

# ADDENDUM NO. 1

Donnelsville Water System  
Clark County, Ohio

Project No. 223879.01

## Index of Contents

Addendum No. 1, 5 Item, 26 pages total

## Attachments

Revised Bid Form  
Bowser Morner Report  
Addendum Drawing #1

May 15, 2026

I hereby certify that this Addendum was prepared by me or under my direct supervision and that I am a duly registered Engineer under the Laws of the State of Ohio.

ACCESS ENGINEERING SOLUTIONS, LLC



05-15-2026

TO: ALL BIDDERS OF RECORD

ADDENDUM NO. 1 to Drawings and Specifications for the Donnelville Water System Project, Clark County, Ohio; as prepared by Access Engineering Solutions, Celina, Ohio.

This Addendum shall hereby be and become a part of the Contract Documents the same as if originally bound thereto.

The following clarifications, amendments, additions, revisions, changes, and modifications change the original Contract Documents only in the amount and to the extent hereinafter specified in this Addendum.

NOTE: Bidders are responsible for becoming familiar with every item of this Addendum and acknowledge the receipt of said addendum on the bid forms.

ITEM NO. 1– Section 00003 of the Project Manual: TABLE OF CONTENTS

DIVISION 13 – SPECIAL CONSTRUCTION

DELETE: 13593 Telemetry

This item is being covered under the Telemetry Allowance in the Bid

ITEM NO. 2– Section 00300 of the Project Manual: BID FORM /W9 FORM

INSERT: Base Bid A

BID ITEM	DESCRIPTION	UNIT OF MEASURE	Approx. QTY
65	4" CONCRETE WALK	SF	300

ALTERNATE BASE BID A #1 - REDUCED PACKAGED WATER BOOSTER SYSTEM

ITEM NO. 3– Section 01230 of the Project Manual: ALTERNATIVES

1.3 SUMMARY OF REQUESTED ALTERNATIVES

INSERT:

B. Base Bid A – Alternative No 1: REDUCED PACKAGED WATER BOOSTER SYSTEM

Construction of a Packaged Water Booster System as detailed in Spec Section 11175 with the following Deletions

DELETE: PUMP #1

The pumps shall be Vertical Multi-Stage by Grundfos.

Design Point: 30 GPM @ 125 feet TDH;  
Maximum Point: 50 GPM @ 60 feet TDH;  
NPSHr: 13 feet;  
Suction Pressure: 40 PSI;

Discharge Pressure: 75 PSI;  
Pump Efficiency at Design Point: 58%  
Pump Power: Non-overloading for 1.5 rated h.p.  
Motor Speed: 3500 rpm nominal.  
Electrical Power: 480 volt 3 phase, 60 cycle

DELETE: PUMP #4 & #5

The pumps shall be Close Coupled End Suction by Paco as Model 50957LC.

Design Point: 1000 GPM @ 60 feet TDH;  
Maximum Point: 1600 GPM @ 37 feet TDH;  
NPSHr: 10 feet;  
Suction Pressure: 40 PSI;  
Discharge Pressure: 75 PSI;  
Pump Efficiency at Design Point: 82%  
Pump Power: Non-overloading for 20 rated h.p.  
Motor Speed: 1800 rpm nominal.  
Electrical Power: 480 volt 3 phase, 60 cycle

INSERT: PUMPS #2 & #3

The pumps shall be Close Coupled End Suction by Paco LC series or equal

Design Point: 260 GPM @ 130 feet TDH;  
Maximum Point: 300 GPM @ 90 feet TDH;  
NPSHr: 10 feet;  
Suction Pressure: 40 PSI;  
Discharge Pressure: 75 PSI;  
Pump Efficiency at Design Point: 82%  
Pump Power: Non-overloading for 20 rated h.p.  
Motor Speed: 1800 rpm nominal.  
Electrical Power: 480 volt 3 phase, 60 cycle

As a part of Base Bid A – Alternate #1 The size of the building , piping, electrical components shall be reduced and resized to account for the elimination of pumps 1,4 & 5.

ITEM NO. 4– Section 00200 of the Project Manual: INFORMATION AVAILABLE TO BIDDERS

INSERT:

Preliminary Report "BOWSER MORNER"

Re: Soil Exploration for Proposed Proposed Water Tower, Ingling Drive, Donnelsville, Ohio.  
19 page report attached

ITEM NO. 5- CONSTRUCTION DRAWINGS – DONNELSVILLE WATER SYSTEM

DRAWING SHEET #6

INSERT: WATERLINE TRENCH DETAIL OUTSIDE PAVEMENT AREA REVISED  
(Addendum Drawing #1)

DELETE: WATERLINE TRENCH DETAIL OUTSIDE PAVEMENT AREA

CONTRACTOR NAME: \_\_\_\_\_

BID ITEM	DESCRIPTION	UNIT OF MEASURE	APPROX. QTY.	UNIT COSTS	TOTAL COSTS
<b>Base Bid A</b>					
1	Bonding and Insurance	LS	1		
2	Mobilization	LS	1		
3	Clearing and Grubbing	LS	1		
4	Pre-Construction Video	LS	1		
5	Stump Removal	EA	4		
6	Tree Removal (Under 18")	EA	8		
7	Tree Removal (18" - 36")	EA	6		
8	Tree Removal (Above 36")	EA	4		
9	Removal and Re-erect Existing Mailbox	EA	8		
10	Removal of Ground Mounted Signs, Storage, and Re-erection	LS	7		
<b>Pavement</b>					
11	Concrete Walk and Drive Removal	SF	1,500		
12	Concrete Curb Removal	LF	40		
13	AC Base Course - Trench Repair	TON	1,290		
14	AC Surface - Trench Repair	TON	510		
15	Non-Tracking Tack Coat (0.10 Gal/SY)	GAL	450		
16	AC Surface	CY	400		
17	Asphalt Drive Replacement	SY	680		
18	6" Concrete Drive (Residential)	SY	220		
19	Concrete Curb and Gutter	LF	100		
<b>Water</b>					
20	8" Waterline with Granular Backfill	LF	8000		
21	12" Waterline with Native Backfill	LF	21100		
22	12" Waterline with Granular Backfill	LF	9100		
23	16" Waterline Directional Bored	LF	2420		
24	3/4" Water Service Line	LF	5180		
25	3/4" Curb Valve with Box	EA	150		
26	1" Water Service Line	LF	1000		
27	1" Curb Valve with Box	EA	10		
28	3/4" Water Service Connection (Includes Saddle, Corp Valve, misc. Fittings)	EA	150		
29	1" Water Service Connection (Includes Saddle, Corp Valve, misc. Fittings)	EA	10		
30	Water Meter Pit and Assembly	EA	160		
31	8" Gate Valve	EA	27		
32	12" Gate Valve	EA	52		
33	8" 11.25° Bend	EA	5		
34	8" 22.5° Bend	EA	4		
35	8" 45° Bend	EA	18		
36	8" 90° Bend	EA	3		
37	12" 11.25° Bend	EA	21		
38	12" 22.5° Bend	EA	8		
39	12" 45° Bend	EA	15		
40	8" x 8" Tee	EA	2		
41	12" x 8" Tee	EA	3		
42	12" x 12" Tee	EA	6		
43	8" x 8" Cross	EA	2		
44	12" x 8" Cross	EA	3		
45	8" x 6" Reducer	EA	1		
46	12" x 8" Reducer	EA	1		
47	8" Cap	EA	3		
48	12" Cap	EA	2		
49	Fire Hydrant Assembly	EA	74		

CONTRACTOR NAME: \_\_\_\_\_

BID ITEM	DESCRIPTION	UNIT OF MEASURE	APPROX. QTY.	UNIT COSTS	TOTAL COSTS
50	Booster Station	LS	1		
51	Connection to Existing Waterline	LS	1		
	<b>Storm</b>				
52	Storm Sewer Repairs (4" to 8")	LF	600		
53	Storm Sewer Repairs (10" to 15")	LF	500		
54	Storm Sewer Repairs (18" to 24")	LF	400		
	<b>Misc.</b>				
55	Erosion & Sediment Control Allowance	LS	1	\$5,500.00	\$5,500.00
56	Stormwater Pollution Prevention Plan (SWP3) Allowance	LS	1	\$3,500.00	\$3,500.00
57	Maintaining Traffic & Signage	LS	1		
58	Construction Staking Allowance	LS	1	\$29,500.00	\$29,500.00
59	Grading and Seeding	LS	1		
60	Utility Relocation	LS	1	\$150,000.00	\$150,000.00
61	Household Connections	LS	1	\$400,000.00	\$400,000.00
62	Telemetry/Communications	LS	1	\$70,000.00	\$70,000.00
63	Electrical Service	LS	1	\$30,000.00	\$30,000.00
64	Rock Removal	CY	300		
65	4" CONCRETE WALK	SF	300		
<b>Base Bid A - Total</b>					

BASE BID "A" TOTAL IN WORDS:

**ALTERNATE BID A #1 - REDUCED PACKAGE WATER BOOSTER SYSTEM**

Add/ Deduct \_\_\_\_\_

**Base Bid B**

1	100,000 Gallon Elevated Water Storage - Legged Style Tank Coatings (Containment Optional - Per Contractor's Discretion)	L.S.	1		
2	Tank Logo / Lettering - As Per Plan	L.S.	1		
3	Submersible Mixer	L.S.	1		
4	12" Ductile Iron Pipe (CLASS 52) Waterline	L.F.	40		
10	Misc. Waterline Fittings and Connections	L.S.	1		
11	6" HDPE Storm Sewer	L.F.	60		
12	ODOT 2-2B Catch Basin	EA.	2		
13	Splash Pad	L.S.	1		
14	Proposed Stone Drive	S.Y.	456		
15	Fencing	LF	300		
16	20' Sliding Gate in Fencing	EA.	1		
17	Site Grading & Seeding	L.S.	1		
18	Tower Electrical	L.S.	1		
19	Mobalization, Bonding and Insurance	L.S.	1		
20	Telemetry Allowance	LS	1	\$ 25,000.00	\$ 25,000.00
<b>Base Bid B - Total</b>					

BASE BID "B" TOTAL IN WORDS:

**ALTERNATE BID B #1 - 100,000 Gallon Pedosphere Tank in lieu of Legged Tank**

Add/ Deduct \_\_\_\_\_

*Preliminary Report*  
**BOWSER-MORNER**

4518 Taylorsville Road • P.O. Box 51 • Dayton, Ohio 45401-0051  
Phone (937) 236-8805 Fax (937) 233-2016

*With other offices in:* **Toledo, Ohio**  
Phone: (419) 255-8200  
Fax: (419) 255-7935

<b>To:</b>	Mr. Chuck Bauer, PE, Director Utilities Department and Solid Waste District	<b>From:</b>	Mr. Chris Ryan, ext. 283
<b>Company:</b>	Board of Clark County Commissioners c/o Clark County Utilities Department	<b>Date:</b>	May 14, 2026
<b>Phone No:</b>	(937) 521-2155	<b>No. of Pages:</b>	19
<b>Email:</b>	cbauer@clarkcountyohio.gov	<b>Job No.:</b>	20009322
<b>Re:</b>	Soil Exploration for Proposed Proposed Water Tower, Ingling Drive, Donnelsville, Ohio.		

**INTRODUCTION**

We understand that as part of the Donnelsville Water System upgrade project, you propose to construct an estimated 100,000-gallon, elevated water storage tank on the southeast side of Ingling Drive in Donnelsville, Ohio. Our understanding of the project is based on information provided by Mr. Bauer in their email dated April 14, 2026. The proposed tank will be approximately 130 feet in height. This study is intended to determine the subgrade soil conditions for the design and construction of the foundation of the proposed elevated water storage tank. We understand that no final design or loading has been decided.

Additionally, a booster station will also be constructed as part of this project. The proposed booster station will be located on the southwest side of the Tecumseh Middle School complex, on the north side of West National Road. The proposed booster station will be approximately 18 feet wide and 20 feet long, and will be approximately five feet deep. No design loading information was provided.

Four (4) borings were made at locations as shown on the attached boring location plan. Borings 1, 2, and 3 were performed in the proposed water storage tank area, whereas Boring 4

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was performed in the proposed booster station area. The boring logs, a preliminary boring location plan, and our preliminary recommendations for the above-referenced project are included in this report. The final report will be issued after all of the laboratory test results are available.

**FOUNDATION RECOMMENDATIONS**

**WATER STORAGE TANK**

Again, Borings 1, 2, and 3 were performed in the proposed water storage tank area. Based on the subgrade soil conditions indicated in the three (3) borings made at this site, the site is covered with topsoil, and/or weaker soil that extends to the approximate depths outlined in Table 1. Based on the results of the standard penetration tests (SPT) in the borings, the recommended net allowable bearing capacities and the depths to bearing strata at each boring are also tabulated in Table 1.

**Table 1. Depths and Elevations to Bearing Strata**

Boring No.	Depth to Bearing Strata (ft)	Elevation* of Bearing Strata (ft)	Topsoil or Fill, and/or Weak Soil	Recommended Net Allowable Bearing Capacity (psf)
1	0.5	-	Topsoil	1,500
	6.0	-	Topsoil and Weak Soil	2,000
	8.5	-	Topsoil and Weak Soil	3,000
2	0.5	-	Topsoil	1,500
	3.5	-	Topsoil and Weak Soil	2,000
	8.5	-	Fill and Weak Soil	4,000
3	0.5	-	Topsoil	1,500
	9.0	-	Topsoil and Weak Soil	4,000

\* In reference to surface elevation based on Ohio South State Plane Coordinate System.

The topsoil is unreliable to support the foundations of the proposed elevated water storage tank and should be removed. The topsoil can be stockpiled for landscaping purposes. Within the tank construction limits, the topsoil, and the weaker soil should be removed to the suitable depths with the desired allowable bearing capacities as outlined in Table 1 and replaced with compacted backfill.

The bottoms of the foundation excavations should extend to the suitable depths with the desired allowable bearing capacities as outlined in Table 1. After the foundation excavations

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extend to the suitable depths, the over-excavation can be filled with compacted backfill. The bottoms of footing foundations should be placed at least 36 inches below the final adjacent grades to protect against frost penetration and heaving.

The base of each excavation should extend one lateral foot for every foot of excavation below the bottom of the footing foundation. If an excavation will extend more than five feet below the existing grade, a maximum allowable side slope of 1 (horizontal) to 1 (vertical) should be maintained in any excavation for stability and for the safety of the workers.

After the foundation excavations extend to the desired grade, the top foot at the bottom of each excavation should be compacted to at least 90% of the maximum dry-unit weight as determined by the modified Proctor test (ASTM D1557) before any new fill or foundation is placed. Any soft soil pockets should be undercut and replaced with newly compacted fill. Any lean clay soils to be imported as backfill or removed from the project site probably will have significantly different Proctor values. Consequently, samples to be tested by the Proctor method should be obtained from a representative area and from the same elevation as the design subgrade.

After the bottoms of the excavations have been compacted, structural fill can be placed to bring the bottoms of the excavations to reach the desired final grade. The fill placed below the bottom of the footing foundations should be placed in eight-inch-thick lifts and compacted to at least 95% of the maximum dry-unit weight as determined by the modified Proctor test (ASTM D1557). Fill placed above the bottom of the footing foundations to serve as the subgrade for the floor slab should be compacted to at least 90% of the maximum dry-unit weight as determined by the modified Proctor test (ASTM D1557). Structural fill should be placed in accordance with the recommendations given above.

The footing foundations for the proposed water storage tank can be supported on the original subgrade soil or newly compacted backfill extending to the depths outlined in Table 1. The foundations can be designed with the corresponding net allowable bearing capacities outlined in Table 1. For these recommended allowable bearing capacities outlined in Table 1 for the original

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soil layer or for the newly compacted backfill, the total estimated amount of settlement of the foundations will be about one inch with differential settlement of about 3/4 inch over a distance of 40 feet.

The soil removed from this site that is free of organic or objectionable materials as defined by a field technician who is qualified in soil material identification and compaction procedures can be reused as fill. Objectionable or undesirable soils are defined as those materials that cannot meet design placement specifications or materials that will deteriorate with time.

When determining the geometric size (the "footprint") of the footing foundation, the total system loads applied to the tops of the foundations should be considered in the bearing pressure calculations.

The bearing capacities recommended in Table 1 for foundations supported on structural fill applies to well-graded granular soils, low-to-medium plastic clays, clayey sands, and some silty sands that are placed and compacted in accordance with the recommendations given in this report. However, uniformly graded or gap-graded granular soils (GP or SP), silts (ML), silty fine sands (SM), and high plasticity clays (CH) will be difficult to place and compact, and may result in a reduced bearing capacity. If these soils will be used as backfill, Bowser-Morner should be notified before the soils are placed so that the proposed placement methods and bearing capacity recommendations can be reviewed.

The bearing capacity of a soil is not a unique physical property of the soil. Instead, it depends explicitly on several factors including the footing type, size, and shape; the depth of embedment; the eccentricity and inclination of the applied load; the footing base inclination; the stiffness of the footing; the proximity of the footing to open cuts or slopes; the relative distance between the bottom of the footing and the water table; and the allowable amounts of settlement. The recommended allowable bearing capacity is based on the foundation design parameters given above and the assumptions that the applied load is vertical with no eccentricity, the base is horizontal and level, the footing is rigid, the footing is not close to an open cut or slope, and the

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water table is below the bottom of footing. If the actual conditions vary from the parameters and assumptions stated above, Bowser-Morner should be notified so that the new information can be reviewed and additional recommendations and services can be given to meet the needs of your project.

Foundations supported on soil settle as the result of externally applied loads. While the foundations should be expected to settle, the amount of settlement should be within the tolerable limits for the structure.

Limestone bedrock was encountered in all three of the water storage tank borings performed for this study. Based on the limestone samples obtained in the borings and the depths where auger refusal occurred, the depths to apparent bedrock are also tabulated in Table 2.

**Table 2. Depth to Bedrock**

Boring No.	Depth to Top of Bedrock (ft)	Elevation* at Top of Bedrock (ft)	Depth to Auger Refusal (ft)	Elevation* at Auger Refusal (ft)
1	13.0	-	13.7	-
2	12.0	-	12.3	-
3	9.0	-	10.5	-

\*In reference to surface elevation based on Ohio South State Plane Coordinate System.

To avoid differential settlement, if any foundations for the water storage tank will be supported on bedrock, all of the foundations for the addition should be supported on bedrock. Alternatively, the bedrock can be over-excavated to at least one foot below the bottoms of the foundations. One foot of compacted backfill should be placed over the bedrock surface, and the foundations for the water tank should be supported on the overburden soil layer or on the newly compacted backfill layer. Alternatively, all of the foundation excavations can extend to bedrock. The over-excavation should be backfilled with lean concrete. The foundations can be partially supported on bedrock and partially supported on cured, lean concrete fill. The footing foundations for the water storage tank can be supported on the limestone bedrock extending to the depths and elevations to auger refusal outlined in Table 2 and can be designed with a net allowable bearing capacity of 8,000

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psf. Foundations supported on more than 3 feet of compacted backfill should be limited to 4,000 psf.

Alternatively, the weaker soil can remain in-place. The weak subgrade soil can be modified by installing Geopiers® for the construction of the elevated water tank. The Geopier® method is a patented method that includes the placement and the compaction of sand and gravel in pre-augered holes. With this method, the sand and gravel fill will be compacted in lifts using a drop hammer. The Geopiers® will be constructed in a pre-set pattern.

The structure can simply be supported on spread-footing foundations over the Geopier®-improved subgrade soil. If the Geopier® method is selected, the Geopier® Foundation Company, Inc. will perform the design of the Geopier® system including the spacing of the piers and the allowable bearing capacity on top of the Geopiers®.

The footing foundations supported on the Geopier®-improved subgrade can be designed with the allowable bearing capacity specified by the Geopier® Foundation Company, Inc. Based on our experiences with other projects, the allowable bearing capacities are about 3,000 to 5,000 pounds per square foot (psf) with Geopier® modified subgrade soil for these type of projects. Additionally, the installation of **Geopiers® can also provide tie-down anchors** in each of the Geopiers® for providing the capacity against any up-lift force.

In general, for the selection or the installation of any type of aggregate piers, the compaction performed with a hammer should provide vertical impact to the granular fill. Each lift of aggregate should be 12 to 26 inches thick and should be placed starting from the bottom of the hole.

If stone-column methods other than the Geopier® method are selected, the compaction of the stone columns should be verified with a dynamic cone-penetration test through the aggregate piers. The “N” values can be obtained continuously through the full length of the aggregate piers. After the tests are completed and the aggregate is still loose, the piers should be recompacted using the installer’s equipment. Based on our experience with other projects, a top-feed method

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of placing the granular material with a vibration device in the open hole cannot achieve the required compaction. The top-feed method with a vibration device is not acceptable and cannot be considered as equal to the Geopiers®.

The Geopier® Foundation Company, Inc. will design the Geopiers® including the length, diameter, and spacing of the piers and the allowable bearing capacities of the improved subgrade soil or with foundations supported directly on top of the piers. If the Geopier® subgrade-improvement method with a displacement mandrel will be used, temporary steel casings will not be needed to extend through the existing topsoil and weak soil to keep the shafts from caving in. If the Geopier® subgrade-improvement method will be considered, we can contact and provide our study to Geopier® Foundation Company, Inc. on behalf of the client to obtain a preliminary cost estimate for this project.

#### **SEISMIC SITE CLASSIFICATION**

Based on the results of the standard penetration tests (SPT) in the borings made for this study, the average “N” values range from 16 to 23 blows per foot for the soil layer within 10.5 to 13.7 feet of the existing grade. Based on the results of the average “N” value, it is our opinion that the site will be classified as a “D” type in accordance with the *Ohio Building Code*.

#### **BOOSTER STATION**

A booster station will also be constructed as part of this project. The proposed booster station will be located on the southwest side of the Tecumseh Middle School complex, on the north side of West National Road. The proposed booster station will be approximately 18 feet wide and 20 feet long, and will be approximately five feet deep.

Based on the information from Boring 4 performed in the vicinity of the booster station, this site is covered with topsoil and weak soil that extends to the approximate depths and elevations outlined in Table 3. Based on the results of the standard penetration tests (SPT) in the borings, the net allowable bearing capacities and the depths to bearing strata at the boring location are also outlined in Table 3.

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**Table 3. Depths and Elevations to Bearing Strata**

Boring No.	Depth to Bearing Strata (ft)	Elevation* of Bearing Strata (ft)	Topsoil or Fill, and/or Weak Soil	Recommended Net Allowable Bearing Capacity (psf)
4	0.5	-	Topsoil	2,000
	3.5	-	Topsoil and Weak Soil	4,000

\* In reference to surface elevation based on Ohio South State Plane Coordinate System.

The topsoil is unreliable to support the booster station and should be removed. The topsoil can be stockpiled for landscaping purposes. The booster pump station should be watertight. It should also be designed against floatation due to any groundwater encountered. The bottoms of the foundation excavations should extend to the suitable depths with the desired allowable bearing capacities as outlined in Table 3.

After the excavation extends to the desired grade, the top foot of the exposed ground surface, in soil, should be compacted to 90% of the maximum dry unit weight as defined by the modified Proctor test (ASTM D1557). Any soft soil pockets should be undercut and replaced with compacted fill. Consequently, samples to be tested by the Proctor method should be obtained from a representative area and from the same elevation as the design booster station subgrade.

After the bottom of the excavation has been compacted, structural fill can be placed in any over-excavation area to bring the excavation to the desired final grade. Structural fill should be placed in accordance with the recommendations given under foundation preparation for the booster station. The soil removed from this site that is free of organic or objectionable materials as defined by a field technician who is qualified in soil material identification and compaction procedures can be reused as backfill. Objectionable or undesirable soils are defined as those materials that cannot meet design placement specifications or materials that will deteriorate with time. It should be noted that lean clay and fat clay soils may require reworking to adjust the moisture content to meet the compaction criteria. For the recommended allowable bearing capacities outlined in Table 3 for the original soil layer or for the newly compacted backfill, the total estimated amount of settlement of the foundations will be about one inch.

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We understand that the bottoms of the booster station foundations and the invert of the pipe will be more than 36 inches below the final adjacent grades. As a result, frost penetration and heaving should not be a problem for the pump station foundations.

Foundations supported on soil settle as the result of externally applied loads. While the foundations of the booster station should be expected to settle, the amount of settlement should be within the tolerable limits for the structures.

Based on the results of the soil boring, bedrock was encountered at the depth and elevation tabulated in Table 4.

**Table 4. Depth to Bedrock**

Boring No.	Depth to Top of Bedrock (ft)	Elevation* at Top of Bedrock (ft)	Depth to Auger Refusal (ft)	Elevation* at Auger Refusal (ft)
4	9.0	-	10.5	-

\*In reference to surface elevation based on Ohio South State Plane Coordinate System.

The rippability of the bedrock will depend on the type of equipment. We recommend that the earth contractor use his own equipment to perform the test pits and to form his own opinion about the rippability.

**SUBGRADE SOIL CLASSIFICATION FOR TRENCH EXCAVATION**

Based on Occupational Safety and Health Administration (OSHA) Subpart P-Excavations (29 CFR PART 1926), cohesive soil with an unconfined compressive strength of 3,000 pounds per square foot (psf) or greater can be classified as Type “A” soil. Cohesive soil with an unconfined compressive strength greater than 1,000 psf but less than 3,000 psf can be classified as Type “B” soil, and cohesive soil with an unconfined compressive strength of 1,000 psf or less can be classified as Type “C” soil. Dense or very dense granular soil with no water can be classified as Type “B” soil; the other granular soils should be classified as Type “C” soil. Previously disturbed soil (fill) should not be classified as Type “A” soil. Soil that is fissured shall not be classified as

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Type “A” soil. Based on the standard penetration test (SPT) results from this study, the subgrade soils in the vicinity of the proposed booster pump station are classified as shown in Table 5.

Table 5. Subgrade Soil Classification (OSHA)

Boring No.	Depth (ft.)	OSHA Soil Type
4	0.0 – 3.5	B
	3.5 – 9.0	A
	9.0 – 10.5	Rock

If weaker soil is encountered below stronger soil, the classifications of all of the stronger soil above the weaker soil layer will have to be lowered to the weaker soil classification. At the time of our study, free groundwater was not encountered in Boring 4. Any groundwater encountered should be lowered to at least three feet below the bottom of the maximum excavation in the granular soil layer and to the bottom of the maximum excavation in the silty and clayey soil layer using sumps and pumps. Otherwise, the bottoms of the trench excavation will be very soft due to the groundwater seepage. All submerged soil or soil from which water is freely seeping should be classified as Type "C" soil.

The side slopes of the trench excavations should be maintained in accordance with OSHA trench excavation regulations for stability and for safety of the worker. The sloping and benching method can be used during the installation of the line. For type “A” soil, a side slope of 3/4 (horizontal) to 1 (vertical) should be provided; For type “B” soil, a side slope of 1 (horizontal) to 1 (vertical) should be provided; and For type “C” soil, a side slope of 1-1/2 (horizontal) to 1 (vertical) should be provided.

As an alternative to the sloping and benching method, a trench box can be used to keep the side walls from caving in and for the safety of the workers. The trench box should be rated in accordance with OSHA regulations. Tabulated data for the trench box that identify the registered professional engineer who approved the data should be kept on the job site. For more detailed information on the OSHA regulations, please refer to OSHA Subpart P-Excavations (29 CFR PART 1926).

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During the trench excavations, the subsurface conditions should be verified. A “competent person” as defined by OSHA should be present throughout the sewer line trench excavations to verify the soil types and soil conditions. The sloping and benching or trench box design should be adjusted with changes in the subgrade soil in accordance with OSHA regulations.

### **LATERAL EARTH PRESSURE FOR BOOSTER STATION WALL DESIGN**

The booster station pit walls should be designed as retaining walls to resist the lateral earth pressure. Free-draining granular materials should be placed behind the perimeter walls. Water should not be allowed to accumulate behind the walls. With the retaining walls to be backfilled with free-draining granular backfill, an “at-rest,” lateral earth-pressure coefficient of 0.5 should be used to determine the lateral earth pressure against the walls. A lateral soil pressure of 63 pounds per square foot per foot depth can be used in the design of the walls. If water will be allowed to accumulate behind the walls, a static water pressure of 62.4 psf per foot depth should be added onto the design lateral pressure against the walls. The design of the booster station pit walls is beyond the scope of the study.

### **PIT SLAB ON-GRADE**

The booster station pit slab on-grade can be supported on the original subgrade soils or on compacted fill placed over bedrock in accordance with the recommendations given above. If compacted fill will be placed over the bedrock as the subgrade for the slab on-grade, we recommend that the backfill be a well-graded, angular, granular material such as crushed sand and gravel or crushed stone with fines less than 10% to help distribute concentrated loads under the slabs.

There also will be a potential for surface water to infiltrate behind the pit wall. The pump pit will have to be designed as a watertight structure. An underdrain system with a sump pit is recommended outside the pump pit to lower the water accumulation behind the wall. If water will accumulated behind the pit wall, the pit floor should be designed to handle the uplift force applied by the water and the pit should be anchored to bedrock against the floating of the pump

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pit. The slab should be a structural slab connected with the pit-wall foundations and the pit walls. An adequate amount of reinforced steel should be provided between the pit walls and the bottom pit slab. Otherwise, the groundwater will lift up the pit slab.

Topsoil, fill, and/or other deleterious materials encountered during the site preparation should be removed and wasted. For any over-excavations, the soil should be replaced with select engineered fill that is compacted to the specifications outlined above.

### **TRENCH EXCAVATIONS**

During the trench excavations, the subsurface conditions should be verified. Changes in subsurface conditions other than what are shown on the boring logs warrant additional subsurface investigation before the booster station and pipe foundation are constructed.

The trench excavations should be observed to ensure that the loose, soft, or otherwise undesirable materials are removed and that any foundations will be supported directly on an acceptable surface. At the time of this observation, it may be necessary to use a hand penetration device in the base of the trench excavation to ensure that the soils immediately below the foundation base are satisfactorily prepared to support the foundations. Please note that such shallow observations do not replace an adequate deep-boring program and structural fill compaction QA/QC records. The overall performance of the foundations is governed by the soils below the bottom of the foundation.

If pockets of soft, loose, or otherwise unsuitable materials are encountered at the bottom of the trench excavation, the proposed line elevations may be reestablished by backfilling after the undesirable materials have been removed. The excavation should extend to suitable soils, and the base of the excavation should extend one lateral foot for every foot of excavation below the bottom of the foundation. The entire excavation should then be refilled with well-compacted, engineered fill. Special care should be taken to remove the sloughed, loose, or soft materials near the base of the excavation slopes. Extra care should also be taken to tie-in the compacted fill with the excavation slopes, with benches as necessary, to ensure that no pockets of loose or soft

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materials are left along the excavation slopes below the foundation bearing level. The contractor should maintain temporary cut slopes in accordance with the current OSHA regulations governing trenching and slope stability.

Soils exposed at the bases of satisfactory foundation excavations should be protected against any detrimental change in condition such as from construction disturbances, rain, and freezing. Surface runoff should be drained away from the excavation and not allowed to pond. It must be emphasized that all excavations must conform to all state, federal, and local regulations relative to slope geometry.

#### **GROUNDWATER CONSIDERATIONS**

Free groundwater was encountered in Boring 2 at depths of between 4.5 and 8.0 feet below the existing grade during the boring operations. No free groundwater was encountered in the rest of the borings. Any groundwater or surface water that accumulates in the excavations should be lowered by sumps and pumps during the excavations for the construction of the proposed water storage tank and booster station. The groundwater will have to be lowered to the bottoms of the excavations and to the top of the clay layer, and to three feet below the bottom of the excavation in granular soil layer.

For the Geopiers® method, any groundwater seepage can be intercepted by lowering a submersible pump into the cased open holes. The water can be pumped from the bottoms of the Geopier® excavations. Casings would then be required to keep the shafts from caving in.

The amount and type of dewatering required during construction will depend on the weather and groundwater levels at the time of construction, and the effectiveness of the contractor's techniques in preventing surface runoff from entering open excavations. Typically, groundwater levels are highest during winter and spring and lower in summer and early fall.

The final report will be issued on a later day after all of the laboratory test results are available.

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CLIENT <b>Board of Clark County Commissioners</b>	JOB NO. <b>20009322</b>	<b>B-1</b> Boring No.  <b>Sheet 1 OF 1</b>
PROJECT <b>Proposed Water Tower, Ingling Drive, Donnelsville, Ohio</b>	BORING STARTED <b>5/7/26</b> BORING COMPLETED <b>5/7/26</b>	
	DRILLER <b>Central Star Drilling</b>	
	TYPED BY <b>DO</b> ELEVATION (FT)	

DEPTH (ft. BGL.)	SAMPLE NO.	SAMPLER TYPE	RECOVERY (in.)	GRAPHIC LOG	VISUAL CLASSIFICATION OF THE MATERIAL	BLOW COUNTS	N VALUE, blows/ft. ♦	WATER	REMARKS
1.0					TOPSOIL (5")				
1.0 - 2.0	SS-1	18	18		Medium stiff, brown, sandy lean CLAY (trace silt, some gravel) - moist	3 3 3	~10		
2.0 - 3.0									
3.0 - 4.0	SS-2	18	18			3 2 4	~15		
4.0 - 5.0									
5.0 - 6.0									
6.0 - 7.0	SS-3	18	18		3 4 5	~20			
7.0 - 8.0									
8.0 - 9.0					(Stiff at 8.5')				
9.0 - 10.0	SS-4	18	18		4 6 7	~15			
10.0 - 11.0									
11.0 - 12.0									
12.0 - 13.0									
13.0	SS-5	2	2		Light gray weathered LIMESTONE - wet	50/2"	50+		
					B-1 Refusal at 13.7 Ft				

WATER LEVEL MEASUREMENTS		<ul style="list-style-type: none"> <li>■ A — SPLIT SPOON</li> <li>■ B — ROCK CORE</li> <li>⊠ C — SHELBY TUBE</li> <li>▨ D — SOIL PROBE</li> <li>■ E — AUGER CUTTINGS</li> <li>▨ F — SONIC</li> </ul>	Bowser-Morner, Inc. Dayton Telephone: (937) 236-8805 Toledo Telephone: (419) 691-4800 <b>BOWSER MORNER.</b>
DEPTH	DATE		
INITIAL <u>N/A</u>	<u>N/A</u>		
AT COMPLETION <u>N/A</u>	<u>N/A</u>		
OTHER <u>N/A</u>	<u>N/A</u>		

CLIENT <b>Board of Clark County Commissioners</b>	JOB NO. <b>20009322</b>	<b>B-2</b> Boring No.  <b>Sheet 1 OF 1</b>
PROJECT <b>Proposed Water Tower, Ingling Drive, Donnelville, Ohio</b>	BORING STARTED <b>5/7/26</b> BORING COMPLETED <b>5/7/26</b>	
	DRILLER <b>Central Star Drilling</b>	
	TYPED BY <b>DO</b> ELEVATION (FT)	

DEPTH (ft. BGL)	SAMPLE NO.	SAMPLER TYPE	RECOVERY (in.)	GRAPHIC LOG	VISUAL CLASSIFICATION OF THE MATERIAL	BLOW COUNTS	N VALUE, blows/ft. ♦	WATER	REMARKS
1.0				TOPSOIL (5")					
1.0 - 2.0	SS-1		18	Medium stiff, brown, sandy lean CLAY (trace silt, some gravel) - moist	3 3 3	♦			
2.0 - 4.0	SS-2		18		3 4 5	♦		▽	
4.0 - 6.0	SS-3		18		4 5 4	♦			
6.0 - 8.0				(Water encountered at 8.0')				▽	
8.0 - 9.0				(Some limestone fragments encountered. Very stiff at 8.5')					
9.0 - 10.0	SS-4		18		9 14 15	♦	29		
10.0 - 12.0	SS-5		3	Light gray weathered LIMESTONE - wet	50/3"	♦	50+		
				B-2 Refusal at 12.3 Ft					

<b>WATER LEVEL MEASUREMENTS</b>  <table style="width:100%;"> <tr> <th style="width:50%;">DEPTH</th> <th style="width:50%;">DATE</th> </tr> <tr> <td>INITIAL 8</td> <td style="text-align: center;">▽ 05/07/2026</td> </tr> <tr> <td>AT COMPLETION 4.5</td> <td style="text-align: center;">▽ 05/07/2026</td> </tr> <tr> <td>OTHER N/A</td> <td style="text-align: center;">▽ N/A</td> </tr> </table>	DEPTH	DATE	INITIAL 8	▽ 05/07/2026	AT COMPLETION 4.5	▽ 05/07/2026	OTHER N/A	▽ N/A	<ul style="list-style-type: none"> <li>■ A - SPLIT SPOON</li> <li>■ B - ROCK CORE</li> <li>⊠ C - SHELBY TUBE</li> <li>▨ D - SOIL PROBE</li> <li>■ E - AUGER CUTTINGS</li> <li>▨ F - SONIC</li> </ul>	Bowser-Morner, Inc.  Dayton Telephone: (937) 236-8805 Toledo Telephone: (419) 691-4800  <b>BOWSER MORNER.</b>
DEPTH	DATE									
INITIAL 8	▽ 05/07/2026									
AT COMPLETION 4.5	▽ 05/07/2026									
OTHER N/A	▽ N/A									

CLIENT <b>Board of Clark County Commissioners</b>	JOB NO. <b>20009322</b>	<b>B-3</b> Boring No.  <b>Sheet 1 OF 1</b>
PROJECT <b>Proposed Water Tower, Ingling Drive, Donnelsville, Ohio</b>	BORING STARTED <b>5/7/26</b> BORING COMPLETED <b>5/7/26</b>	
	DRILLER <b>Central Star Drilling</b>	
	TYPED BY <b>DO</b> ELEVATION (FT)	

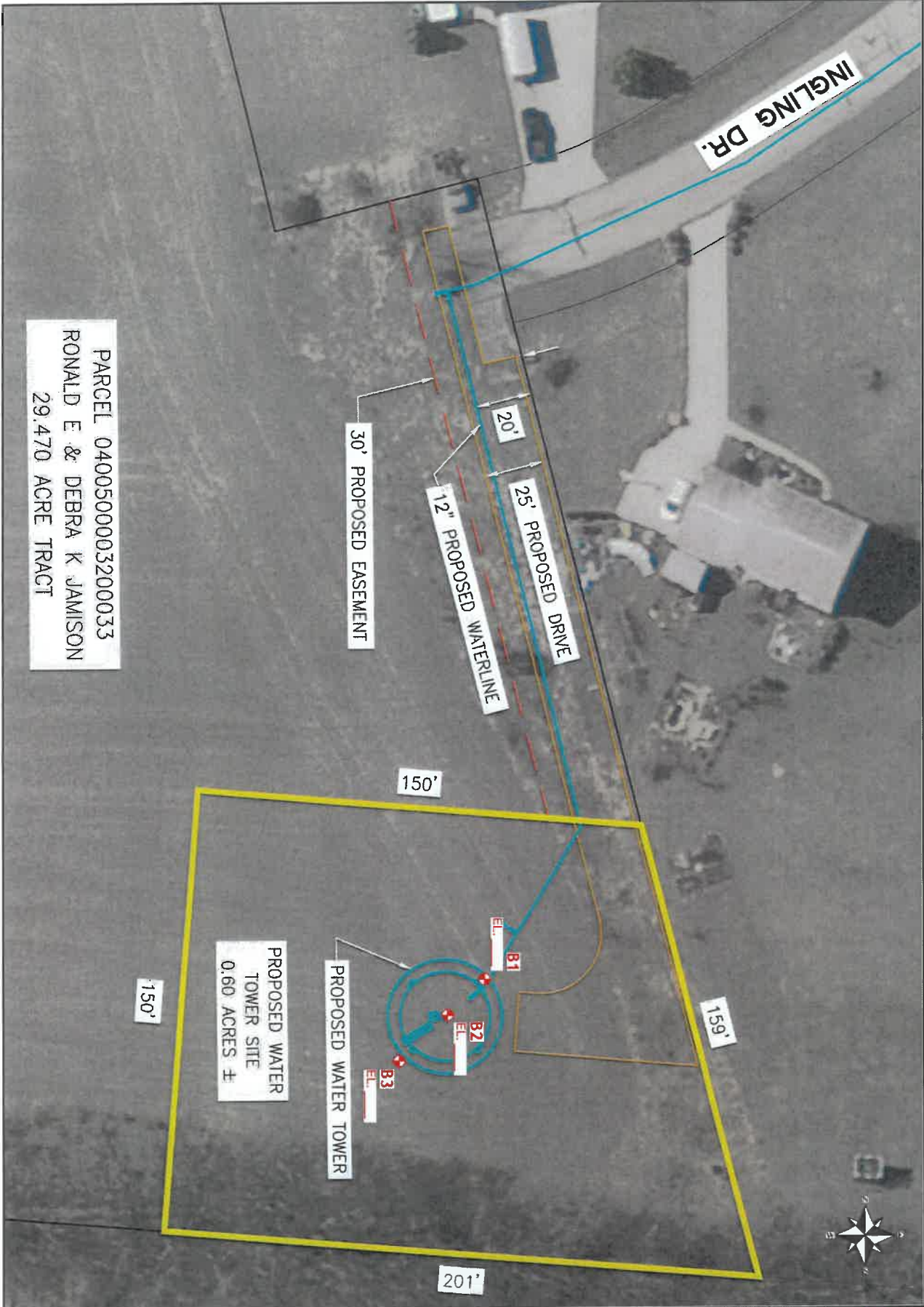
DEPTH (ft. BGL.)	SAMPLE NO.	SAMPLER TYPE	RECOVERY (in.)	GRAPHIC LOG	VISUAL CLASSIFICATION OF THE MATERIAL	BLOW COUNTS	N VALUE, blows/ft. ♦	WATER	REMARKS
1.0				TOPSOIL (5")					
2.0	SS-1		18	Medium stiff, brown, sandy lean CLAY (trace silt, some gravel) - moist	3 3 3				
4.0	SS-2		18		3 4 5				
7.0	SS-3		18		3 3 3				
9.0	SS-4		13	(Hard at 8.5') Light gray LIMESTONE - dry	6 31 50/1"		50♦		
10.0					B-3 Refusal at 10.5 Ft				

<b>WATER LEVEL MEASUREMENTS</b>  <table style="width:100%;"> <tr> <td style="width:30%;">DEPTH</td> <td style="width:30%;">DATE</td> <td style="width:40%;"></td> </tr> <tr> <td>INITIAL N/A</td> <td>▽ N/A</td> <td></td> </tr> <tr> <td>AT COMPLETION N/A</td> <td>▽ N/A</td> <td></td> </tr> <tr> <td>OTHER N/A</td> <td>▽ N/A</td> <td></td> </tr> </table>	DEPTH	DATE		INITIAL N/A	▽ N/A		AT COMPLETION N/A	▽ N/A		OTHER N/A	▽ N/A		<ul style="list-style-type: none"> <li>■ A - SPLIT SPOON</li> <li>■ B - ROCK CORE</li> <li>⊠ C - SHELBY TUBE</li> <li>▨ D - SOIL PROBE</li> <li>■ E - AUGER CUTTINGS</li> <li>▨ F - SONIC</li> </ul>	Bowser-Morner, Inc.  Dayton Telephone: (937) 236-8805 Toledo Telephone: (419) 691-4800  <b>BOWSER MORNER.</b>
DEPTH	DATE													
INITIAL N/A	▽ N/A													
AT COMPLETION N/A	▽ N/A													
OTHER N/A	▽ N/A													

CLIENT <b>Board of Clark County Commissioners</b>	JOB NO. <b>20009322</b>	<b>B-4</b> Boring No.  <b>Sheet 1 OF 1</b>
PROJECT <b>Proposed Water Tower, Ingling Drive, Donnelsville, Ohio</b>	BORING STARTED <b>5/7/26</b> BORING COMPLETED <b>5/7/26</b>	
	DRILLER <b>Central Star Drilling</b>	
	TYPED BY <b>DO</b> ELEVATION (FT)	

DEPTH (ft. BGL)	SAMPLE NO.	SAMPLER TYPE	RECOVERY (in.)	GRAPHIC LOG	VISUAL CLASSIFICATION OF THE MATERIAL	BLOW COUNTS	N VALUE, blows/ft. ♦	WATER	REMARKS
							0 10 20 30 40 50 60 70 80 90100		
1.0					<b>TOPSOIL (6")</b> Medium stiff, brown, sandy lean CLAY (trace silt, trace gravel, trace cobbles) – moist	3 4 5	9		
2.0	SS-1		18						
3.0					(Very stiff at 3.5')				
4.0	SS-2		18			5 7 12	10		
5.0									
6.0	SS-3		18			10 10 8	18		
7.0									
8.0					(Hard at 8.5')				
9.0	SS-4		18		Light gray weathered LIMESTONE – dry	21 20 27	37		
10.0									
					B-4 Refusal at 10.5 Ft				

<b>WATER LEVEL MEASUREMENTS</b>  <table style="width:100%;"> <tr> <td style="width:50%;">DEPTH</td> <td style="width:50%;">DATE</td> </tr> <tr> <td>INITIAL <u>N/A</u></td> <td><u>N/A</u></td> </tr> <tr> <td>AT COMPLETION <u>N/A</u></td> <td><u>N/A</u></td> </tr> <tr> <td>OTHER <u>N/A</u></td> <td><u>N/A</u></td> </tr> </table>	DEPTH	DATE	INITIAL <u>N/A</u>	<u>N/A</u>	AT COMPLETION <u>N/A</u>	<u>N/A</u>	OTHER <u>N/A</u>	<u>N/A</u>	<ul style="list-style-type: none"> <li> A – SPLIT SPOON</li> <li> B – ROCK CORE</li> <li> C – SHELBY TUBE</li> <li> D – SOIL PROBE</li> <li> E – AUGER CUTTINGS</li> <li> F – SONIC</li> </ul>	Bowser-Morner, Inc.  Dayton Telephone: (937) 236-8805 Toledo Telephone: (419) 691-4800  
DEPTH	DATE									
INITIAL <u>N/A</u>	<u>N/A</u>									
AT COMPLETION <u>N/A</u>	<u>N/A</u>									
OTHER <u>N/A</u>	<u>N/A</u>									

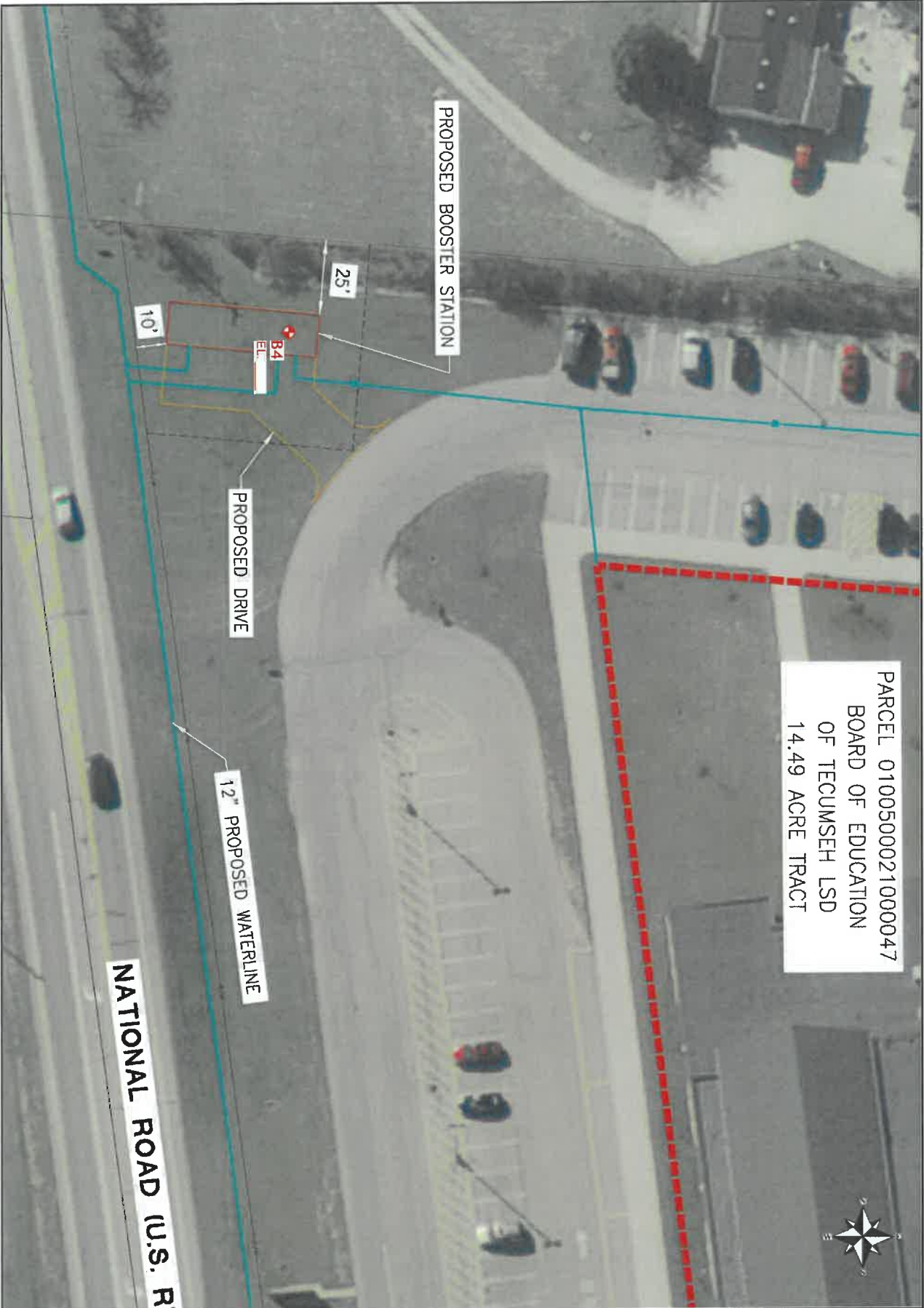


PARCEL 0400500003200033  
 RONALD E & DEBRA K JAMISON  
 29.470 ACRE TRACT

**BORING LOCATION PLAN**  
 Soil Study for Proposed Water Tower  
 Ingling Drive and West National Road  
 Donnelsville, Clark County, Ohio  
 For: Clark County Commissioners

PROJECT NO.  
 20009322  
 SCALE  
 1" = 30'  
 FIGURE  
 2





PARCEL 0100500021000047  
 BOARD OF EDUCATION  
 OF TECUMSEH LSD  
 14.49 ACRE TRACT

NATIONAL ROAD (U.S. R.)

PROPOSED BOOSTER STATION

PROPOSED DRIVE

12" PROPOSED WATERLINE

10'  
 25'  
 10'

B4  
 E.L.

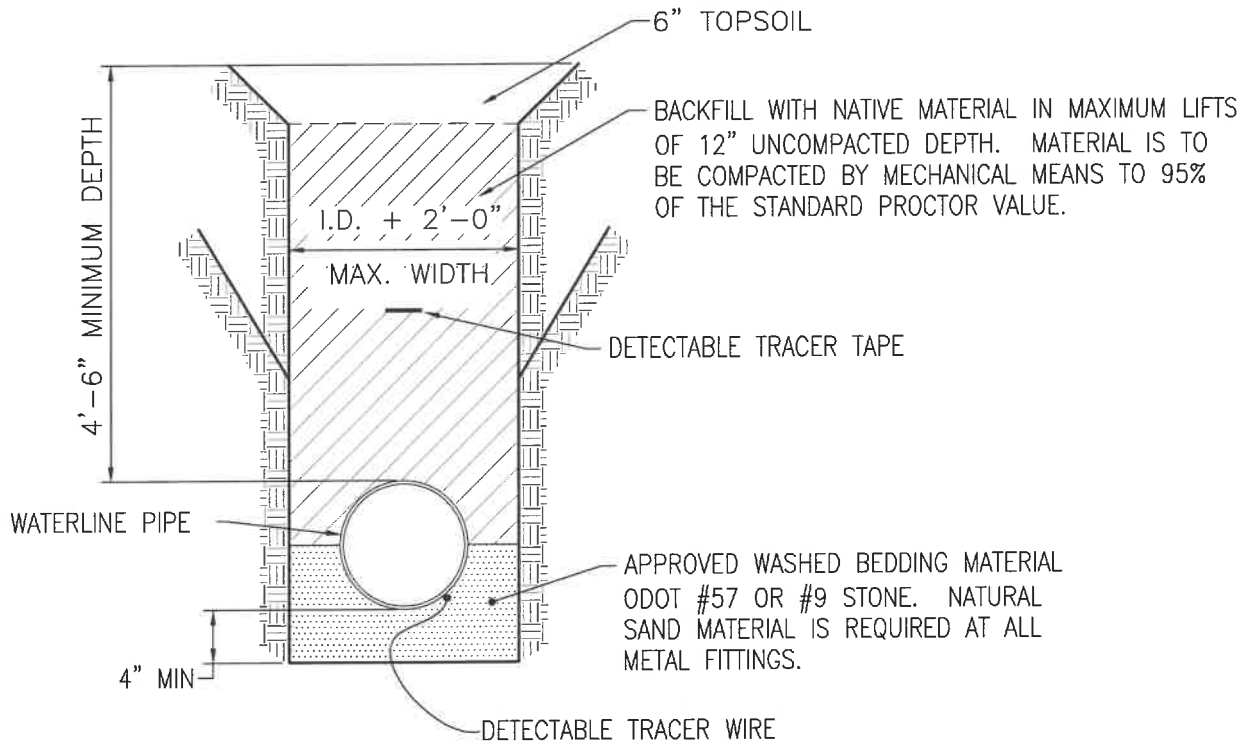


**BORING LOCATION PLAN**  
 Soil Study for Proposed Water Tower  
 Ingling Drive  
 Donnelsville, Clark County, Ohio  
 For: Clark County Commissioners

PROJECT NO.  
 20009322  
 SCALE  
 1" = 30'  
 FIGURE  
 3



# ADDENDUM DRAWING #1



PIPE BEDDED TO ITS CENTERLINE IN COMPACTED GRANULAR MATERIAL, 4-INCH MINIMUM UNDER PIPE. COMPACTED GRANULAR OR SELECT MATERIAL TO TOP OF PIPE. (APPROXIMATELY 90 PERCENT STANDARD PROCTOR, AASHTO T-99)

## WATERLINE TRENCH DETAIL OUTSIDE PAVEMENT AREA

NOT TO SCALE



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DRAWN BY

JTL

DATE

MAY 2026

COMM. NO.

223879.01

**DONNELSVILLE WATER  
SYSTEM**

**VILLAGE OF DONNELSVILLE /  
CLARK COUNTY**