information on the review process is available at the website for the Office of Environmental Adjudication at http://www.in.gov/oea.

Meeting Minutes

8440 Allison Pointe Blvd., Suite 200, Indianapolis, IN 46250 (317) 895-2585 www.ucindy.com

April 15, 2024

Mr. Carey Stranahan, PE
Acting City Engineer
City of Kokomo
100 South Union Street
Kokomo, IN 46901

RE: North Side Interceptor Relief Sewer
Pre-Bid Meeting

Dear Mr. Stranahan**:**

A voluntary pre-bid meeting was held on April 9, 2024, at the City of Kokomo – City Hall. The following people were in attendance:

- Jon Pyke, PLS — City of Kokomo **(CITY)**
- Dann Barrett, PE — United Consulting (**UNITED**)
- Ricardo Paredes, PE — United Consulting
- Michael Kern — Atlas Excavating

The objective of the meeting was to review aspects of the project and provide prospective bidders an opportunity to ask questions related to the project and bidding documents. During the meeting, the following information was discussed:

1. Project Scope
    a. The project is part of the efforts by the City to provide additional capacity to alleviate downstream bottleneck conditions in the existing North Side Interceptor Sewer due to new industry development within City limits. Project includes:
        i. Approx. 1,100 LFT of 24” PVC Sanitary Sewer
        ii. Approx. 300 LFT of 36” PVC Sanitary Sewer
        iii. (4) Sanitary MH’s, (1) Sanitary Drop MH, and (1) Regulator Structure
        iv. Sanitary service connections, road restoration, curb restoration, etc.
        v. Flow management and bypass pumping along Union Street and as needed at existing sewer connections.
    b. Restoration: Contractor shall be responsible for restoring all areas impacted by construction including ADA ramps, sidewalks, curbs, and full width mill & resurface as indicated in the bidding documents.

2. Schedule
    a. Bid Date
        i. Wednesday, April 17, 2024, at 10:00 AM (local time). Bids will be received by the City of Kokomo Board of Public Works and Safety at the City Hall located at 100 South Union Street, Kokomo, Indiana 46901.
        ii. Bids are to be delivered to the Board of Public Works on the 3rd Floor of City Hall prior to the 10:00 AM meeting. City officials will receive the bids and transfer to the 1st Floor prior to the meeting commencement.

b. Completion Dates:
    i. Substantial Completion: 150 days
    ii. Final Completion: 180 days
    iii. Intermediate Completion:
        1. Line SA through Apperson Way: July 31, 2024
        2. This schedule is being driven by the school calendar. Work along Union Street and Superior Street west of Apperson Way must be completed by this date. Work east of Apperson Way along Superior Street may continue through the project completion dates.

3. Bid Requirements
    a. Refer to Information to Bidders. Required bid submittal items include:
        i. Proposal Form
        ii. Form 96 (State Board of Accounts)
        iii. BIDDER'S Financial Statement (if required by Form 96)
        iv. Bid Bond or Certified Check (5% of bid amount)
        v. E-Verify Affidavit
        vi. BIDDER's written plan for a program to test BIDDER's employees for drugs in accordance with IC 4-13-18.
    b. IDOA Certification required prior to Agreement.

4. Permit Requirements
    a. IDEM Sanitary Sewer Construction Permit (Appendix B). This permit application is currently under review by IDEM. A copy of the permit will be distributed via addendum if received prior to the bid date.

5. Funding
    a. Local by City of Kokomo.

6. Geotech
    a. Draft logs included in the bidding documents (Appendix A)
    b. The full geotechnical report will be part of the forthcoming addendum.

7. Other
    a. Utility Coordination
        i. Utility information on the plans was obtained through field survey, 811 locates, and design coordination with local utility companies. Contractor is responsible for field locating all utility crossings, services, etc. during construction.
        ii. Contractor responsible for protecting and repairing all disturbed utilities (including services) within the trench limits at no additional cost.
            1. Gas main coordination (NIPSCO)
                a. 8" plastic and 10" steel gas main along the north side of Superior Street between Union and Market
                b. Abandoned gas main along the south side of Superior (East of Apperson) needs to be coordinated with NIPSCO prior to removal and disposal.
            2. Water main coordination (INAW)
                a. 24" CEM (PCCP) water main along the centerline of Superior.
                b. Contractor to relocate existing water service (STA 24+75) as needed and impacted by work performed.
    b. Sanitary Sewer Pipe Materials & Testing
        i. All sewer pipe will be C-900 DR-21 PVC.

ii. Mandrel and low air pressure testing for sewers required per specifications. Post-construction video of pipe may be permitted in lieu of low-pressure air test where active laterals exist.
iii. Vacuum testing of manholes per specifications.
iv. Granular backfill compaction testing: 95% modified proctor

c. Sanitary Drop (Interior) Manhole – SA-2
   i. Structure has a min. size of 60" diameter for proper installation of internal drop. No reducing cone section (flat-top structure).
   ii. Contractor to protect and support nearby utilities at this intersection.
   iii. Core-drill structure for existing sanitary sewer (24" RCP) connection due to elevation variability. Seal to water-tight condition.
   iv. It was confirmed that the drop size was designed as 18" due to hydraulic performance of the vertical pipe section and to limit structure size.
d. Regulator Structure
   i. Shown as a precast concrete doghouse box over a cast-in-place structure base.
   ii. Contractor to provide stamped calculations by professional engineer for precast structure for review prior to procurement and installation.
   iii. Watertight connections and stop log assembly per the plan details.
e. Backfill
   i. Use #53 compacted stone as backfill within trench and below road restoration.
f. Sanitary Service Connections (Union Street)
   i. Contractor to verify activity of sanitary service laterals prior to reconnection. Existing connections on the west side of the sewer along Union Street will not be reconnected (future convention center development).
g. Flow Management / Bypass Pumping
   i. Contractor expected to maintain sanitary flow upstream of structure SA-2 (Union and Superior) as this line is being replaced / upsized with construction. Regulator structure on the existing 84" combined sewer has been designed as a doghouse structure to simplify flow management.
h. Pavement Restoration
   i. Prior to base restoration, compacted No. 53 to be installed to the surface and regularly maintained.
   ii. Base restoration to be completed as work progresses (within 30 days of final backfill) on a block-by-block basis. All base restoration shall temporarily be extended flush to the surface. Initial placement shall be 7.5" with 1.5" of sacrificial depth that will be removed during milling in advance of final 1.5" HMA surface placement.
      1. Final surface restoration (including milling) is to be completed for all disturbed areas at the end of the project. Coordinate with Kokomo School Corporation to avoid impacts to operations.
   iii. Pavement markings: Contractor to note prior to construction and replace to match existing. Approximate quantities provided on Plan Sheet 7. Contractor to verify. Cost included under the site restoration line item.
      1. Other items included in the site restoration lump sum pay item include impacted drives, ADA curb ramps, inlets, miscellaneous concrete work, stone surface, etc. Refer to the pay item specification (Section 01010) for additional details.
i. Maintenance of Traffic
   i. Contractor to develop detailed maintenance of traffic plans and submit to the Engineer and City for review and approval.
   ii. Critical dates for construction and maintenance of traffic were reviewed. Refer to Construction Sequence Requirements on Plan Sheet 2:

1. May 31st (Graduation): Superior Street open entirely.
2. June 7th (Strawberry Festival): Superior Street open entirely.
3. June 29th (4th of July Parade): Union Street and Apperson Way open for thru traffic during the weekend. Sections of Superior Street may remain closed.
4. August 1st (School resumes): Union Street and Apperson Way shall be open for thru traffic. Superior Street west of Apperson Way shall be open. Superior Street east of Apperson Way may remain closed for construction and final upstream connection.

iii. Two detour routes shall be implemented to maintain either Union Street or Apperson Way open at all times.
iv. The 2-week period noted for parking garage closure at City Hall is flexible if this needs to be staggered or modified to allow for efficient construction.

j. Storage / staging areas
   i. A portion of the existing lot at the southwest corner of Union Street and Superior Street may be utilized through August 1st in advance of the Kokomo Convention Center construction. Available area includes approximately 140' north of the riverwalk and west of Union Street to the east side of the existing alley.
   ii. The CITY will confirm with Kokomo School officials, but the parking lot east of the Kokomo Memorial Gymnasium on the southside of Superior Street may be considered.
   iii. Contractor is responsible for restoring all staging areas back to existing conditions following construction. The stone area west of Union Street shall be top dressed with #8 stone following construction.

8. Pre-Bid Question Procedure/Addendums
   a. Questions must be submitted in writing to United Consulting for response and inclusion in Addendum, as necessary.
      i. Final questions to be submitted by Thursday, April 11, 2024.
      ii. Attn: Ricardo Paredes PE, ricardo.paredes@ucindy.com
   b. Addenda will be distributed electronically through Eastern Engineering Plan Room.
   c. Acknowledgement of Addendum required with bid submittal on the proposal form and on the signature page of the addendum.

9. General Comments, Discussion, and Questions
   a. Is landscaping required as part of the restoration efforts on the project (i.e. at ADA ramp planting boxes)?
      i. **Response**: No. If existing landscaping is disturbed, the Contractor will only be required to restore existing grade, topsoil, and seed. Future landscaping will be completed by others.

   b. How is restoration to impacted sidewalks and concrete driveways accounted for in the project? Can these be split out and paid as separate unit price pay items?
      i. **Response**: All impacted sidewalks and driveways due to construction activities are to be repaired and replaced back to original conditions. All concrete work shall be replaced to the nearest joint. Currently, this work is to be paid under the site restoration lump sum pay item. Additional consideration will be given to separating this work into unit price pay items with an "undistributed" quantity.

   c. What is required for the SWPPP measures?
      i. **Response**: The project falls under the 1-acre disturbance threshold, so there is no formal IDEM Construction Stormwater General Permit required. General

SWPPP requirements and details have been included in the plan set. The intent is for the contractor to implement basic SWPPP measures during construction to limit erosion and sediment transport from the site including storm inlet protection, regular street sweeping, and sediment filtering from dewatering efforts.

d. Plans require a water service relocation near STA 24+75. What is the size and material type for this service line?
    i. **Response**: The existing water service is ¾" HPDE per INAW.

e. Plans indicate an abandoned gas main along the south side of Superior Street. What is the size and material?
    i. **Response**: The existing abandoned gas is an 8" steel per NIPSCO.

f. Will utility relocations be done by others prior to work beginning?
    i. **Response**: Contractor will be responsible to protect and support utilities during construction to maintain service in the corridor. Poles requiring support are the contractor's responsibility to coordinate and pay associated costs. Conversations are ongoing with both INAW and NIPSCO to possibly relocate parallel infrastructure along Superior Street between Union Street and Apperson Way.

g. What is required to cap / seal abandoned pipes including sanitary laterals, gas mains, etc.
    i. **Response**: Contractor shall plug and seal all open ends of abandoned sewers and utilities watertight with non-shrink grout to prevent soil migration and potential sinkholes.

h. Who is responsible for the reinstallation of traffic control devices?
    i. **Response**: The only signalized intersection within the project limits is Apperson Way and Superior Street. There are no loop detectors at this intersection. The CITY agreed to remove and reinstall the overhead mast arms and traffic lights at this intersection to avoid overhead impacts during excavation.

i. Which curbs are included in the concrete curb replacement quantity.
    i. **Response**: The quantity in the proposal form is conservative assuming impacts to the curb closest to the trench for the entire alignment length. Note that only impacted curb requires replacement. Different curb types are not distinguished and will all be paid under the same line item. It is primarily combined curb and gutter (chairback) though the project limits.

j. Can groundwater dewatering be discharged into the nearby storm sewer system?
    i. **Response**: Yes. The contractor shall utilize a filter bag prior to discharge to limit sediment transport.

k. Will temporary lane closures be allowed to set up dewatering / bypass pumping?
    i. **Response**: Yes. The Contractor shall coordinate traffic impacts in advance. All signage shall be in accordance with the manual on uniform traffic control devices (MUTCD).

l. Is there a requirement for site fencing on this project?
    i. **Response**: Bidding documents do not dictate means and methods. Contractor is ultimately responsible and liable for maintaining a safe work area during construction.

The above minutes reflect our understanding of the discussions and decisions made at this meeting. If you have any questions, additions, or comments, please contact our office at your convenience.

Sincerely,
UNITED CONSULTING

Ricardo Juan Paredes Aronsohn, PE
Project Engineer

Dann Barrett, PE
Senior Project Manager

c: All Attendees / Plan Holders
File 24-917-01

Sign In Sheet

8440 Allison Pointe Blvd., Suite 200, Indianapolis, IN 46250 (317) 895-2585

UNITED Consulting

Kokomo – North Side Interceptor Relief Sewer
Pre-bid Meeting
April 9, 2024

Initial:	Name:	Company:	Email:	Phone Number:
DB	Dann Barrett	United Consulting	dann.barrett@ucindy.com	317-895-2585
RJPA	Ricardo Paredes	United Consulting	ricardo.paredes@ucindy.com	317-895-2585
	Carey Stranahan	City of Kokomo	cstranahan@cityofkokomo.org	765-432-4916
JP	Jon Pyke	City of Kokomo	jpyke@cityofkokomo.org	765-432-4916
MK	Michael Kern	Atlas Excavation	Michaelk@atlasexcavating.com	765-532-8795