

# INTEROFFICE COMMUNICATION

TO: Chris Merklin, P.E, Office of Geotechnical Engineering  
FROM: Kyle Dohlen, P.E, ODOT – District 12  
DATE: February 24, 2025  
SUBJECT: Design Memo – PID 115182

## Project Description

A total of four noise barriers are proposed to be constructed along IR-480 in Cuyahoga county with this project. Wall 1 is an extension of an already existing noise barrier which was constructed in 2009 in North Olmsted. This wall is approximately 850 feet in length with an average height of 17 feet above existing ground surface. Walls 2 – 4 are in Fairview Park, Walls 2 and 3 are located along IR-480 WB and Wall 4 is located along IR-480 EB. Wall 2 is approximately 836' in length with an average height of 12' above the existing ground surface. Wall 3 is approximately 1,983' feet in length with an average height of 12' above the existing ground. Wall 4 is approximately 832' feet in length with an average height of 12' above the existing ground.

## Historic Records

Historic borings were performed for the original construction (PID 80085, CUY-480-0.93, Sub batch 19470) of the noise barrier adjacent to the proposed Wall 1. One (1) boring, B-001-0-07, was used from this exploration to characterize the soil conditions for the eastern limits of Wall 1.

No historic borings were available along the alignments of Walls 2 – 4.

## Reconnaissance

Field reconnaissance was completed by personnel from the Office of Geotechnical Engineering (OGE) on February 23, 2023. Within the vicinity of Wall 1, located at Barton road, IR-480 is located within a minor depressed corridor relative to the adjacent areas with Barton road overpass approaches supported on embankment fills. The slope below the proposed noise wall is well vegetated with grass with shrubs present along the right of way fence. Immediately north of the right of way fence are residential yards with trees.

Within the vicinity of Walls 2, 3, and 4, located between Clague road and W. 220th St, IR-480 is located within a minor depressed corridor relative to the adjacent areas. Both W. 227th St and W. 220th St overpass approaches are located at grade. The slopes below the proposed noise walls are well vegetated with grass with occasional barren locations with shrubs present along the right of way fence. Immediately north and south of the right-of-way fence are residential yards with trees. No signs of instability were noted within the slopes adjacent to the proposed wall locations.

A field reconnaissance was completed by personnel from ODOT District 12. Along the wall 4 alignment a heavily vegetated erosion rill has formed. Water is draining from the adjacent vacant lot has created an approximately 6 foot

wide by 2-foot-deep erosion channel. Approximately 20 feet east of the eastern limit of Wall 4, a small depression approximately 3 feet by 8 feet has formed in the slope. No slope instabilities were noted at walls 1, 2 and 3.

### Subsurface Exploration

A geotechnical exploration for this project was completed between April 24 and May, 31, 2023. A track mounted CME 850R rotary drill rig and a truck mounted CME 55 rotary drill rig were used to complete the borings for this project. A total of twenty-four (24) borings, B-001-0-23 through B-024-0-23 were completed as part of this exploration. All borings were advanced through the overburden soils utilizing hollow stem augers. The CME 850R utilized 3.75-inch I.D. augers while the CME 55 utilized 3.25-inch I.D. augers. Disturbed samples were collected in accordance with the standard penetration test (AASHTO T206) at 2.5 foot intervals for the full depth of the borings. The hammer system for the CME 850R was calibrated on April 25, 2023, with an average drill rod energy ratio (ER) of 89%. The hammer system for the CME 55R was calibrated on April 18, 2022 with an ER of 87%.

### Analysis

Drilled shaft lengths for the noise barriers were designed utilizing the ODOT Noise Wall Foundation Design spreadsheet. Outputs from the design spreadsheet are included in the appendix of this memo.

---

# Appendix

## Boring Logs

|                           |                                          |                             |                                     |                               |
|---------------------------|------------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74     | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 100+27, 2' RT.    | EXPLORATION ID:<br>B-001-0-23 |
| TYPE: NOISE WALL          | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 1                |                               |
| PID: 115182 SFN: N/A      | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 782.6 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1                |
| START: 5/9/23 END: 5/9/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.391342, -81.956164   |                               |

[illegible]

|                                                                                                             |  |                                        |       |                             |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|-------------------------------------------------------------------------------------------------------------|--|----------------------------------------|-------|-----------------------------|--|--------------------------------------|-----------------|---------|-----------|----------------------------|---------------|---|----|----|-----------|----|----|----|-----------------|-----------|--|
| PROJECT: CUY-480-0.74                                                                                       |  | DRILLING FIRM / OPERATOR: ODOT / LEWIS |       | DRILL RIG: CME 850R TRACKED |  | STATION / OFFSET: 102+29, 1' LT.     |                 |         |           | EXPLORATION ID: B-002-0-23 |               |   |    |    |           |    |    |    |                 |           |  |
| TYPE: NOISE WALL                                                                                            |  | SAMPLING FIRM / LOGGER: ODOT / BENNING |       | HAMMER: CME AUTOMATIC       |  | ALIGNMENT: BL WALL 1                 |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| PID: 115182 SFN: N/A                                                                                        |  | DRILLING METHOD: 3.75" HSA             |       | CALIBRATION DATE: 4/25/23   |  | ELEVATION: 784.3 (ft) EOB: 24.42 ft. |                 |         |           | PAGE 1 OF 1                |               |   |    |    |           |    |    |    |                 |           |  |
| START: 5/8/23 END: 5/8/23                                                                                   |  | SAMPLING METHOD: SPT                   |       | ENERGY RATIO (%): 89        |  | LAT / LONG: 41.391633, -81.955538    |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| MATERIAL DESCRIPTION AND NOTES                                                                              |  |                                        | ELEV. | DEPTHS                      |  | SPT/RQD                              | N <sub>60</sub> | REC (%) | SAMPLE ID | HP (tsf)                   | GRADATION (%) |   |    |    | ATTERBERG |    |    | WC | ODOT CLASS (GI) | BACK FILL |  |
|                                                                                                             |  |                                        | 784.3 |                             |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| TOPSOIL (6")                                                                                                |  |                                        | 783.8 | 1                           |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| HARD, BROWN MOTTLED WITH GRAY, SILT AND CLAY, SOME SAND, TRACE GRAVEL, SLIGHTLY ORGANIC (LOI = 3.4%), MOIST |  |                                        |       | 2                           |  | 4                                    | 19              | 78      | SS-1      | 4.50                       | 4             | 7 | 16 | 36 | 37        | 29 | 16 | 13 | 16              | A-6a (9)  |  |
|                                                                                                             |  |                                        | 780.8 | 3                           |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| HARD, BROWN MOTTLED WITH GRAY, SILT AND CLAY, LITTLE SAND, TRACE GRAVEL, MOIST                              |  |                                        |       | 4                           |  | 6                                    | 27              | 94      | SS-2      | 4.50                       | 4             | 5 | 13 | 39 | 39        | 28 | 17 | 11 | 18              | A-6a (8)  |  |
|                                                                                                             |  |                                        |       | 5                           |  | 8                                    | 10              |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| @6.0'; VERY STIFF                                                                                           |  |                                        |       | 6                           |  | 8                                    |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|                                                                                                             |  |                                        |       | 7                           |  | 9                                    | 31              | 100     | SS-3      | 3.50                       | -             | - | -  | -  | -         | -  | -  | 17 | A-6a (V)        |           |  |
|                                                                                                             |  |                                        |       | 8                           |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| @8.5'; HARD, DAMP                                                                                           |  |                                        |       | 9                           |  | 10                                   | 37              | 100     | SS-4      | 4.50                       | -             | - | -  | -  | -         | -  | -  | 15 | A-6a (V)        |           |  |
|                                                                                                             |  |                                        |       | 10                          |  | 11                                   | 14              |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| @11.0'; MOTTLED BROWN AND GRAY                                                                              |  |                                        |       | 11                          |  | 11                                   |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|                                                                                                             |  |                                        |       | 12                          |  | 14                                   | 47              | 100     | SS-5      | 4.50                       | 7             | 8 | 12 | 35 | 38        | 30 | 17 | 13 | 14              | A-6a (9)  |  |
|                                                                                                             |  |                                        | 770.8 | 13                          |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| HARD, GRAY, SILT AND CLAY, LITTLE SAND, TRACE GRAVEL, DAMP                                                  |  |                                        |       | 14                          |  | 9                                    | 46              | 100     | SS-6      | 4.50                       | 6             | 7 | 11 | 35 | 41        | 27 | 15 | 12 | 13              | A-6a (9)  |  |
|                                                                                                             |  |                                        |       | 15                          |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|                                                                                                             |  |                                        |       | 16                          |  | 22                                   | 71              | 100     | SS-7      | 4.50                       | -             | - | -  | -  | -         | -  | -  | 10 | A-6a (V)        |           |  |
|                                                                                                             |  |                                        |       | 17                          |  | 22                                   | 26              |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|                                                                                                             |  |                                        |       | 18                          |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|                                                                                                             |  |                                        |       | 19                          |  | 17                                   | 52              | 100     | SS-8      | 4.50                       | -             | - | -  | -  | -         | -  | -  | 10 | A-6a (V)        |           |  |
|                                                                                                             |  |                                        |       | 20                          |  | 18                                   | 17              |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|                                                                                                             |  |                                        |       | 21                          |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
|                                                                                                             |  |                                        |       | 22                          |  | 15                                   | 49              | 100     | SS-9      | 4.50                       | 6             | 6 | 14 | 36 | 38        | 25 | 14 | 11 | 13              | A-6a (8)  |  |
|                                                                                                             |  |                                        |       | 23                          |  | 16                                   | 17              |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| @23.0' - 23.5'; RIG CHATTER                                                                                 |  |                                        | 760.8 | 24                          |  | 46                                   |                 |         | SS-10A    | -                          | -             | - | -  | -  | -         | -  | -  | 8  | A-4a (V)        |           |  |
| HARD, GRAY, SANDY SILT, LITTLE GRAVEL, LITTLE CLAY, NOT ENOUGH MATERIAL TO TEST, DAMP                       |  |                                        | 760.6 |                             |  | 50/5"                                | -               | 100     | SS-10B    | -                          | -             | - | -  | -  | -         | -  | -  | 13 | A-3a (0)        |           |  |
| VERY DENSE, GRAY, COARSE AND FINE SAND, LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP                         |  |                                        | 759.9 | EOB                         |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.                    |  |                                        |       |                             |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |
| ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 100 LB. BENTONITE CHIPS               |  |                                        |       |                             |  |                                      |                 |         |           |                            |               |   |    |    |           |    |    |    |                 |           |  |

|                           |                                          |                             |                                     |                              |
|---------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74     | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 104+25, 1' RT.    | EXPLORATION ID<br>B-003-0-23 |
| TYPE: NOISE WALL          | SAMPLING FIRM / LOGGER: ODOT / AJ        | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 1                |                              |
| PID: 115182 SFN: N/A      | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 783.3 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1               |
| START: 5/8/23 END: 5/8/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.391911, -81.954925   |                              |

[illegible]

|                           |                                          |                             |                                     |                               |
|---------------------------|------------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74     | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 106+28, 0' LT.    | EXPLORATION ID:<br>B-004-0-23 |
| TYPE: NOISE WALL          | SAMPLING FIRM / LOGGER: ODOT / BINKLEY   | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 1                |                               |
| PID: 115182 SFN: N/A      | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 782.7 (ft) EOB: 24.4 ft. | PAGE<br>1 OF 1                |
| START: 5/1/23 END: 5/2/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.392211, -81.954303   |                               |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.



|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 199+91, 1' LT.    | EXPLORATION ID<br>B-005-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / BINKLEY   | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 2                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 748.6 (ft) EOB: 24.3 ft. | PAGE<br>1 OF 1               |
| START: 5/31/23 END: 5/31/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.423529, -81.874953   |                              |

[illegible]

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 50 LB. BENTONITE CHIPS

|                             |                                          |                             |                                     |                               |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 201+96, 1' RT.    | EXPLORATION ID:<br>B-006-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / BINKLEY   | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 2                |                               |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.3 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1                |
| START: 5/31/23 END: 5/31/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.423697, -81.874236   |                               |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.

|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 203+95, 0' LT.    | EXPLORATION ID<br>B-007-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / BINKLEY   | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 2                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 751.4 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1               |
| START: 5/31/23 END: 5/31/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.423879, -81.873552   |                              |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.

|                             |                                        |                             |                                     |                               |
|-----------------------------|----------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / CAREY | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 205+96, 0' LT.    | EXPLORATION ID:<br>B-008-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / BINKLEY | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 2                |                               |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA             | CALIBRATION DATE: 4/25/23   | ELEVATION: 750.4 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1                |
| START: 5/30/23 END: 5/31/23 | SAMPLING METHOD: SPT                   | ENERGY RATIO (%): 89        | LAT / LONG: 41.424059, -81.872861   |                               |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.



|                            |                                          |                             |                                     |                              |
|----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74      | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 300+49, 5' RT.    | EXPLORATION ID<br>B-010-0-23 |
| TYPE: NOISE WALL           | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                              |
| PID: 115182 SFN: N/A       | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.7 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1               |
| START: 5/3/23 END: 5/23/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424335, -81.871650   |                              |

[illegible]

|                            |                                          |                             |                                     |                              |
|----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74      | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 302+52, 1' RT.    | EXPLORATION ID<br>B-011-0-23 |
| TYPE: NOISE WALL           | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                              |
| PID: 115182 SFN: N/A       | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.0 (ft) EOB: 24.0 ft. | PAGE<br>1 OF 1               |
| START: 5/3/23 END: 5/16/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424448, -81.870934   |                              |

| MATERIAL DESCRIPTION<br>AND NOTES                                                       | ELEV. |  | DEPTHS | SPT/<br>RQD | N <sub>60</sub> | REC<br>(%) | SAMPLE<br>ID | HP<br>(tsf) | GRADATION (%) |    |    |    |    | ATTERBERG |    |    |    | ODOT<br>CLASS (GI) | BACK<br>FILL |
|-----------------------------------------------------------------------------------------|-------|--|--------|-------------|-----------------|------------|--------------|-------------|---------------|----|----|----|----|-----------|----|----|----|--------------------|--------------|
|                                                                                         |       |  |        |             |                 |            |              |             | GR            | CS | FS | SI | CL | LL        | PL | PI | WC |                    |              |
| TOPSOIL (5")                                                                            | 749.0 |  |        |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
| VERY STIFF, BROWN MOTTLED WITH GRAY, <b>SILTY CLAY</b> , TRACE SAND, TRACE ROOTS, MOIST | 748.5 |  | 1      |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 2      | 4           | 7               | 21         | SS-1         | 4.00        | 0             | 1  | 2  | 46 | 51 | 37        | 19 | 18 | 20 | A-6b (11)          |              |
| @3.5'; DAMP                                                                             |       |  | 3      |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 4      | 5           | 7               | 24         | SS-2         | 4.00        | -             | -  | -  | -  | -  | -         | -  | -  | 17 | A-6b (V)           |              |
| @6.0'; HARD                                                                             |       |  | 5      |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 6      | 5           |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 7      | 9           | 12              | 31         | SS-3         | 4.5+        | -             | -  | -  | -  | -  | -         | -  | -  | 18 | A-6b (V)           |              |
| HARD, BROWN MOTTLED WITH GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, DAMP                | 740.5 |  | 8      |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 9      | 11          | 16              | 46         | SS-4         | 4.5+        | 0             | 1  | 1  | 71 | 27 | 25        | 17 | 8  | 15 | A-4b (8)           |              |
|                                                                                         |       |  | 10     |             | 15              |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
| HARD, GRAY, <b>SILT AND CLAY</b> , LITTLE SAND, LITTLE GRAVEL AND STONE FRAGMENTS, DAMP | 738.0 |  | 11     | 9           |                 | 28         | SS-5         | 4.5+        | 15            | 6  | 11 | 33 | 35 | 26        | 15 | 11 | 13 | A-6a (7)           |              |
|                                                                                         |       |  | 12     |             | 10              |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 13     |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 14     | 7           | 7               | 25         | SS-6         | 4.5+        | -             | -  | -  | -  | -  | -         | -  | -  | 13 | A-6a (V)           |              |
| @16.0': SPLITSPOON PARTIALLY BLOCKED BY STONE FRAGMENTS                                 |       |  | 15     |             | 10              |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 16     | 17          |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 17     | 19          | 21              | 59         | SS-7         | 4.5+        | -             | -  | -  | -  | -  | -         | -  | -  | 6  | A-6a (V)           |              |
|                                                                                         |       |  | 18     |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
| <b>SHALE</b> , GRAY, SEVERELY WEATHERED, VERY WEAKE TO WEAK, LAMINATED.                 | 730.5 |  | 19     | 22          | 41              | 145        | SS-8         | -           | -             | -  | -  | -  | -  | -         | -  | -  | 7  | Rock (V)           |              |
|                                                                                         |       |  | 20     |             | 57              |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
| @21.0'; HIGHLY WEATHERED.                                                               |       |  | 21     | 28          |                 | -          | SS-9         | -           | -             | -  | -  | -  | -  | -         | -  | -  | 6  | Rock (V)           |              |
|                                                                                         |       |  | 22     | 68          |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         |       |  | 23     |             |                 |            |              |             |               |    |    |    |    |           |    |    |    |                    |              |
|                                                                                         | 725.0 |  | 24     | 60          |                 | -          | SS-10        | -           | -             | -  | -  | -  | -  | -         | -  | -  | 5  | Rock (V)           |              |

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 100 LB. BENTONITE CHIPS

| PROJECT: CUY-480-0.74                                                                                  |  | DRILLING FIRM / OPERATOR: ODOT / MCINTOSH |        | DRILL RIG: CME 55 TRUCK   |         | STATION / OFFSET: 304+52, 11' LT.   |         |           |          | EXPLORATION ID: B-012-0-23 |    |    |    |    |           |    |    |    |                 |           |  |
|--------------------------------------------------------------------------------------------------------|--|-------------------------------------------|--------|---------------------------|---------|-------------------------------------|---------|-----------|----------|----------------------------|----|----|----|----|-----------|----|----|----|-----------------|-----------|--|
| TYPE: NOISE WALL                                                                                       |  | SAMPLING FIRM / LOGGER: ODOT / SPROUSE    |        | HAMMER: CME AUTOMATIC     |         | ALIGNMENT: BL WALL 3                |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| PID: 115182 SFN: N/A                                                                                   |  | DRILLING METHOD: 3.25" HSA                |        | CALIBRATION DATE: 4/18/22 |         | ELEVATION: 749.3 (ft) EOB: 25.0 ft. |         |           |          | PAGE 1 OF 1                |    |    |    |    |           |    |    |    |                 |           |  |
| START: 5/3/23 END: 5/3/23                                                                              |  | SAMPLING METHOD: SPT                      |        | ENERGY RATIO (%): 87      |         | LAT / LONG: 41.424582, -81.870249   |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| MATERIAL DESCRIPTION AND NOTES                                                                         |  | ELEV.                                     | DEPTHS |                           | SPT/RQD | N <sub>60</sub>                     | REC (%) | SAMPLE ID | HP (tsf) | GRADATION (%)              |    |    |    |    | ATTERBERG |    |    | WC | ODOT CLASS (GI) | BACK FILL |  |
|                                                                                                        |  | 749.3                                     |        |                           |         |                                     |         |           |          | GR                         | CS | FS | SI | CL | LL        | PL | PI |    |                 |           |  |
| TOPSOIL (8")                                                                                           |  | 748.6                                     | 1      |                           |         |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| MEDIUM DENSE, BROWN AND GRAY, <b>STONE FRAGMENTS WITH SAND AND SILT</b> , TRACE CLAY, DAMP             |  | 745.8                                     | 2      |                           | 8       | 23                                  | 67      | SS-1      | -        | 37                         | 16 | 20 | 17 | 10 | 24        | 16 | 8  | 13 | A-2-4 (0)       |           |  |
|                                                                                                        |  |                                           | 3      |                           |         | 7                                   |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
|                                                                                                        |  |                                           | 4      |                           | 3       | 4                                   | 16      | 61        | SS-2     | 4.25                       | 4  | 3  | 4  | 38 | 51        | 37 | 18 | 19 | 20              | A-6b (12) |  |
| HARD, MOTTLED BROWN AND GRAY, <b>SILTY CLAY</b> , TRACE SAND, TRACE GRAVEL, MOIST                      |  | 743.3                                     | 5      |                           |         |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
|                                                                                                        |  |                                           | 6      |                           | 6       | 7                                   | 29      | 100       | SS-3     | 4.50                       | 8  | 9  | 13 | 32 | 38        | 30 | 16 | 14 | 15              | A-6a (9)  |  |
|                                                                                                        |  |                                           | 7      |                           |         | 13                                  |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| HARD, BROWN, <b>SILT AND CLAY</b> , SOME SAND, TRACE GRAVEL, DAMP                                      |  | 733.3                                     | 8      |                           |         |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| @8.5'; GRAY MOTTLED WITH BROWN, LITTLE GRAVEL                                                          |  |                                           | 9      |                           | 5       | 9                                   | 26      | 100       | SS-4     | 4.50                       | 11 | 9  | 12 | 33 | 35        | 26 | 15 | 11 | 13              | A-6a (7)  |  |
|                                                                                                        |  |                                           | 10     |                           |         | 9                                   |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| @11.0'; GRAY                                                                                           |  |                                           | 11     |                           | 5       |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
|                                                                                                        |  |                                           | 12     |                           |         | 6                                   | 19      | 89        | SS-5     | 4.50                       | -  | -  | -  | -  | -         | -  | -  | -  | 14              | A-6a (V)  |  |
|                                                                                                        |  |                                           | 13     |                           |         | 7                                   |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| @47.5' - 50.0'; NO RECOVERY / RESAMPLED WITH 3" SPLITSPOON; ENCOUNTERED A 3"x 2.5" COBBLE              |  |                                           | 14     |                           | 9       | 14                                  | 42      | 0         | SS-6     | 4.50                       | -  | -  | -  | -  | -         | -  | -  | -  | 13              | A-6a (V)  |  |
|                                                                                                        |  |                                           | 15     |                           |         | 15                                  |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| VERY STIFF, GRAY, <b>SANDY SILT</b> , SOME GRAVEL AND STONE FRAGMENTS, LITTLE CLAY, DAMP               |  |                                           | 728.3  | 16                        |         | 17                                  | 90      | 100       | SS-7     | 3.50                       | 29 | 18 | 10 | 30 | 13        | 23 | 17 | 6  | 10              | A-4a (2)  |  |
|                                                                                                        |  |                                           |        | 17                        |         |                                     | 27      |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| @18.5'; HARD                                                                                           |  | 18                                        |        |                           |         |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
|                                                                                                        |  | 19                                        |        | 13                        | 24      | 83                                  | 100     | SS-8      | 4.00     | -                          | -  | -  | -  | -  | -         | -  | -  | 11 | A-4a (V)        |           |  |
|                                                                                                        |  | 20                                        |        |                           | 33      |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| VERY DENSE, GRAY, <b>STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, DAMP                     |  | 725.8                                     | 21     |                           | 15      | 155                                 | 100     | SS-9      | -        | 50                         | 22 | 9  | 11 | 8  | 25        | 20 | 5  | 7  | A-1-b (0)       |           |  |
|                                                                                                        |  |                                           | 22     |                           |         | 49                                  |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
|                                                                                                        |  | 23                                        |        |                           | 58      |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| VERY DENSE, GRAY, <b>STONE FRAGMENTS WITH SAND AND SILT</b> , LITTLE CLAY, DAMP                        |  | 724.3                                     | 24     |                           | 17      | 78                                  | 89      | SS-10     | -        | 38                         | 16 | 13 | 22 | 11 | 24        | 19 | 5  | 8  | A-2-4 (0)       |           |  |
|                                                                                                        |  |                                           | 25     |                           |         | 29                                  |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
|                                                                                                        |  | EOB                                       |        |                           |         |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| NOTES: HOLE DRY UPON COMPLETION. LAT/LONG FROM OGE HANDHELD GPS UNIT. ELEV FROM CONSULTANT SURVEY TIN. |  |                                           |        |                           |         |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |
| ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 50 LB. BENTONITE CHIPS           |  |                                           |        |                           |         |                                     |         |           |          |                            |    |    |    |    |           |    |    |    |                 |           |  |



|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 306+53, 0' RT.    | EXPLORATION ID<br>B-013-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / BENNING   | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 748.7 (ft) EOB: 24.0 ft. | PAGE<br>1 OF 1               |
| START: 5/10/23 END: 5/10/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424700, -81.869516   |                              |

[illegible]

|                             |                                          |                             |                                     |                               |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 308+31, 2' RT.    | EXPLORATION ID:<br>B-014-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                               |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.4 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1                |
| START: 5/15/23 END: 5/15/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424785, -81.868876   |                               |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.

|                             |                                          |                             |                                     |                               |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 310+54, 1' RT.    | EXPLORATION ID:<br>B-015-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                               |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.9 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1                |
| START: 5/10/23 END: 5/11/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424888, -81.868119   |                               |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.

|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 312+53, 6' RT.    | EXPLORATION ID<br>B-016-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / BENNING   | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.1 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1               |
| START: 5/10/23 END: 5/10/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424974, -81.867402   |                              |

| MATERIAL DESCRIPTION<br>AND NOTES                                                                                                                            | ELEV.          | DEPTHS                                                                                          | SPT/<br>RQD | N <sub>60</sub> | REC<br>(%) | SAMPLE<br>ID | HP<br>(tsf) | GRADATION (%) |    |    |    |    | ATTERBERG |    |    | WC       | ODOT<br>CLASS (G) | BACK<br>FILL |  |          |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------|-------------|-----------------|------------|--------------|-------------|---------------|----|----|----|----|-----------|----|----|----------|-------------------|--------------|--|----------|--|--|--|--|
|                                                                                                                                                              |                |                                                                                                 |             |                 |            |              |             | GR            | CS | FS | SI | CL | LL        | PL | PI |          |                   |              |  |          |  |  |  |  |
| TOPSOIL (5")<br>VERY STIFF, MOTTLED BROWN AND GRAY, <b>SILTY CLAY</b> ,<br>LITTLE SAND, TRACE GRAVEL, SLIGHTLY ORGANIC (LOI =<br>3.2%) CONTAINS ROOTS, MOIST | 749.1<br>748.7 | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15<br>16<br>17<br>18 | 1<br>4      | 12              | 78         | SS-1         | 2.50        | 1             | 0  | 19 | 34 | 46 | 39        | 23 | 16 | 23       | A-6b (10)         |              |  |          |  |  |  |  |
| VERY STIFF, MOTTLED BROWN AND GRAY, <b>SILTY CLAY</b> ,<br>LITTLE SAND, MOIST<br><br>@6.0'; HARD, BROWN, DAMP                                                | 745.6          |                                                                                                 | 3<br>3      | 9               | 83         | SS-2         | 2.25        | 0             | 2  | 12 | 35 | 51 | 40        | 23 | 17 | 28       | A-6b (11)         |              |  |          |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 5<br>6      | 21              | 100        | SS-3         | 4.50        | -             | -  | -  | -  | -  | -         | -  | 18 | A-6b (V) |                   |              |  |          |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 8<br>8      | 25              | 100        | SS-4         | 4.5+        | 10            | 5  | 13 | 35 | 37 | 26        | 17 | 9  | 13       |                   |              |  | A-4a (7) |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 9<br>10     | 30              | 100        | SS-5         | 4.5+        | -             | -  | -  | -  | -  | -         | -  | -  | 12       |                   |              |  | A-4a (V) |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 9<br>10     | 30              | 100        | SS-6         | 4.5+        | -             | -  | -  | -  | -  | -         | -  | -  | 12       |                   |              |  | A-4a (V) |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 8<br>10     | 37              | 100        | SS-7         | 4.5+        | 9             | 8  | 11 | 33 | 39 | 25        | 17 | 8  | 13       |                   |              |  | A-4a (7) |  |  |  |  |
| HARD, GRAY, <b>SANDY SILT</b> , "AND" CLAY, TRACE GRAVEL,<br>DAMP                                                                                            | 740.6          |                                                                                                 | 18          |                 |            |              |             |               |    |    |    |    |           |    |    |          |                   |              |  |          |  |  |  |  |
| HARD, DARK GRAY, <b>SANDY SILT</b> , SOME STONE<br>FRAGMENTS, LITTLE CLAY, DAMP                                                                              | 730.6          |                                                                                                 | 36<br>48    | 146             | 100        | SS-8         | 4.5+        | 31            | 18 | 10 | 30 | 11 | 21        | 16 | 5  | 8        | A-4a (1)          |              |  |          |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 51          |                 |            |              |             |               |    |    |    |    |           |    |    |          |                   |              |  |          |  |  |  |  |
| <b>SHALE</b> , DARK GRAY, SEVERELY WEATHERED, VERY<br>WEAK TO WEAK, LAMINATED.<br><br>@23.5'; HIGHLY WEATHERED.                                              | 728.1<br>724.1 |                                                                                                 | 47<br>49    | 161             | 100        | SS-9         | -           | -             | -  | -  | -  | -  | -         | -  | -  | 8        | Rock (V)          |              |  |          |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 60          |                 |            |              |             |               |    |    |    |    |           |    |    |          |                   |              |  |          |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 35<br>43    | 125             | 100        | SS-10        | -           | -             | -  | -  | -  | -  | -         | -  | -  | 5        | Rock (V)          |              |  |          |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 42          |                 |            |              |             |               |    |    |    |    |           |    |    |          |                   |              |  |          |  |  |  |  |
|                                                                                                                                                              |                |                                                                                                 | 25          |                 |            |              |             |               |    |    |    |    |           |    |    |          |                   |              |  |          |  |  |  |  |

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 100 LB. SOIL CUTTINGS

|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 314+53, 0' LT.    | EXPLORATION ID<br>B-017-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / BENNING   | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.2 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1               |
| START: 5/10/23 END: 5/10/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.425090, -81.866690   |                              |

[illegible]

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 3/24/25 12:31 - X:\GINT\PROJECTS\2023 COMPLETE\601053.GPJ

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 100 LB. BENTONITE CHIPS

|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 316+52, 0' LT.    | EXPLORATION ID<br>B-018-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.4 (ft) EOB: 24.5 ft. | PAGE<br>1 OF 1               |
| START: 5/10/23 END: 5/10/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.425125, -81.865965   |                              |

[illegible]

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 100 LB. BENTONITE CHIPS

|                           |                                          |                             |                                     |                               |
|---------------------------|------------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74     | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 318+52, 1' LT.    | EXPLORATION ID:<br>B-019-0-23 |
| TYPE: NOISE WALL          | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 3                |                               |
| PID: 115182 SFN: N/A      | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/19/21   | ELEVATION: 751.7 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1                |
| START: 5/9/23 END: 5/9/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 90*       | LAT / LONG: 41.425159, -81.865239   |                               |

[illegible]

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 100 LB. BENTONITE CHIPS

|                             |                                          |                             |                                     |                               |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 400+00, 4' LT.    | EXPLORATION ID:<br>B-020-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 4                |                               |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 748.4 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1                |
| START: 4/24/23 END: 4/25/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.423993, -81.869610   |                               |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.



|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 401+85, 5' LT.    | EXPLORATION ID<br>B-021-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 4                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 748.4 (ft) EOB: 25.0 ft. | PAGE<br>1 OF 1               |
| START: 4/25/23 END: 4/25/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424115, -81.868956   |                              |

[illegible]

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 3/7/25 12:10 - X:\GINT\PROJECTS\2023 COMPLETE\601053.GPJ

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS  
ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 50 LB. BENTONITE CHIPS

|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 404+04, 6' LT.    | EXPLORATION ID<br>B-022-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 4                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 748.4 (ft) EOB: 24.0 ft. | PAGE<br>1 OF 1               |
| START: 4/25/23 END: 4/26/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424215, -81.868197   |                              |

[illegible]

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 50 LB. BENTONITE CHIPS

|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 406+03, 0' LT.    | EXPLORATION ID<br>B-023-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 4                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 749.4 (ft) EOB: 24.5 ft. | PAGE<br>1 OF 1               |
| START: 4/26/23 END: 4/26/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424247, -81.867472   |                              |

[illegible]

|                             |                                          |                             |                                     |                              |
|-----------------------------|------------------------------------------|-----------------------------|-------------------------------------|------------------------------|
| PROJECT: CUY-480-0.74       | DRILLING FIRM / OPERATOR: ODOT / SPROUSE | DRILL RIG: CME 850R TRACKED | STATION / OFFSET: 408+07, 2' LT.    | EXPLORATION ID<br>B-024-0-23 |
| TYPE: NOISE WALL            | SAMPLING FIRM / LOGGER: ODOT / LEWIS     | HAMMER: CME AUTOMATIC       | ALIGNMENT: BL WALL 4                |                              |
| PID: 115182 SFN: N/A        | DRILLING METHOD: 3.75" HSA               | CALIBRATION DATE: 4/25/23   | ELEVATION: 750.3 (ft) EOB: 24.5 ft. | PAGE<br>1 OF 1               |
| START: 4/26/23 END: 4/27/23 | SAMPLING METHOD: SPT                     | ENERGY RATIO (%): 89        | LAT / LONG: 41.424325, -81.866738   |                              |

[illegible]

NOTES: HOLE DRY UPON COMPLETION. LAT/LONG/ELEV FROM CONSULTANT SURVEY GRADE INSTRUMENTS.

State of Ohio  
Department of Transportation  
Division of Highways  
Testing Laboratory  
LOG OF BORING

Date Started 5/17/07 Sampler Type SS Dia 2.0" Water Elev ft  
Date Completed 5/17/07 Casing Length            Dia 3.25"

Project CUY-480-0.93 (Noise Barrier Replacement)  
Project No A07010G  
Location North Olmsted, Ohio

Boring No B-001-0-07 Station & Offset 149+68.81, 95.97' Lt Surface Elev 782.17ft

| Elev<br>(ft)                  | Depth<br>(ft) | Blows/6 inch<br>or ROD | Rec<br>(ft) | Loss<br>(ft) | Description                                                                                 | Sample<br>No | Physical Characteristics |          |          |           |           |     |     |     | ODOT<br>Class |
|-------------------------------|---------------|------------------------|-------------|--------------|---------------------------------------------------------------------------------------------|--------------|--------------------------|----------|----------|-----------|-----------|-----|-----|-----|---------------|
|                               |               |                        |             |              |                                                                                             |              | %<br>Agg                 | %<br>C.S | %<br>F.S | %<br>Silt | %<br>Clay | L.L | P.I | W.C |               |
| 782.2                         | 0             |                        |             |              |                                                                                             |              |                          |          |          |           |           |     |     |     |               |
| 781.5                         |               |                        |             |              | TOPSOIL (8.0 inches thick)                                                                  |              |                          |          |          |           |           |     |     |     |               |
|                               | 2             | 3 - 9 - 11             |             |              | Very stiff to hard, brown SILT AND CLAY (A-6a), some sand, trace rock fragments, moist      | 1            | --                       | --       | --       | --        | --        |     |     | 17  | Visual        |
|                               | 4             | 5 - 11 - 13            |             |              | Note Mottled gray color present at 1.0 foot sample                                          | 2            | --                       | --       | --       | --        | --        |     |     | 15  | Visual        |
|                               | 6             | 5 - 14 - 17            |             |              |                                                                                             | 3            | 10                       | 10       | 14       | --        | 66*       | 32  | 11  | 15  | A-6a          |
|                               | 8             |                        |             |              |                                                                                             | 4            | --                       | --       | --       | --        | --        |     |     | 14  | Visual        |
|                               | 10            | 7 - 13 - 20            |             |              |                                                                                             |              |                          |          |          |           |           |     |     |     |               |
| 770.7                         | 12            | 6 - 16 - 26            |             |              |                                                                                             | 5            | --                       | --       | --       | --        | --        |     |     | 10  | Visual        |
|                               | 14            | 5 - 18 - 29            |             |              | Hard, gray, plastic SANDY SILT (A-4a), some clay, trace rock fragments, moist. (fill)       | 6            | --                       | --       | --       | --        | --        |     |     | 9   | Visual        |
| 767.2                         | 16            |                        |             |              |                                                                                             |              |                          |          |          |           |           |     |     |     |               |
|                               | 18            | 7 - 26 - 41            |             |              | Very dense, gray, non-plastic SANDY SILT (A-4a), trace rock fragments, moist.               | 7            | 5                        | 11       | 12       | 44        | 28        | NP  | NP  | 10  | A-4a          |
| 763.7                         | 20            | 7 - 50/0.4 -           |             |              | Hard, gray, plastic SANDY SILT (A-4a), some clay, trace rock fragments, moist (fill)        | 8            | --                       | --       | --       | --        | --        |     |     | 8   | Visual        |
| 761.4                         | 22            | 7 - 50/0.4 -           |             |              | Very dense, gray COARSE AND FINE SAND (A-3a), some fines, little sandstone fragments, moist | 9            | --                       | --       | --       | --        | --        |     |     | 7   | Visual        |
| 758.7                         |               |                        |             |              |                                                                                             |              |                          |          |          |           |           |     |     |     |               |
| 758.1                         | 24            | 17 - 50/0.1 -          |             |              | Very soft, light gray, decomposed SANDSTONE                                                 | 10           | --                       | --       | --       | --        | --        |     |     | 13  | Visual        |
| TERMINATION DEPTH = 24.1 FEET |               |                        |             |              |                                                                                             |              |                          |          |          |           |           |     |     |     |               |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.075mm, Silt = 0.075-0.005mm, Clay =< 0.005mm (\*Indicates silt & clay combined)

Wall 1 – Drilled Shaft Analysis

**OHIO DEPARTMENT OF TRANSPORTATION****OFFICE OF GEOTECHNICAL ENGINEERING****Noise Wall Design****CUY-480-0.74/VAR  
115182****Noise Wall Along IR-480- WB to Barton Road****Noise Wall 1****ODOT - D12****Prepared By:** Kyle J. Dohlen, P.E  
**Date prepared:** Monday, December 9, 2024**Checked By:**  
**Date Checked:****No. of Borings:** 5

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 1+00.00      | 1        | 17.00                  | 10.00                | 781.76                         |
| 1+10.00      | 2        | 17.00                  | 24.00                | 781.62                         |
| 1+34.00      | 3        | 17.00                  | 24.00                | 781.62                         |
| 1+58.00      | 4        | 17.00                  | 24.00                | 781.62                         |
| 1+82.00      | 5        | 18.00                  | 24.00                | 781.62                         |
| 2+06.00      | 6        | 17.00                  | 24.00                | 782.62                         |
| 2+30.00      | 7        | 17.00                  | 24.00                | 782.62                         |
| 2+54.00      | 8        | 17.00                  | 24.00                | 782.62                         |
| 2+78.00      | 9        | 17.00                  | 24.00                | 782.62                         |
| 3+02.00      | 10       | 17.00                  | 24.00                | 782.62                         |
| 3+26.00      | 11       | 17.00                  | 24.00                | 782.62                         |
| 3+50.00      | 12       | 17.00                  | 24.00                | 782.62                         |
| 3+74.00      | 13       | 17.00                  | 24.00                | 782.62                         |
| 3+98.00      | 14       | 18.00                  | 24.00                | 781.62                         |
| 4+22.00      | 15       | 18.00                  | 24.00                | 781.62                         |
| 4+46.00      | 16       | 17.00                  | 24.00                | 781.62                         |
| 4+70.00      | 17       | 17.00                  | 24.00                | 781.62                         |
| 4+94.00      | 18       | 17.00                  | 24.00                | 781.62                         |
| 5+18.00      | 19       | 17.00                  | 24.00                | 781.62                         |
| 5+42.00      | 20       | 17.00                  | 24.00                | 781.62                         |
| 5+66.00      | 21       | 17.00                  | 24.00                | 781.62                         |
| 5+90.00      | 22       | 17.00                  | 24.00                | 781.62                         |
| 6+14.00      | 23       | 17.00                  | 24.00                | 781.62                         |
| 6+38.00      | 24       | 17.00                  | 24.00                | 781.62                         |
| 6+62.00      | 25       | 17.00                  | 24.00                | 781.62                         |
| 6+86.00      | 26       | 17.00                  | 24.00                | 781.62                         |
| 7+10.00      | 27       | 17.00                  | 24.00                | 781.62                         |
| 7+34.00      | 28       | 17.00                  | 24.00                | 781.62                         |
| 7+58.00      | 29       | 17.00                  | 24.00                | 781.62                         |
| 7+82.00      | 30       | 17.00                  | 24.00                | 781.62                         |
| 8+06.00      | 31       | 17.00                  | 24.00                | 781.62                         |
| 8+30.00      | 32       | 17.00                  | 24.00                | 781.62                         |
| 8+54.00      | 33       | 17.00                  | 24.00                | 781.62                         |
| 8+78.00      | 34       | 17.00                  | 24.00                | 781.62                         |



| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 9+02.00      | 35       | 17.00                  | 24.00                | 781.62                         |
| 9+26.00      | 36       | 17.00                  | 24.00                | 781.62                         |

**Boring Information and  
Design Recommendation**

**CUY-480-0.74/VAR  
PID: 115182**

**Foundation Design**

**Noise Wall ID: Noise Wall 1**

| Boring ID  | Boring STA.<br>(ft) | Mid-Boring STA.<br>(ft) | Boring Elev.<br>(ft) | Shaft Elev.<br>(ft) | Ex. Ground Elev.<br>(ft) | Rock Elev.<br>(ft) | Rock UCS<br>(psi) | Post Spacing<br>(ft) | Barrier Height<br>(ft) | Cross Slope |       | From DS STA. | To DS STA. | From Post No. | To Post No. | DS Length<br>(ft) | Bottom of DS Elev.<br>(ft) |
|------------|---------------------|-------------------------|----------------------|---------------------|--------------------------|--------------------|-------------------|----------------------|------------------------|-------------|-------|--------------|------------|---------------|-------------|-------------------|----------------------------|
| B-001-0-23 | 1+24.04             | 2+25.16                 | 782.60               | 781.62              | 782.60                   |                    |                   | 24                   | 18.00                  | 6.0         | 5:1   | 1+00.00      | 2+06.00    | 1             | 6           | 7.50              | 774.12                     |
| B-002-0-23 | 3+26.27             | 4+26.25                 | 784.30               | 782.62              | 784.30                   |                    |                   | 24                   | 18.00                  | 6.0         | 5:1   | 2+30.00      | 4+22.00    | 7             | 15          | 7.50              | 775.12                     |
| B-003-0-23 | 5+26.22             | 6+26.22                 | 783.30               | 781.62              | 783.30                   |                    |                   | 24                   | 18.00                  | 5.0         | 5:1   | 4+46.00      | 6+14.00    | 16            | 23          | 7.50              | 774.12                     |
| B-004-0-23 | 7+26.22             | 8+27.68                 | 782.70               | 781.62              | 782.70                   |                    |                   | 24                   | 17.00                  | 8.0         | Level | 6+38.00      | 8+06.00    | 24            | 31          | 6.00              | 775.62                     |
| B-001-0-07 | 9+29.14             | 9+29.14                 | 782.17               | 781.62              | 782.17                   | 758.70             | 1500              | 24                   | 17.00                  | 8.0         | Level | 8+30.00      | 9+26.00    | 32            | 36          | 6.00              | 775.62                     |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-0.98  
781.62  
782.60  
24  
18.00  
5:1

Ex. Ground Elev.= 782.60

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 7.5 ft                |          |          |          |          |          |          |          |          |          |
| 774.12'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 26

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 782.60            | 779.60               | 3.00                | A-6b       | Cohesive  | 13                       | 2.00           | 13                        | 13                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.02                   | 13                                | Cohesive   |
| 2         | 779.60            | 777.60               | 5.00                | A-6b       | Cohesive  | 28                       | 1.71           | 28                        | 28                             | 128                        | 66                         | 66                    | 131                     | 238                      | 4.02                   | 28                                | Cohesive   |
| 3         | 777.60            | 775.10               | 7.50                | A-6a       | Cohesive  | 34                       | 1.55           | 34                        | 32                             | 128                        | 66                         | 66                    | 164                     | 386                      | 6.52                   | 32                                | Cohesive   |
| 4         | 775.10            | 772.60               | 10.00               | A-6a       | Cohesive  | 58                       | 1.42           | 58                        | 32                             | 140                        | 78                         | 78                    | 194                     | 565                      | 9.02                   | 32                                | Cohesive   |
| 5         | 772.60            | 770.10               | 12.50               | A-6a       | Cohesive  | 55                       | 1.33           | 55                        | 32                             | 140                        | 78                         | 78                    | 194                     | 759                      | 11.52                  | 32                                | Cohesive   |
| 6         | 770.10            | 767.60               | 15.00               | A-4a P     | Cohesive  | 81                       | 1.25           | 81                        | 32                             | 140                        | 78                         | 78                    | 194                     | 953                      | 14.02                  | 32                                | Cohesive   |
| 7         | 767.60            | 765.10               | 17.50               | A-4a P     | Cohesive  | 83                       | 1.19           | 83                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1147                     | 16.52                  | 32                                | Cohesive   |
| 8         | 765.10            | 762.60               | 20.00               | A-4a P     | Cohesive  | 66                       | 1.14           | 66                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1341                     | 19.02                  | 32                                | Cohesive   |
| 9         | 762.60            | 760.10               | 22.50               | A-4a NP    | Granular  | 59                       | 1.09           | 64                        | 60                             | 135                        | 73                         | 73                    | 182                     | 1529                     | 21.52                  | 60                                | Granular   |
| 10        | 760.10            | 757.60               | 25.00               | A-4a NP    | Granular  | 60                       | 1.05           | 63                        | 60                             | 135                        | 73                         | 73                    | 182                     | 1710                     | 24.02                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -1.68

Shaft Top Elev. (ft) = 782.62

Boring Top Elev. (ft) = 784.30

Ex. Ground Elev.= 784.30

Post Spacing (ft) = 24

Barrier Height (ft) = 18.00

Transverse Slope = 5:1

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 7.5 ft                |          |          |          |          |          |          |          |          |          |
| 775.12'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 27

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 784.30            | 780.80               | 3.50                | A-6a       | Cohesive  | 19                       | 1.99           | 19                        | 19                             | 122                        | 60                         | 60                    | 209                     | 104                      | 1.82                   | 19                                | Cohesive   |
| 2         | 780.80            | 779.30               | 5.00                | A-6a       | Cohesive  | 27                       | 1.69           | 27                        | 27                             | 125                        | 63                         | 63                    | 94                      | 256                      | 3.32                   | 27                                | Cohesive   |
| 3         | 779.30            | 776.80               | 7.50                | A-6a       | Cohesive  | 31                       | 1.55           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 385                      | 5.82                   | 31                                | Cohesive   |
| 4         | 776.80            | 774.30               | 10.00               | A-6a       | Cohesive  | 37                       | 1.43           | 37                        | 32                             | 130                        | 68                         | 68                    | 169                     | 551                      | 8.32                   | 32                                | Cohesive   |
| 5         | 774.30            | 771.80               | 12.50               | A-6a       | Cohesive  | 47                       | 1.34           | 47                        | 32                             | 135                        | 73                         | 73                    | 182                     | 726                      | 10.82                  | 32                                | Cohesive   |
| 6         | 771.80            | 769.30               | 15.00               | A-6a       | Cohesive  | 46                       | 1.27           | 46                        | 32                             | 135                        | 73                         | 73                    | 182                     | 908                      | 13.32                  | 32                                | Cohesive   |
| 7         | 769.30            | 766.80               | 17.50               | A-6a       | Cohesive  | 71                       | 1.20           | 71                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1096                     | 15.82                  | 32                                | Cohesive   |
| 8         | 766.80            | 764.30               | 20.00               | A-6a       | Cohesive  | 52                       | 1.15           | 52                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1290                     | 18.32                  | 32                                | Cohesive   |
| 9         | 764.30            | 761.80               | 22.50               | A-6a       | Cohesive  | 49                       | 1.10           | 49                        | 32                             | 135                        | 73                         | 73                    | 182                     | 1477                     | 20.82                  | 32                                | Cohesive   |
| 10        | 761.80            | 760.30               | 24.00               | A-4a P     | Cohesive  | 100                      | 1.07           | 100                       | 32                             | 140                        | 78                         | 78                    | 116                     | 1626                     | 22.32                  | 32                                | Cohesive   |
| 11        | 760.30            | 759.80               | 24.50               | A-3a       | Granular  | 100                      | 1.06           | 106                       | 60                             | 140                        | 78                         | 78                    | 39                      | 1704                     | 22.82                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-1.68  
781.62  
783.30  
24  
18.00  
5:1

Ex. Ground Elev.= 783.30

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 7.5 ft                |          |          |          |          |          |          |          |          |          |
| 774.12'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 30

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N1 <sub>60</sub><br>(bpf) | Adj. N1 <sub>60</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 783.30            | 780.30               | 3.00                | A-6a       | Cohesive  | 25                       | 2.00           | 25                        | 25                             | 125                        | 63                         | 63                    | 188                     | 94                       | 1.32                   | 25                                | Cohesive   |
| 2         | 780.30            | 778.30               | 5.00                | A-6a       | Cohesive  | 35                       | 1.69           | 35                        | 32                             | 128                        | 66                         | 66                    | 131                     | 253                      | 3.32                   | 32                                | Cohesive   |
| 3         | 778.30            | 775.80               | 7.50                | A-6a       | Cohesive  | 32                       | 1.54           | 32                        | 32                             | 128                        | 66                         | 66                    | 164                     | 401                      | 5.82                   | 32                                | Cohesive   |
| 4         | 775.80            | 773.30               | 10.00               | A-6a       | Cohesive  | 53                       | 1.42           | 53                        | 32                             | 140                        | 78                         | 78                    | 194                     | 580                      | 8.32                   | 32                                | Cohesive   |
| 5         | 773.30            | 770.80               | 12.50               | A-6a       | Cohesive  | 44                       | 1.32           | 44                        | 32                             | 135                        | 73                         | 73                    | 182                     | 768                      | 10.82                  | 32                                | Cohesive   |
| 6         | 770.80            | 768.30               | 15.00               | A-4a P     | Cohesive  | 69                       | 1.25           | 69                        | 32                             | 140                        | 78                         | 78                    | 194                     | 956                      | 13.32                  | 32                                | Cohesive   |
| 7         | 768.30            | 765.80               | 17.50               | A-4a P     | Cohesive  | 72                       | 1.19           | 72                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1150                     | 15.82                  | 32                                | Cohesive   |
| 8         | 765.80            | 763.30               | 20.00               | A-4a P     | Cohesive  | 65                       | 1.13           | 65                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1344                     | 18.32                  | 32                                | Cohesive   |
| 9         | 763.30            | 761.30               | 22.00               | A-4a P     | Cohesive  | 100                      | 1.09           | 100                       | 32                             | 140                        | 78                         | 78                    | 155                     | 1518                     | 20.32                  | 32                                | Cohesive   |
| 10        | 761.30            | 760.90               | 22.40               | A-1-b      | Granular  | 100                      | 1.07           | 107                       | 60                             | 140                        | 78                         | 78                    | 31                      | 1611                     | 20.72                  | 60                                | Granular   |
| 11        | 760.90            | 758.30               | 25.00               | A-4a NP    | Granular  | 128                      | 1.05           | 134                       | 60                             | 140                        | 78                         | 78                    | 202                     | 1728                     | 23.32                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -1.08

Shaft Top Elev. (ft) = 781.62

Boring Top Elev. (ft) = 782.70

Ex. Ground Elev.= 782.70

Post Spacing (ft) = 24

Barrier Height (ft) = 17.00

Transverse Slope = Level

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.0 ft                |          |          |          |          |          |          |          |          |          |
| 775.62'               |          |          |          |          |          |          |          |          |          |

C CT.: 3

G CT.: 0

N dsgn: 24

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 782.70            | 779.20               | 3.50                | A-4a P     | Cohesive  | 12                       | 2.00           | 12                        | 12                             | 120                        | 58                         | 58                    | 202                     | 101                      | 2.42                   | 12                                | Cohesive   |
| 2         | 779.20            | 777.70               | 5.00                | A-4a P     | Cohesive  | 28                       | 1.70           | 28                        | 28                             | 128                        | 66                         | 66                    | 98                      | 251                      | 3.92                   | 28                                | Cohesive   |
| 3         | 777.70            | 775.20               | 7.50                | A-4a P     | Cohesive  | 34                       | 1.56           | 34                        | 32                             | 128                        | 66                         | 66                    | 164                     | 382                      | 6.42                   | 32                                | Cohesive   |
| 4         | 775.20            | 772.70               | 10.00               | A-4a P     | Cohesive  | 44                       | 1.43           | 44                        | 32                             | 135                        | 73                         | 73                    | 182                     | 555                      | 8.92                   | 32                                | Cohesive   |
| 5         | 772.70            | 770.20               | 12.50               | A-6a       | Cohesive  | 56                       | 1.33           | 56                        | 32                             | 140                        | 78                         | 78                    | 194                     | 743                      | 11.42                  | 32                                | Cohesive   |
| 6         | 770.20            | 767.70               | 15.00               | A-6a       | Cohesive  | 75                       | 1.26           | 75                        | 32                             | 140                        | 78                         | 78                    | 194                     | 937                      | 13.92                  | 32                                | Cohesive   |
| 7         | 767.70            | 765.20               | 17.50               | A-4a P     | Cohesive  | 94                       | 1.19           | 94                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1131                     | 16.42                  | 32                                | Cohesive   |
| 8         | 765.20            | 763.40               | 19.30               | A-4a P     | Cohesive  | 100                      | 1.15           | 100                       | 32                             | 140                        | 78                         | 78                    | 140                     | 1297                     | 18.22                  | 32                                | Cohesive   |
| 9         | 763.40            | 761.30               | 21.40               | A-2-4      | Granular  | 100                      | 1.11           | 111                       | 60                             | 140                        | 78                         | 78                    | 163                     | 1449                     | 20.32                  | 60                                | Granular   |
| 10        | 761.30            | 758.30               | 24.40               | A-2-4      | Granular  | 100                      | 1.07           | 107                       | 60                             | 140                        | 78                         | 78                    | 233                     | 1647                     | 23.32                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-0.55  
781.62  
782.17  
24  
17.00  
Level

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

758.70  
1500  
782.17

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.0 ft                |          |          |          |          |          |          |          |          |          |
| 775.62'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 26

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 782.17            | 780.67               | 1.50                | A-6a       | Cohesive  | 20                       | 2.00           | 20                        | 20                             | 125                        | 63                         | 63                    | 94                      | 47                       | 0.95                   | 20                                | Cohesive   |
| 2         | 780.67            | 778.17               | 4.00                | A-6a       | Cohesive  | 22                       | 1.82           | 22                        | 22                             | 125                        | 63                         | 63                    | 157                     | 172                      | 3.45                   | 22                                | Cohesive   |
| 3         | 778.17            | 775.67               | 6.50                | A-6a       | Cohesive  | 31                       | 1.60           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 332                      | 5.95                   | 31                                | Cohesive   |
| 4         | 775.67            | 773.17               | 9.00                | A-6a       | Cohesive  | 33                       | 1.47           | 33                        | 32                             | 128                        | 66                         | 66                    | 164                     | 496                      | 8.45                   | 32                                | Cohesive   |
| 5         | 773.17            | 770.67               | 11.50               | A-6a       | Cohesive  | 42                       | 1.37           | 42                        | 32                             | 130                        | 68                         | 68                    | 169                     | 663                      | 10.95                  | 32                                | Cohesive   |
| 6         | 770.67            | 768.17               | 14.00               | A-4a P     | Cohesive  | 47                       | 1.29           | 47                        | 32                             | 135                        | 73                         | 73                    | 182                     | 838                      | 13.45                  | 32                                | Cohesive   |
| 7         | 768.17            | 766.67               | 15.50               | A-4a NP    | Granular  | 67                       | 1.24           | 83                        | 60                             | 140                        | 78                         | 78                    | 116                     | 987                      | 14.95                  | 60                                | Granular   |
| 8         | 766.67            | 763.27               | 18.90               | A-4a P     | Cohesive  | 100                      | 1.18           | 100                       | 32                             | 140                        | 78                         | 78                    | 264                     | 1177                     | 18.35                  | 32                                | Cohesive   |
| 9         | 763.27            | 760.27               | 21.90               | A-3a       | Granular  | 100                      | 1.12           | 112                       | 60                             | 140                        | 78                         | 78                    | 233                     | 1426                     | 21.35                  | 60                                | Granular   |
| 10        | 760.27            | 758.07               | 24.10               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 23.55                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

## Wall 2 – Drilled Shaft Analysis



**OHIO DEPARTMENT OF TRANSPORTATION****OFFICE OF GEOTECHNICAL ENGINEERING****Noise Wall Design****CUY-480-0.74/VAR  
115182****Noise Wall Along IR-480EB - Clague to W227th Road****Noise Wall 2****ODOT - District 12****Prepared By:** Kyle J. Dohlen, P.E**Date prepared:** Tuesday, November 12, 2024**Checked By:****Date Checked:****No. of Borings:** 5

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 1+00.00      | 1        | 14.00                  | 10.00                | 747.21                         |
| 1+10.00      | 2        | 14.00                  | 24.00                | 747.13                         |
| 1+34.00      | 3        | 14.00                  | 24.00                | 747.13                         |
| 1+58.00      | 4        | 13.00                  | 24.00                | 748.13                         |
| 1+82.00      | 5        | 13.00                  | 24.00                | 748.13                         |
| 2+06.00      | 6        | 13.00                  | 24.00                | 748.13                         |
| 2+30.00      | 7        | 13.00                  | 24.00                | 748.13                         |
| 2+54.00      | 8        | 13.00                  | 24.00                | 748.13                         |
| 2+78.00      | 9        | 13.00                  | 24.00                | 748.13                         |
| 3+02.00      | 10       | 13.00                  | 24.00                | 748.13                         |
| 3+26.00      | 11       | 13.00                  | 24.00                | 748.13                         |
| 3+50.00      | 12       | 13.00                  | 24.00                | 748.13                         |
| 3+74.00      | 13       | 14.00                  | 24.00                | 748.13                         |
| 3+98.00      | 14       | 14.00                  | 24.00                | 748.13                         |
| 4+22.00      | 15       | 14.00                  | 24.00                | 749.13                         |
| 4+46.00      | 16       | 14.00                  | 24.00                | 749.13                         |
| 4+70.00      | 17       | 14.00                  | 24.00                | 749.13                         |
| 4+94.00      | 18       | 13.00                  | 24.00                | 750.13                         |
| 5+18.00      | 19       | 13.00                  | 24.00                | 750.13                         |
| 5+42.00      | 20       | 13.00                  | 24.00                | 750.13                         |
| 5+66.00      | 21       | 13.00                  | 24.00                | 750.13                         |
| 5+90.00      | 22       | 13.00                  | 24.00                | 750.13                         |
| 6+14.00      | 23       | 13.00                  | 24.00                | 750.13                         |
| 6+38.00      | 24       | 14.00                  | 24.00                | 749.13                         |
| 6+62.00      | 25       | 14.00                  | 24.00                | 749.13                         |
| 6+86.00      | 26       | 14.00                  | 24.00                | 748.63                         |
| 7+10.00      | 27       | 13.00                  | 24.00                | 748.63                         |
| 7+34.00      | 28       | 13.00                  | 24.00                | 748.63                         |
| 7+58.00      | 29       | 13.00                  | 24.00                | 748.63                         |
| 7+82.00      | 30       | 13.00                  | 24.00                | 748.63                         |
| 8+06.00      | 31       | 13.00                  | 24.00                | 748.63                         |
| 8+30.00      | 32       | 13.00                  | 24.00                | 748.63                         |
| 8+54.00      | 33       | 13.00                  | 24.00                | 748.63                         |
| 8+78.00      | 34       | 13.00                  | 24.00                | 749.13                         |

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 9+02.00      | 35       | 13.00                  | 24.00                | 749.13                         |
| 9+26.00      | 36       | 13.00                  | 10.00                | 749.13                         |
| 9+36.00      | 37       | 13.00                  |                      | 749.21                         |

**Boring Information and  
Design Recommendation**

**CUY-480-0.74/VAR  
PID: 115182**

**Foundation Design**

**Noise Wall ID: Noise Wall 2**

| Boring ID  | Boring STA.<br>(ft) | Mid-Boring STA.<br>(ft) | Boring Elev.<br>(ft) | Shaft Elev.<br>(ft) | Ex. Ground Elev.<br>(ft) | Rock Elev.<br>(ft) | Rock UCS<br>(psi) | Post Spacing<br>(ft) | Barrier Height<br>(ft) | Cross Slope |       | From DS STA. | To DS STA. | From Post No. | To Post No. | DS Length<br>(ft) | Bottom of DS Elev.<br>(ft) |
|------------|---------------------|-------------------------|----------------------|---------------------|--------------------------|--------------------|-------------------|----------------------|------------------------|-------------|-------|--------------|------------|---------------|-------------|-------------------|----------------------------|
| B-005-0-23 | 0+90.50             | 1+93.25                 | 748.60               | 747.21              | 748.60                   | 727.60             |                   | 24                   | 14.00                  | 8.0         | Level | 1+00.00      | 1+82.00    | 1             | 5           | 6.00              | 741.21                     |
| B-006-0-23 | 2+96.00             | 3+95.50                 | 749.30               | 748.13              | 749.30                   |                    |                   | 24                   | 14.00                  | 8.0         | Level | 2+06.00      | 3+74.00    | 6             | 13          | 6.00              | 742.13                     |
| B-007-0-23 | 4+95.00             | 5+95.50                 | 751.40               | 750.13              | 751.40                   |                    |                   | 24                   | 14.00                  | 5.0         | 5:1   | 3+98.00      | 5+90.00    | 14            | 22          | 6.50              | 743.63                     |
| B-008-0-23 | 6+96.00             | 7+96.50                 | 750.40               | 748.63              | 750.40                   |                    |                   | 24                   | 14.00                  | 4.0         | 4:1   | 6+14.00      | 7+82.00    | 23            | 30          | 6.50              | 742.13                     |
| B-009-0-23 | 8+97.00             | 8+97.00                 | 750.10               | 749.13              | 750.10                   |                    |                   | 24                   | 13.00                  | 4.0         | 4:1   | 8+06.00      | 9+36.00    | 31            | 37          | 6.50              | 742.63                     |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-1.39  
747.21  
748.60  
24  
14.00  
Level

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

727.60  
0  
748.60

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.0 ft                |          |          |          |          |          |          |          |          |          |
| 741.21'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 0  
N dsgn: 20

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 748.60            | 745.10               | 3.50                | A-6b       | Cohesive  | 12                       | 2.00           | 12                        | 12                             | 120                        | 58                         | 58                    | 202                     | 101                      | 2.11                   | 12                                | Cohesive   |
| 2         | 745.10            | 743.60               | 5.00                | A-6a       | Cohesive  | 18                       | 1.70           | 18                        | 18                             | 122                        | 60                         | 60                    | 89                      | 246                      | 3.61                   | 18                                | Cohesive   |
| 3         | 743.60            | 741.10               | 7.50                | A-6a       | Cohesive  | 30                       | 1.56           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 373                      | 6.11                   | 30                                | Cohesive   |
| 4         | 741.10            | 738.60               | 10.00               | A-6a       | Cohesive  | 16                       | 1.45           | 16                        | 16                             | 122                        | 60                         | 60                    | 149                     | 530                      | 8.61                   | 16                                | Cohesive   |
| 5         | 738.60            | 736.10               | 12.50               | A-6a       | Cohesive  | 18                       | 1.36           | 18                        | 18                             | 122                        | 60                         | 60                    | 149                     | 679                      | 11.11                  | 18                                | Cohesive   |
| 6         | 736.10            | 733.60               | 15.00               | A-6a       | Cohesive  | 25                       | 1.30           | 25                        | 25                             | 125                        | 63                         | 63                    | 157                     | 831                      | 13.61                  | 25                                | Cohesive   |
| 7         | 733.60            | 731.10               | 17.50               | A-4a P     | Cohesive  | 115                      | 1.23           | 115                       | 32                             | 140                        | 78                         | 78                    | 194                     | 1007                     | 16.11                  | 32                                | Cohesive   |
| 8         | 731.10            | 729.20               | 19.40               | A-4a P     | Cohesive  | 100                      | 1.18           | 100                       | 32                             | 140                        | 78                         | 78                    | 147                     | 1177                     | 18.01                  | 32                                | Cohesive   |
| 9         | 729.20            | 726.20               | 22.40               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 21.01                  |                                   |            |
| 10        | 726.20            | 724.20               | 24.40               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 23.01                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -1.17

Shaft Top Elev. (ft) = 748.13

Boring Top Elev. (ft) = 749.30

Ex. Ground Elev.= 749.30

Post Spacing (ft) = 24

Barrier Height (ft) = 14.00

Transverse Slope = Level

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.0 ft                |          |          |          |          |          |          |          |          |          |
| 742.13'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 0  
N dsgn: 19

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.30            | 746.30               | 3.00                | A-7-6      | Cohesive  | 18                       | 2.00           | 18                        | 18                             | 122                        | 60                         | 60                    | 179                     | 89                       | 1.83                   | 18                                | Cohesive   |
| 2         | 746.30            | 744.30               | 5.00                | A-7-6      | Cohesive  | 15                       | 1.71           | 15                        | 15                             | 122                        | 60                         | 60                    | 119                     | 238                      | 3.83                   | 15                                | Cohesive   |
| 3         | 744.30            | 741.80               | 7.50                | A-4a P     | Cohesive  | 25                       | 1.56           | 25                        | 25                             | 125                        | 63                         | 63                    | 157                     | 376                      | 6.33                   | 25                                | Cohesive   |
| 4         | 741.80            | 739.30               | 10.00               | A-4a P     | Cohesive  | 49                       | 1.44           | 49                        | 32                             | 135                        | 73                         | 73                    | 182                     | 545                      | 8.83                   | 32                                | Cohesive   |
| 5         | 739.30            | 736.80               | 12.50               | A-4a P     | Cohesive  | 28                       | 1.34           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 718                      | 11.33                  | 28                                | Cohesive   |
| 6         | 736.80            | 734.30               | 15.00               | A-6a       | Cohesive  | 28                       | 1.28           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 882                      | 13.83                  | 28                                | Cohesive   |
| 7         | 734.30            | 731.80               | 17.50               | A-6a       | Cohesive  | 38                       | 1.22           | 38                        | 32                             | 130                        | 68                         | 68                    | 169                     | 1049                     | 16.33                  | 32                                | Cohesive   |
| 8         | 731.80            | 729.30               | 20.00               | A-6a       | Cohesive  | 31                       | 1.17           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 1215                     | 18.83                  | 31                                | Cohesive   |
| 9         | 729.30            | 726.80               | 22.50               | A-1-b      | Granular  | 89                       | 1.12           | 100                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1394                     | 21.33                  | 60                                | Granular   |
| 10        | 726.80            | 724.30               | 25.00               | A-1-b      | Granular  | 89                       | 1.08           | 96                        | 60                             | 140                        | 78                         | 78                    | 194                     | 1588                     | 23.83                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -1.27

Shaft Top Elev. (ft) = 750.13

Boring Top Elev. (ft) = 751.40

Ex. Ground Elev.= 751.40

Post Spacing (ft) = 24

Barrier Height (ft) = 14.00

Transverse Slope = 5:1

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 743.63'               |          |          |          |          |          |          |          |          |          |

C CT.: 4

G CT.: 0

N dsgn: 19

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 751.40            | 747.90               | 3.50                | A-6a       | Cohesive  | 18                       | 1.99           | 18                        | 18                             | 122                        | 60                         | 60                    | 209                     | 104                      | 2.23                   | 18                                | Cohesive   |
| 2         | 747.90            | 746.40               | 5.00                | A-6a       | Cohesive  | 16                       | 1.69           | 16                        | 16                             | 122                        | 60                         | 60                    | 89                      | 253                      | 3.73                   | 16                                | Cohesive   |
| 3         | 746.40            | 743.90               | 7.50                | A-6a       | Cohesive  | 15                       | 1.56           | 15                        | 15                             | 122                        | 60                         | 60                    | 149                     | 373                      | 6.23                   | 15                                | Cohesive   |
| 4         | 743.90            | 741.40               | 10.00               | A-6a       | Cohesive  | 28                       | 1.45           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 529                      | 8.73                   | 28                                | Cohesive   |
| 5         | 741.40            | 738.90               | 12.50               | A-6a       | Cohesive  | 74                       | 1.35           | 74                        | 32                             | 140                        | 78                         | 78                    | 194                     | 708                      | 11.23                  | 32                                | Cohesive   |
| 6         | 738.90            | 736.40               | 15.00               | A-4a P     | Cohesive  | 30                       | 1.27           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 887                      | 13.73                  | 30                                | Cohesive   |
| 7         | 736.40            | 733.90               | 17.50               | A-6a       | Cohesive  | 49                       | 1.21           | 49                        | 32                             | 135                        | 73                         | 73                    | 182                     | 1060                     | 16.23                  | 32                                | Cohesive   |
| 8         | 733.90            | 731.40               | 20.00               | A-4a P     | Cohesive  | 43                       | 1.16           | 43                        | 32                             | 130                        | 68                         | 68                    | 169                     | 1235                     | 18.73                  | 32                                | Cohesive   |
| 9         | 731.40            | 728.90               | 22.50               | A-4a P     | Cohesive  | 37                       | 1.12           | 37                        | 32                             | 130                        | 68                         | 68                    | 169                     | 1404                     | 21.23                  | 32                                | Cohesive   |
| 10        | 728.90            | 726.40               | 25.00               | A-4a P     | Cohesive  | 78                       | 1.08           | 78                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1586                     | 23.73                  | 32                                | Cohesive   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -1.77

Shaft Top Elev. (ft) = 748.63

Boring Top Elev. (ft) = 750.40

Ex. Ground Elev.= 750.40

Post Spacing (ft) = 24

Barrier Height (ft) = 14.00

Transverse Slope = 4:1

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 742.13'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 18

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 750.40            | 746.90               | 3.50                | A-6a       | Cohesive  | 10                       | 2.00           | 10                        | 10                             | 120                        | 58                         | 58                    | 202                     | 101                      | 1.73                   | 10                                | Cohesive   |
| 2         | 746.90            | 745.40               | 5.00                | A-6b       | Cohesive  | 18                       | 1.70           | 18                        | 18                             | 122                        | 60                         | 60                    | 89                      | 246                      | 3.23                   | 18                                | Cohesive   |
| 3         | 745.40            | 742.90               | 7.50                | A-4b P     | Cohesive  | 22                       | 1.57           | 22                        | 22                             | 125                        | 63                         | 63                    | 157                     | 369                      | 5.73                   | 22                                | Cohesive   |
| 4         | 742.90            | 740.40               | 10.00               | A-6a       | Cohesive  | 22                       | 1.45           | 22                        | 22                             | 125                        | 63                         | 63                    | 157                     | 526                      | 8.23                   | 22                                | Cohesive   |
| 5         | 740.40            | 737.89               | 12.52               | A-4a P     | Cohesive  | 24                       | 1.36           | 24                        | 24                             | 125                        | 63                         | 63                    | 157                     | 683                      | 10.75                  | 24                                | Cohesive   |
| 6         | 737.89            | 732.90               | 17.50               | A-4a P     | Cohesive  | 84                       | 1.25           | 84                        | 32                             | 140                        | 78                         | 78                    | 387                     | 955                      | 15.73                  | 32                                | Cohesive   |
| 7         | 732.90            | 730.40               | 20.00               | A-4a P     | Cohesive  | 124                      | 1.16           | 124                       | 32                             | 140                        | 78                         | 78                    | 194                     | 1245                     | 18.23                  | 32                                | Cohesive   |
| 8         | 730.40            | 728.60               | 21.80               | A-4a P     | Cohesive  | 100                      | 1.12           | 100                       | 32                             | 140                        | 78                         | 78                    | 140                     | 1412                     | 20.03                  | 32                                | Cohesive   |
| 9         | 728.60            | 725.40               | 25.00               | A-4a P     | Cohesive  | 108                      | 1.08           | 108                       | 32                             | 140                        | 78                         | 78                    | 248                     | 1606                     | 23.23                  | 32                                | Cohesive   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |



Cut (ft) = -0.97

Shaft Top Elev. (ft) = 749.13

Boring Top Elev. (ft) = 750.10

Ex. Ground Elev.= 750.10

Post Spacing (ft) = 24

Barrier Height (ft) = 13.00

Transverse Slope = 4:1

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 742.63'               |          |          |          |          |          |          |          |          |          |

C CT.: 3

G CT.: 0

N dsgn: 20

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 750.10            | 747.10               | 3.00                | A-6a       | Cohesive  | 19                       | 2.00           | 19                        | 19                             | 122                        | 60                         | 60                    | 179                     | 89                       | 2.03                   | 19                                | Cohesive   |
| 2         | 747.10            | 745.10               | 5.00                | A-6a       | Cohesive  | 15                       | 1.71           | 15                        | 15                             | 122                        | 60                         | 60                    | 119                     | 238                      | 4.03                   | 15                                | Cohesive   |
| 3         | 745.10            | 742.60               | 7.50                | A-6a       | Cohesive  | 25                       | 1.56           | 25                        | 25                             | 125                        | 63                         | 63                    | 157                     | 376                      | 6.53                   | 25                                | Cohesive   |
| 4         | 742.60            | 740.10               | 10.00               | A-6a       | Cohesive  | 35                       | 1.44           | 35                        | 32                             | 128                        | 66                         | 66                    | 164                     | 537                      | 9.03                   | 32                                | Cohesive   |
| 5         | 740.10            | 737.60               | 12.50               | A-4a P     | Cohesive  | 27                       | 1.35           | 27                        | 27                             | 125                        | 63                         | 63                    | 157                     | 697                      | 11.53                  | 27                                | Cohesive   |
| 6         | 737.60            | 735.10               | 15.00               | A-4a P     | Cohesive  | 24                       | 1.29           | 24                        | 24                             | 125                        | 63                         | 63                    | 157                     | 853                      | 14.03                  | 24                                | Cohesive   |
| 7         | 735.10            | 732.60               | 17.50               | A-4a P     | Cohesive  | 32                       | 1.23           | 32                        | 32                             | 128                        | 66                         | 66                    | 164                     | 1014                     | 16.53                  | 32                                | Cohesive   |
| 8         | 732.60            | 730.30               | 19.80               | A-4a NP    | Granular  | 100                      | 1.18           | 118                       | 60                             | 140                        | 78                         | 78                    | 178                     | 1185                     | 18.83                  | 60                                | Granular   |
| 9         | 730.30            | 727.60               | 22.50               | A-4a NP    | Granular  | 114                      | 1.13           | 128                       | 60                             | 140                        | 78                         | 78                    | 210                     | 1379                     | 21.53                  | 60                                | Granular   |
| 10        | 727.60            | 725.20               | 24.90               | A-4a NP    | Granular  | 100                      | 1.08           | 108                       | 60                             | 140                        | 78                         | 78                    | 186                     | 1577                     | 23.93                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

### Wall 3 – Drilled Shaft Analysis

**OHIO DEPARTMENT OF TRANSPORTATION****OFFICE OF GEOTECHNICAL ENGINEERING****Noise Wall Design****CUY-480-0.74/VAR  
115182****Noise Wall Along IR-480WB - Clague to W227th Road****Noise Wall 3****ODOT - District 12****Prepared By:** Kyle J. Dohlen, P.E  
**Date prepared:** Tuesday, March 4, 2025**Checked By:**  
**Date Checked:****No. of Borings:** 10

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 300+00.00    | 1        | 13.00                  | 10.00                | 749.24                         |
| 300+10.00    | 2        | 13.00                  | 24.00                | 749.16                         |
| 300+34.00    | 3        | 13.00                  | 24.00                | 749.16                         |
| 300+58.00    | 4        | 13.00                  | 24.00                | 749.16                         |
| 300+82.00    | 5        | 13.00                  | 24.00                | 748.16                         |
| 301+06.00    | 6        | 13.00                  | 24.00                | 748.16                         |
| 301+30.00    | 7        | 13.00                  | 24.00                | 748.16                         |
| 301+54.00    | 8        | 13.00                  | 24.00                | 748.16                         |
| 301+78.00    | 9        | 13.00                  | 12.00                | 748.16                         |
| 301+90.00    | 10       | 13.00                  | 24.00                | 747.16                         |
| 302+14.00    | 11       | 13.00                  | 24.00                | 747.16                         |
| 302+38.00    | 12       | 13.00                  | 24.00                | 747.16                         |
| 302+62.00    | 13       | 13.00                  | 24.00                | 747.16                         |
| 302+86.00    | 14       | 13.00                  | 24.00                | 747.16                         |
| 303+10.00    | 15       | 13.00                  | 24.00                | 747.16                         |
| 303+34.00    | 16       | 13.00                  | 24.00                | 747.16                         |
| 303+58.00    | 17       | 13.00                  | 24.00                | 747.16                         |
| 303+82.00    | 18       | 13.00                  | 8.00                 | 747.16                         |
| 303+90.00    | 19       | 13.00                  | 24.00                | 747.16                         |
| 304+14.00    | 20       | 13.00                  | 24.00                | 747.16                         |
| 304+38.00    | 21       | 13.00                  | 24.00                | 747.16                         |
| 304+62.00    | 22       | 13.00                  | 24.00                | 748.16                         |
| 304+86.00    | 23       | 13.00                  | 24.00                | 748.16                         |
| 305+10.00    | 24       | 13.00                  | 24.00                | 748.16                         |
| 305+34.00    | 25       | 13.00                  | 24.00                | 748.16                         |
| 305+58.00    | 26       | 13.00                  | 23.00                | 748.16                         |
| 305+81.00    | 27       | 13.00                  | 24.00                | 748.16                         |
| 306+05.00    | 28       | 13.00                  | 24.00                | 747.16                         |
| 306+29.00    | 29       | 13.00                  | 24.00                | 747.16                         |
| 306+53.00    | 30       | 13.00                  | 24.00                | 747.16                         |
| 306+77.00    | 31       | 13.00                  | 24.00                | 747.16                         |
| 307+01.00    | 32       | 13.00                  | 24.00                | 747.16                         |
| 307+25.00    | 33       | 13.00                  | 24.00                | 747.16                         |
| 307+49.00    | 34       | 13.00                  | 24.00                | 747.16                         |

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 307+73.00    | 35       | 13.00                  | 24.00                | 748.16                         |
| 307+97.00    | 36       | 13.00                  | 24.00                | 748.16                         |
| 308+21.00    | 37       | 13.00                  | 24.00                | 748.16                         |
| 308+45.00    | 38       | 13.00                  | 24.00                | 749.16                         |
| 308+69.00    | 39       | 13.00                  | 24.00                | 749.16                         |
| 308+93.00    | 40       | 13.00                  | 24.00                | 749.16                         |
| 309+17.00    | 41       | 13.00                  | 24.00                | 749.16                         |
| 309+41.00    | 42       | 14.00                  | 13.00                | 748.16                         |
| 309+54.00    | 43       | 13.00                  | 24.00                | 747.16                         |
| 309+78.00    | 44       | 13.00                  | 10.00                | 747.16                         |
| 309+88.00    | 45       | 13.00                  | 24.00                | 747.16                         |
| 310+12.00    | 46       | 13.00                  | 24.00                | 747.16                         |
| 310+36.00    | 47       | 14.00                  | 13.00                | 748.16                         |
| 310+49.00    | 48       | 13.00                  | 24.00                | 749.16                         |
| 310+73.00    | 49       | 13.00                  | 24.00                | 749.16                         |
| 310+97.00    | 50       | 13.00                  | 19.00                | 749.16                         |
| 311+16.00    | 51       | 13.00                  | 24.00                | 749.16                         |
| 311+40.00    | 52       | 13.00                  | 24.00                | 748.16                         |
| 311+64.00    | 53       | 13.00                  | 24.00                | 748.16                         |
| 311+88.00    | 54       | 13.00                  | 24.00                | 748.16                         |
| 312+12.00    | 55       | 13.00                  | 24.00                | 748.16                         |
| 312+36.00    | 56       | 13.00                  | 24.00                | 748.16                         |
| 312+60.00    | 57       | 13.00                  | 24.00                | 748.16                         |
| 312+84.00    | 58       | 13.00                  | 24.00                | 748.16                         |
| 313+08.00    | 59       | 13.00                  | 24.00                | 748.16                         |
| 313+32.00    | 60       | 13.00                  | 24.00                | 748.16                         |
| 313+56.00    | 61       | 13.00                  | 24.00                | 748.16                         |
| 313+80.00    | 62       | 13.00                  | 24.00                | 748.16                         |
| 314+04.00    | 63       | 13.00                  | 17.00                | 748.16                         |
| 314+21.00    | 64       | 13.00                  | 24.00                | 748.16                         |
| 314+45.00    | 65       | 13.00                  | 24.00                | 748.16                         |
| 314+69.00    | 66       | 13.00                  | 24.00                | 748.16                         |
| 314+93.00    | 67       | 13.00                  | 24.00                | 748.16                         |
| 315+17.00    | 68       | 13.00                  | 24.00                | 748.16                         |

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 315+41.00    | 69       | 13.00                  | 24.00                | 748.16                         |
| 315+65.00    | 70       | 13.00                  | 24.00                | 748.16                         |
| 315+89.00    | 71       | 13.00                  | 24.00                | 748.16                         |
| 316+13.00    | 72       | 13.00                  | 24.00                | 748.16                         |
| 316+37.00    | 73       | 13.00                  | 24.00                | 748.16                         |
| 316+61.00    | 74       | 13.00                  | 24.00                | 748.16                         |
| 316+85.00    | 75       | 13.00                  | 24.00                | 748.16                         |
| 317+09.00    | 76       | 13.00                  | 24.00                | 748.16                         |
| 317+33.00    | 77       | 13.00                  | 24.00                | 748.16                         |
| 317+57.00    | 78       | 13.00                  | 24.00                | 748.16                         |
| 317+81.00    | 79       | 13.00                  | 24.00                | 749.16                         |
| 318+05.00    | 80       | 13.00                  | 24.00                | 749.16                         |
| 318+29.00    | 81       | 13.00                  | 24.00                | 750.16                         |
| 318+53.00    | 82       | 13.00                  | 24.00                | 750.16                         |
| 318+77.00    | 83       | 13.00                  | 24.00                | 751.16                         |
| 319+01.00    | 84       | 13.00                  | 24.00                | 751.16                         |
| 319+25.00    | 85       | 13.00                  | 23.00                | 751.16                         |
| 319+48.00    | 86       | 13.00                  | 11.00                | 752.16                         |
| 319+59.00    | 87       | 13.00                  | 16.00                | 752.16                         |
| 319+75.00    | 88       | 13.00                  | 8.00                 | 752.16                         |
| 319+83.00    | 89       | 13.00                  |                      | 752.24                         |

**Boring Information and  
Design Recommendation**

**CUY-480-0.74/VAR  
PID: 115182**

**Foundation Design**

**Noise Wall ID: Noise Wall 3**

| Boring ID | Boring STA.<br>(ft) | Mid-Boring STA.<br>(ft) | Boring Elev.<br>(ft) | Shaft Elev.<br>(ft) | Ex. Ground Elev.<br>(ft) | Rock Elev.<br>(ft) | Rock UCS<br>(psi) | Post Spacing<br>(ft) | Barrier Height<br>(ft) | Cross Slope |     | From DS STA. | To DS STA. | From Post No. | To Post No. | DS Length<br>(ft) | Bottom of DS Elev.<br>(ft) |
|-----------|---------------------|-------------------------|----------------------|---------------------|--------------------------|--------------------|-------------------|----------------------|------------------------|-------------|-----|--------------|------------|---------------|-------------|-------------------|----------------------------|
| B-010     | 300+49.28           | 301+50.41               | 749.79               | 749.16              | 749.79                   | 725.20             |                   | 24                   | 13.00                  | 3.0         | 3:1 | 300+00.00    | 301+30.00  | 1             | 7           | 6.50              | 742.66                     |
| B-011     | 302+51.53           | 303+51.87               | 748.58               | 747.16              | 748.58                   | 730.50             |                   | 24                   | 13.00                  | 3.0         | 3:1 | 301+54.00    | 303+34.00  | 8             | 16          | 6.50              | 740.66                     |
| B-012     | 304+52.21           | 305+52.49               | 749.40               | 747.16              | 749.40                   |                    |                   | 24                   | 13.00                  | 2.0         | 2:1 | 303+58.00    | 305+34.00  | 17            | 25          | 6.50              | 740.66                     |
| B-013     | 306+52.77           | 307+41.82               | 747.41               | 747.16              | 747.41                   | 725.20             |                   | 24                   | 13.00                  | 5.0         | 5:1 | 305+58.00    | 307+25.00  | 26            | 33          | 6.50              | 740.66                     |
| B-014     | 308+30.88           | 309+42.52               | 749.14               | 748.16              | 749.14                   |                    |                   | 24                   | 14.00                  | 4.0         | 4:1 | 307+49.00    | 309+41.00  | 34            | 42          | 6.50              | 741.66                     |
| B-015     | 310+54.17           | 311+53.63               | 749.73               | 749.16              | 749.73                   |                    |                   | 24                   | 14.00                  | 4.0         | 4:1 | 309+54.00    | 311+40.00  | 43            | 52          | 6.50              | 742.66                     |
| B-016     | 312+53.10           | 313+52.98               | 749.11               | 748.16              | 749.11                   | 728.10             |                   | 24                   | 13.00                  | 4.0         | 4:1 | 311+64.00    | 313+32.00  | 53            | 60          | 8.00              | 740.16                     |
| B-017     | 314+52.86           | 315+52.62               | 748.90               | 748.16              | 748.90                   |                    |                   | 24                   | 13.00                  | 5.0         | 5:1 | 313+56.00    | 315+41.00  | 61            | 69          | 8.00              | 740.16                     |
| B-018     | 316+52.37           | 317+52.05               | 749.33               | 748.16              | 749.33                   | 728.40             |                   | 24                   | 13.00                  | 4.0         | 4:1 | 315+65.00    | 317+33.00  | 70            | 77          | 6.50              | 741.66                     |
| B-019     | 318+51.72           | 318+51.72               | 751.94               | 750.16              | 751.94                   | 729.50             |                   | 24                   | 13.00                  | 2.0         | 2:1 | 317+57.00    | 319+83.00  | 78            | 89          | 6.50              | 743.66                     |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-0.63  
749.16  
749.79  
24  
13.00  
3:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

725.20  
0  
749.79

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 742.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 0  
N dsgn: 17

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.79            | 746.79               | 3.00                | A-6b       | Cohesive  | 10                       | 2.00           | 10                        | 10                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.37                   | 10                                | Cohesive   |
| 2         | 746.79            | 744.79               | 5.00                | A-6b       | Cohesive  | 15                       | 1.72           | 15                        | 15                             | 122                        | 60                         | 60                    | 119                     | 232                      | 4.37                   | 15                                | Cohesive   |
| 3         | 744.79            | 742.29               | 7.50                | A-6a       | Cohesive  | 25                       | 1.57           | 25                        | 25                             | 125                        | 63                         | 63                    | 157                     | 370                      | 6.87                   | 25                                | Cohesive   |
| 4         | 742.29            | 739.79               | 10.00               | A-6a       | Cohesive  | 31                       | 1.45           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 531                      | 9.37                   | 31                                | Cohesive   |
| 5         | 739.79            | 737.29               | 12.50               | A-4a P     | Cohesive  | 18                       | 1.36           | 18                        | 18                             | 122                        | 60                         | 60                    | 149                     | 687                      | 11.87                  | 18                                | Cohesive   |
| 6         | 737.29            | 734.79               | 15.00               | A-4a P     | Cohesive  | 22                       | 1.29           | 22                        | 22                             | 125                        | 63                         | 63                    | 157                     | 840                      | 14.37                  | 22                                | Cohesive   |
| 7         | 734.79            | 732.29               | 17.50               | A-4a P     | Cohesive  | 27                       | 1.23           | 27                        | 27                             | 125                        | 63                         | 63                    | 157                     | 996                      | 16.87                  | 27                                | Cohesive   |
| 8         | 732.29            | 730.29               | 19.50               | A-2-4      | Granular  | 94                       | 1.19           | 112                       | 60                             | 140                        | 78                         | 78                    | 155                     | 1152                     | 18.87                  | 60                                | Granular   |
| 9         | 730.29            | 727.29               | 22.50               | A-2-4      | Granular  | 125                      | 1.13           | 142                       | 60                             | 140                        | 78                         | 78                    | 233                     | 1346                     | 21.87                  | 60                                | Granular   |
| 10        | 727.29            | 725.29               | 24.50               | A-2-4      | Granular  | 108                      | 1.09           | 118                       | 60                             | 140                        | 78                         | 78                    | 155                     | 1540                     | 23.87                  | 60                                | Granular   |
| 11        | 725.29            | 724.79               | 25.00               | Rock       |           | 108                      |                |                           |                                |                            |                            |                       |                         |                          | 24.37                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |



Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-1.42  
747.16  
748.58  
24  
13.00  
3:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

730.50  
0  
748.58

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 740.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 27

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 748.58            | 745.58               | 3.00                | A-6b       | Cohesive  | 21                       | 2.00           | 21                        | 21                             | 125                        | 63                         | 63                    | 188                     | 94                       | 1.58                   | 21                                | Cohesive   |
| 2         | 745.58            | 743.58               | 5.00                | A-6b       | Cohesive  | 24                       | 1.70           | 24                        | 24                             | 125                        | 63                         | 63                    | 125                     | 250                      | 3.58                   | 24                                | Cohesive   |
| 3         | 743.58            | 741.08               | 7.50                | A-6b       | Cohesive  | 31                       | 1.54           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 395                      | 6.08                   | 31                                | Cohesive   |
| 4         | 741.08            | 738.58               | 10.00               | A-4b P     | Cohesive  | 46                       | 1.42           | 46                        | 32                             | 135                        | 73                         | 73                    | 182                     | 568                      | 8.58                   | 32                                | Cohesive   |
| 5         | 738.58            | 736.08               | 12.50               | A-6a       | Cohesive  | 28                       | 1.33           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 741                      | 11.08                  | 28                                | Cohesive   |
| 6         | 736.08            | 733.58               | 15.00               | A-6a       | Cohesive  | 25                       | 1.27           | 25                        | 25                             | 125                        | 63                         | 63                    | 157                     | 901                      | 13.58                  | 25                                | Cohesive   |
| 7         | 733.58            | 731.08               | 17.50               | A-6a       | Cohesive  | 59                       | 1.21           | 59                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1076                     | 16.08                  | 32                                | Cohesive   |
| 8         | 731.08            | 728.58               | 20.00               | Rock       |           | 145                      |                |                           |                                |                            |                            |                       |                         |                          | 18.58                  |                                   |            |
| 9         | 728.58            | 726.58               | 22.00               | Rock       |           | 96                       |                |                           |                                |                            |                            |                       |                         |                          | 20.58                  |                                   |            |
| 10        | 726.58            | 724.58               | 24.00               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 22.58                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -2.24

Shaft Top Elev. (ft) = 747.16

Boring Top Elev. (ft) = 749.40

Post Spacing (ft) = 24

Barrier Height (ft) = 13.00

Transverse Slope = 2:1

Ex. Ground Elev.= 749.40

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 740.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 1  
N dsgn: 29

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.40            | 746.40               | 3.00                | A-2-4      | Granular  | 23                       | 2.00           | 46                        | 46                             | 125                        | 63                         | 63                    | 188                     | 94                       | 0.76                   | 46                                | Granular   |
| 2         | 746.40            | 744.40               | 5.00                | A-6b       | Cohesive  | 16                       | 1.70           | 16                        | 16                             | 122                        | 60                         | 60                    | 119                     | 247                      | 2.76                   | 16                                | Cohesive   |
| 3         | 744.40            | 741.90               | 7.50                | A-6a       | Cohesive  | 29                       | 1.55           | 29                        | 29                             | 128                        | 66                         | 66                    | 164                     | 389                      | 5.26                   | 29                                | Cohesive   |
| 4         | 741.90            | 739.40               | 10.00               | A-6a       | Cohesive  | 26                       | 1.43           | 26                        | 26                             | 125                        | 63                         | 63                    | 157                     | 549                      | 7.76                   | 26                                | Cohesive   |
| 5         | 739.40            | 736.90               | 12.50               | A-6a       | Cohesive  | 19                       | 1.35           | 19                        | 19                             | 122                        | 60                         | 60                    | 149                     | 702                      | 10.26                  | 19                                | Cohesive   |
| 6         | 736.90            | 734.40               | 15.00               | A-6a       | Cohesive  | 42                       | 1.28           | 42                        | 32                             | 130                        | 68                         | 68                    | 169                     | 861                      | 12.76                  | 32                                | Cohesive   |
| 7         | 734.40            | 731.90               | 17.50               | A-4a P     | Cohesive  | 90                       | 1.22           | 90                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1043                     | 15.26                  | 32                                | Cohesive   |
| 8         | 731.90            | 729.40               | 20.00               | A-4a P     | Cohesive  | 83                       | 1.16           | 83                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1237                     | 17.76                  | 32                                | Cohesive   |
| 9         | 729.40            | 726.90               | 22.50               | A-1-b      | Granular  | 155                      | 1.11           | 173                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1431                     | 20.26                  | 60                                | Granular   |
| 10        | 726.90            | 724.40               | 25.00               | A-2-4      | Granular  | 78                       | 1.07           | 84                        | 60                             | 140                        | 78                         | 78                    | 194                     | 1625                     | 22.76                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-0.25  
747.16  
747.41  
24  
13.00  
5:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

725.20  
0  
747.41

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 740.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 0  
N dsgn: 16

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 747.41            | 744.41               | 3.00                | A-6b       | Cohesive  | 10                       | 2.00           | 10                        | 10                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.75                   | 10                                | Cohesive   |
| 2         | 744.41            | 742.41               | 5.00                | A-6b       | Cohesive  | 16                       | 1.72           | 16                        | 16                             | 122                        | 60                         | 60                    | 119                     | 232                      | 4.75                   | 16                                | Cohesive   |
| 3         | 742.41            | 739.91               | 7.50                | A-6b       | Cohesive  | 22                       | 1.57           | 22                        | 22                             | 125                        | 63                         | 63                    | 157                     | 370                      | 7.25                   | 22                                | Cohesive   |
| 4         | 739.91            | 737.41               | 10.00               | A-6a       | Cohesive  | 24                       | 1.45           | 24                        | 24                             | 125                        | 63                         | 63                    | 157                     | 527                      | 9.75                   | 24                                | Cohesive   |
| 5         | 737.41            | 734.91               | 12.50               | A-6a       | Cohesive  | 25                       | 1.36           | 25                        | 25                             | 125                        | 63                         | 63                    | 157                     | 683                      | 12.25                  | 25                                | Cohesive   |
| 6         | 734.91            | 732.41               | 15.00               | A-6a       | Cohesive  | 35                       | 1.29           | 35                        | 32                             | 128                        | 66                         | 66                    | 164                     | 844                      | 14.75                  | 32                                | Cohesive   |
| 7         | 732.41            | 729.91               | 17.50               | A-4a NP    | Granular  | 133                      | 1.23           | 163                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1023                     | 17.25                  | 60                                | Granular   |
| 8         | 729.91            | 727.41               | 20.00               | A-4a NP    | Granular  | 127                      | 1.17           | 148                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1217                     | 19.75                  | 60                                | Granular   |
| 9         | 727.41            | 724.91               | 22.50               | A-4a NP    | Granular  | 111                      | 1.12           | 124                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1411                     | 22.25                  | 60                                | Granular   |
| 10        | 724.91            | 722.91               | 24.50               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 24.25                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -0.98

Shaft Top Elev. (ft) = 748.16

Boring Top Elev. (ft) = 749.14

Ex. Ground Elev.= 749.14

Post Spacing (ft) = 24

Barrier Height (ft) = 14.00

Transverse Slope = 4:1

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 741.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 0  
N dsgn: 16

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N1 <sub>60</sub><br>(bpf) | Adj. N1 <sub>60</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.14            | 746.14               | 3.00                | A-7-6      | Cohesive  | 10                       | 2.00           | 10                        | 10                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.02                   | 10                                | Cohesive   |
| 2         | 746.14            | 744.14               | 5.00                | A-7-6      | Cohesive  | 13                       | 1.72           | 13                        | 13                             | 120                        | 58                         | 58                    | 115                     | 230                      | 4.02                   | 13                                | Cohesive   |
| 3         | 744.14            | 741.64               | 7.50                | A-7-6      | Cohesive  | 24                       | 1.57           | 24                        | 24                             | 125                        | 63                         | 63                    | 157                     | 366                      | 6.52                   | 24                                | Cohesive   |
| 4         | 741.64            | 739.14               | 10.00               | A-6b       | Cohesive  | 16                       | 1.45           | 16                        | 16                             | 122                        | 60                         | 60                    | 149                     | 519                      | 9.02                   | 16                                | Cohesive   |
| 5         | 739.14            | 736.64               | 12.50               | A-4b NP    | Granular  | 15                       | 1.37           | 20                        | 20                             | 125                        | 63                         | 63                    | 157                     | 672                      | 11.52                  | 20                                | Granular   |
| 6         | 736.64            | 734.14               | 15.00               | A-6a       | Cohesive  | 31                       | 1.30           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 832                      | 14.02                  | 31                                | Cohesive   |
| 7         | 734.14            | 731.64               | 17.50               | A-6a       | Cohesive  | 46                       | 1.23           | 46                        | 32                             | 135                        | 73                         | 73                    | 182                     | 1005                     | 16.52                  | 32                                | Cohesive   |
| 8         | 731.64            | 729.14               | 20.00               | A-4a NP    | Granular  | 108                      | 1.17           | 127                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1193                     | 19.02                  | 60                                | Granular   |
| 9         | 729.14            | 726.64               | 22.50               | A-4a NP    | Granular  | 142                      | 1.12           | 160                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1387                     | 21.52                  | 60                                | Granular   |
| 10        | 726.64            | 724.14               | 25.00               | A-4a NP    | Granular  | 156                      | 1.08           | 169                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1581                     | 24.02                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -0.57

Shaft Top Elev. (ft) = 749.16

Boring Top Elev. (ft) = 749.73

Ex. Ground Elev.= 749.73

Post Spacing (ft) = 24

Barrier Height (ft) = 14.00

Transverse Slope = 4:1

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 742.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 0  
N dsgn: 19

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.73            | 746.73               | 3.00                | A-4a P     | Cohesive  | 7                        | 2.00           | 7                         | 7                              | 118                        | 56                         | 56                    | 167                     | 83                       | 2.43                   | 7                                 | Cohesive   |
| 2         | 746.73            | 744.73               | 5.00                | A-6a       | Cohesive  | 22                       | 1.73           | 22                        | 22                             | 125                        | 63                         | 63                    | 125                     | 229                      | 4.43                   | 22                                | Cohesive   |
| 3         | 744.73            | 742.23               | 7.50                | A-6a       | Cohesive  | 27                       | 1.57           | 27                        | 27                             | 125                        | 63                         | 63                    | 157                     | 370                      | 6.93                   | 27                                | Cohesive   |
| 4         | 742.23            | 739.73               | 10.00               | A-4a P     | Cohesive  | 32                       | 1.45           | 32                        | 32                             | 128                        | 66                         | 66                    | 164                     | 531                      | 9.43                   | 32                                | Cohesive   |
| 5         | 739.73            | 737.23               | 12.50               | A-4a P     | Cohesive  | 24                       | 1.36           | 24                        | 24                             | 125                        | 63                         | 63                    | 157                     | 691                      | 11.93                  | 24                                | Cohesive   |
| 6         | 737.23            | 734.73               | 15.00               | A-4a P     | Cohesive  | 38                       | 1.29           | 38                        | 32                             | 130                        | 68                         | 68                    | 169                     | 854                      | 14.43                  | 32                                | Cohesive   |
| 7         | 734.73            | 732.23               | 17.50               | A-4a P     | Cohesive  | 35                       | 1.23           | 35                        | 32                             | 128                        | 66                         | 66                    | 164                     | 1020                     | 16.93                  | 32                                | Cohesive   |
| 8         | 732.23            | 729.73               | 20.00               | A-2-4      | Granular  | 118                      | 1.17           | 138                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1199                     | 19.43                  | 60                                | Granular   |
| 9         | 729.73            | 727.23               | 22.50               | A-2-4      | Granular  | 125                      | 1.12           | 140                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1393                     | 21.93                  | 60                                | Granular   |
| 10        | 727.23            | 724.73               | 25.00               | A-2-4      | Granular  | 72                       | 1.08           | 78                        | 60                             | 140                        | 78                         | 78                    | 194                     | 1587                     | 24.43                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-0.95  
748.16  
749.11  
24  
13.00  
4:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

728.10  
0  
749.11

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                | 8.0 ft   |          |          |          |          |          |          |          |          |
| 741.66'               | 740.16'  |          |          |          |          |          |          |          |          |

C CT.: 3    C CT.: 4

G CT.: 0    G CT.: 0

N dsgn: 14    N dsgn: 17

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.11            | 746.11               | 3.00                | A-6b       | Cohesive  | 12                       | 2.00           | 12                        | 12                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.05                   | 12                                | Cohesive   |
| 2         | 746.11            | 744.11               | 5.00                | A-6b       | Cohesive  | 9                        | 1.73           | 9                         | 9                              | 118                        | 56                         | 56                    | 111                     | 228                      | 4.05                   | 9                                 | Cohesive   |
| 3         | 744.11            | 741.61               | 7.50                | A-6b       | Cohesive  | 21                       | 1.57           | 21                        | 21                             | 125                        | 63                         | 63                    | 157                     | 362                      | 6.55                   | 21                                | Cohesive   |
| 4         | 741.61            | 739.11               | 10.00               | A-4a P     | Cohesive  | 25                       | 1.45           | 25                        | 25                             | 125                        | 63                         | 63                    | 157                     | 519                      | 9.05                   | 25                                | Cohesive   |
| 5         | 739.11            | 736.61               | 12.50               | A-4a P     | Cohesive  | 30                       | 1.36           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 679                      | 11.55                  | 30                                | Cohesive   |
| 6         | 736.61            | 734.11               | 15.00               | A-4a P     | Cohesive  | 30                       | 1.29           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 843                      | 14.05                  | 30                                | Cohesive   |
| 7         | 734.11            | 731.61               | 17.50               | A-4a P     | Cohesive  | 37                       | 1.23           | 37                        | 32                             | 130                        | 68                         | 68                    | 169                     | 1010                     | 16.55                  | 32                                | Cohesive   |
| 8         | 731.61            | 729.11               | 20.00               | A-4a NP    | Granular  | 146                      | 1.18           | 172                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1191                     | 19.05                  | 60                                | Granular   |
| 9         | 729.11            | 726.61               | 22.50               | Rock       |           | 161                      |                |                           |                                |                            |                            |                       |                         |                          | 21.55                  |                                   |            |
| 10        | 726.61            | 724.11               | 25.00               | Rock       |           | 125                      |                |                           |                                |                            |                            |                       |                         |                          | 24.05                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -0.74

Shaft Top Elev. (ft) = 748.16

Boring Top Elev. (ft) = 748.90

Post Spacing (ft) = 24

Barrier Height (ft) = 13.00

Transverse Slope = 5:1

Ex. Ground Elev.= 748.90

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                | 8.0 ft   |          |          |          |          |          |          |          |          |
| 741.66'               | 740.16'  |          |          |          |          |          |          |          |          |

C CT.: 3

G CT.: 0

N dsgn: 15

C CT.: 4

G CT.: 0

N dsgn: 16

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 748.90            | 745.90               | 3.00                | A-7-6      | Cohesive  | 12                       | 2.00           | 12                        | 12                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.26                   | 12                                | Cohesive   |
| 2         | 745.90            | 743.90               | 5.00                | A-4a P     | Cohesive  | 10                       | 1.72           | 10                        | 10                             | 120                        | 58                         | 58                    | 115                     | 230                      | 4.26                   | 10                                | Cohesive   |
| 3         | 743.90            | 741.40               | 7.50                | A-6a       | Cohesive  | 22                       | 1.57           | 22                        | 22                             | 125                        | 63                         | 63                    | 157                     | 366                      | 6.76                   | 22                                | Cohesive   |
| 4         | 741.40            | 738.90               | 10.00               | A-4a P     | Cohesive  | 21                       | 1.45           | 21                        | 21                             | 125                        | 63                         | 63                    | 157                     | 523                      | 9.26                   | 21                                | Cohesive   |
| 5         | 738.90            | 736.40               | 12.50               | A-4a P     | Cohesive  | 31                       | 1.36           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 683                      | 11.76                  | 31                                | Cohesive   |
| 6         | 736.40            | 733.90               | 15.00               | A-4a P     | Cohesive  | 43                       | 1.29           | 43                        | 32                             | 130                        | 68                         | 68                    | 169                     | 850                      | 14.26                  | 32                                | Cohesive   |
| 7         | 733.90            | 731.40               | 17.50               | A-4a P     | Cohesive  | 37                       | 1.23           | 37                        | 32                             | 130                        | 68                         | 68                    | 169                     | 1019                     | 16.76                  | 32                                | Cohesive   |
| 8         | 731.40            | 728.90               | 20.00               | A-4a NP    | Granular  | 100                      | 1.17           | 117                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1200                     | 19.26                  | 60                                | Granular   |
| 9         | 728.90            | 726.40               | 22.50               | A-4a NP    | Granular  | 100                      | 1.12           | 112                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1394                     | 21.76                  | 60                                | Granular   |
| 10        | 726.40            | 723.90               | 25.00               | A-4a NP    | Granular  | 150                      | 1.08           | 162                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1588                     | 24.26                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-1.17  
748.16  
749.33  
24  
13.00  
4:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

728.40  
0  
749.33

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 741.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 17

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.33            | 746.33               | 3.00                | A-6a       | Cohesive  | 10                       | 2.00           | 10                        | 10                             | 120                        | 58                         | 58                    | 173                     | 86                       | 1.83                   | 10                                | Cohesive   |
| 2         | 746.33            | 744.33               | 5.00                | A-6a       | Cohesive  | 13                       | 1.72           | 13                        | 13                             | 120                        | 58                         | 58                    | 115                     | 230                      | 3.83                   | 13                                | Cohesive   |
| 3         | 744.33            | 741.83               | 7.50                | A-6a       | Cohesive  | 13                       | 1.58           | 13                        | 13                             | 120                        | 58                         | 58                    | 144                     | 360                      | 6.33                   | 13                                | Cohesive   |
| 4         | 741.83            | 739.33               | 10.00               | A-4a P     | Cohesive  | 34                       | 1.46           | 34                        | 32                             | 128                        | 66                         | 66                    | 164                     | 514                      | 8.83                   | 32                                | Cohesive   |
| 5         | 739.33            | 736.83               | 12.50               | A-4a P     | Cohesive  | 37                       | 1.36           | 37                        | 32                             | 130                        | 68                         | 68                    | 169                     | 681                      | 11.33                  | 32                                | Cohesive   |
| 6         | 736.83            | 734.33               | 15.00               | A-2-4      | Granular  | 28                       | 1.29           | 36                        | 36                             | 128                        | 66                         | 66                    | 164                     | 847                      | 13.83                  | 36                                | Granular   |
| 7         | 734.33            | 731.83               | 17.50               | A-4a P     | Cohesive  | 35                       | 1.23           | 35                        | 32                             | 128                        | 66                         | 66                    | 164                     | 1011                     | 16.33                  | 32                                | Cohesive   |
| 8         | 731.83            | 729.83               | 19.50               | A-4a NP    | Granular  | 100                      | 1.18           | 118                       | 60                             | 140                        | 78                         | 78                    | 155                     | 1171                     | 18.33                  | 60                                | Granular   |
| 9         | 729.83            | 727.33               | 22.00               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 20.83                  |                                   |            |
| 10        | 727.33            | 725.33               | 24.00               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 22.83                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |



Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-1.78  
750.16  
751.94  
24  
13.00  
2:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

729.50  
0  
751.94

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 743.66'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 21

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 751.94            | 748.94               | 3.00                | A-6a       | Cohesive  | 15                       | 2.00           | 15                        | 15                             | 122                        | 60                         | 60                    | 179                     | 89                       | 1.22                   | 15                                | Cohesive   |
| 2         | 748.94            | 746.94               | 5.00                | A-6a       | Cohesive  | 15                       | 1.71           | 15                        | 15                             | 122                        | 60                         | 60                    | 119                     | 238                      | 3.22                   | 15                                | Cohesive   |
| 3         | 746.94            | 744.44               | 7.50                | A-4a P     | Cohesive  | 20                       | 1.56           | 20                        | 20                             | 125                        | 63                         | 63                    | 157                     | 376                      | 5.72                   | 20                                | Cohesive   |
| 4         | 744.44            | 741.94               | 10.00               | A-4a P     | Cohesive  | 35                       | 1.44           | 35                        | 32                             | 128                        | 66                         | 66                    | 164                     | 537                      | 8.22                   | 32                                | Cohesive   |
| 5         | 741.94            | 739.44               | 12.50               | A-4a P     | Cohesive  | 27                       | 1.35           | 27                        | 27                             | 125                        | 63                         | 63                    | 157                     | 697                      | 10.72                  | 27                                | Cohesive   |
| 6         | 739.44            | 736.94               | 15.00               | A-4a P     | Cohesive  | 26                       | 1.29           | 26                        | 26                             | 125                        | 63                         | 63                    | 157                     | 853                      | 13.22                  | 26                                | Cohesive   |
| 7         | 736.94            | 734.44               | 17.50               | A-4a P     | Cohesive  | 38                       | 1.23           | 38                        | 32                             | 130                        | 68                         | 68                    | 169                     | 1016                     | 15.72                  | 32                                | Cohesive   |
| 8         | 734.44            | 731.94               | 20.00               | A-4a P     | Cohesive  | 41                       | 1.18           | 41                        | 32                             | 130                        | 68                         | 68                    | 169                     | 1185                     | 18.22                  | 32                                | Cohesive   |
| 9         | 731.94            | 729.74               | 22.20               | A-4a P     | Cohesive  | 105                      | 1.13           | 105                       | 32                             | 140                        | 78                         | 78                    | 171                     | 1355                     | 20.42                  | 32                                | Cohesive   |
| 10        | 729.74            | 729.44               | 22.50               | Rock       |           | 105                      |                |                           |                                |                            |                            |                       |                         |                          | 20.72                  |                                   |            |
| 11        | 729.44            | 726.94               | 25.00               | Rock       |           | 179                      |                |                           |                                |                            |                            |                       |                         |                          | 23.22                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

#### Wall 4 – Drilled Shaft Analysis

**OHIO DEPARTMENT OF TRANSPORTATION****OFFICE OF GEOTECHNICAL ENGINEERING****Noise Wall Design****CUY-480-0.74/VAR  
115182****Noise Wall Along IR-480EB - Clague to W227th Road****Noise Wall 4****ODOT - District 12****Prepared By:** Kyle J. Dohlen, P.E.  
**Date prepared:** Friday, February 21, 2025**Checked By:**  
**Date Checked:****No. of Borings:** 5

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 400+00.00    | 1        | 13.00                  | 24.00                | 747.79                         |
| 400+24.00    | 2        | 13.00                  | 24.00                | 747.79                         |
| 400+48.00    | 3        | 13.00                  | 14.00                | 747.79                         |
| 400+62.00    | 4        | 13.00                  | 24.00                | 747.79                         |
| 400+86.00    | 5        | 13.00                  | 24.00                | 747.79                         |
| 401+10.00    | 6        | 13.00                  | 14.00                | 747.79                         |
| 401+24.00    | 7        | 13.00                  | 24.00                | 747.79                         |
| 401+48.00    | 8        | 13.00                  | 24.00                | 747.79                         |
| 401+72.00    | 9        | 13.00                  | 24.00                | 747.79                         |
| 401+96.00    | 10       | 13.00                  | 19.00                | 747.79                         |
| 402+15.00    | 11       | 13.00                  | 24.00                | 747.79                         |
| 402+39.00    | 12       | 13.00                  | 24.00                | 748.79                         |
| 402+63.00    | 13       | 13.00                  | 24.00                | 748.79                         |
| 402+87.00    | 14       | 13.00                  | 24.00                | 748.79                         |
| 403+11.00    | 15       | 14.00                  | 15.00                | 747.79                         |
| 403+26.00    | 16       | 13.00                  | 16.00                | 747.79                         |
| 403+42.00    | 17       | 13.00                  | 24.00                | 747.79                         |
| 403+66.00    | 18       | 13.00                  | 24.00                | 747.79                         |
| 403+90.00    | 19       | 13.00                  | 24.00                | 747.79                         |
| 404+14.00    | 20       | 13.00                  | 24.00                | 747.79                         |
| 404+38.00    | 21       | 13.00                  | 24.00                | 747.79                         |
| 404+62.00    | 22       | 13.00                  | 24.00                | 747.79                         |
| 404+86.00    | 23       | 13.00                  | 24.00                | 747.79                         |
| 405+10.00    | 24       | 13.00                  | 24.00                | 747.79                         |
| 405+34.00    | 25       | 13.00                  | 24.00                | 747.79                         |
| 405+58.00    | 26       | 13.00                  | 24.00                | 747.79                         |
| 405+82.00    | 27       | 13.00                  | 24.00                | 747.79                         |
| 406+06.00    | 28       | 13.00                  | 24.00                | 747.79                         |
| 406+30.00    | 29       | 13.00                  | 24.00                | 747.79                         |
| 406+54.00    | 30       | 13.00                  | 24.00                | 747.79                         |
| 406+78.00    | 31       | 13.00                  | 24.00                | 748.79                         |
| 407+02.00    | 32       | 13.00                  | 24.00                | 748.79                         |
| 407+26.00    | 33       | 13.00                  | 24.00                | 748.79                         |
| 407+50.00    | 34       | 13.00                  | 24.00                | 748.79                         |

| STA.<br>(FT) | Post No. | Barrier Height<br>(FT) | Post Spacing<br>(FT) | Top of Shaft Elev.<br>(MSL FT) |
|--------------|----------|------------------------|----------------------|--------------------------------|
| 407+74.00    | 35       | 13.00                  | 24.00                | 748.79                         |
| 407+98.00    | 36       | 13.00                  | 24.00                | 748.79                         |
| 408+22.00    | 37       | 13.00                  | 10.00                | 748.79                         |
| 408+32.00    | 38       | 13.00                  |                      | 748.79                         |

**Boring Information and  
Design Recommendation**

**CUY-480-0.74/VAR  
PID: 115182**

**Foundation Design**

**Noise Wall ID: Noise Wall 4**

| Boring ID  | Boring STA.<br>(ft) | Mid-Boring STA.<br>(ft) | Boring Elev.<br>(ft) | Shaft Elev.<br>(ft) | Ex. Ground Elev.<br>(ft) | Rock Elev.<br>(ft) | Rock UCS<br>(psi) | Post Spacing<br>(ft) | Barrier Height<br>(ft) | Cross Slope |     | From DS STA. | To DS STA. | From Post No. | To Post No. | DS Length<br>(ft) | Bottom of DS Elev.<br>(ft) |
|------------|---------------------|-------------------------|----------------------|---------------------|--------------------------|--------------------|-------------------|----------------------|------------------------|-------------|-----|--------------|------------|---------------|-------------|-------------------|----------------------------|
| B-020-0-23 | 400+00.00           | 400+92.50               | 748.40               | 747.79              | 748.40                   |                    |                   | 24                   | 13.00                  | 4.0         | 4:1 | 400+00.00    | 400+86.00  | 1             | 5           | 8.00              | 739.79                     |
| B-021-0-23 | 401+85.00           | 402+94.50               | 748.40               | 747.79              | 748.40                   |                    |                   | 24                   | 13.00                  | 3.0         | 3:1 | 401+10.00    | 402+87.00  | 6             | 14          | 6.50              | 741.29                     |
| B-022-0-23 | 404+04.00           | 405+03.50               | 748.40               | 747.79              | 748.40                   | 726.70             | 61                | 24                   | 14.00                  | 4.0         | 4:1 | 403+11.00    | 404+86.00  | 15            | 23          | 6.50              | 741.29                     |
| B-023-0-23 | 406+03.00           | 407+05.00               | 749.40               | 747.79              | 749.40                   | 725.90             | 78                | 24                   | 13.00                  | 5.0         | 5:1 | 405+10.00    | 407+02.00  | 24            | 32          | 8.00              | 739.79                     |
| B-024-0-23 | 408+07.00           | 408+07.00               | 750.30               | 748.79              | 750.30                   | 726.80             | 85                | 24                   | 13.00                  | 4.0         | 4:1 | 407+26.00    | 408+32.00  | 33            | 38          | 6.50              | 742.29                     |

Cut (ft) = -0.61

Shaft Top Elev. (ft) = 747.79

Boring Top Elev. (ft) = 748.40

Post Spacing (ft) = 24

Barrier Height (ft) = 13.00

Transverse Slope = 4:1

Ex. Ground Elev.= 748.40

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                | 8.0 ft   |          |          |          |          |          |          |          |          |
| 741.29'               | 739.79'  |          |          |          |          |          |          |          |          |

C CT.: 3C CT.: 4

G CT.: 0G CT.: 0

N dsgn: 15N dsgn: 16

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 748.40            | 745.40               | 3.00                | A-7-6      | Cohesive  | 10                       | 2.00           | 10                        | 10                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.39                   | 10                                | Cohesive   |
| 2         | 745.40            | 743.40               | 5.00                | A-7-6      | Cohesive  | 13                       | 1.72           | 13                        | 13                             | 120                        | 58                         | 58                    | 115                     | 230                      | 4.39                   | 13                                | Cohesive   |
| 3         | 743.40            | 740.90               | 7.50                | A-7-6      | Cohesive  | 21                       | 1.57           | 21                        | 21                             | 125                        | 63                         | 63                    | 157                     | 366                      | 6.89                   | 21                                | Cohesive   |
| 4         | 740.90            | 738.40               | 10.00               | A-6a       | Cohesive  | 21                       | 1.45           | 21                        | 21                             | 125                        | 63                         | 63                    | 157                     | 523                      | 9.39                   | 21                                | Cohesive   |
| 5         | 738.40            | 735.90               | 12.50               | A-4a P     | Cohesive  | 30                       | 1.36           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 683                      | 11.89                  | 30                                | Cohesive   |
| 6         | 735.90            | 733.40               | 15.00               | A-4a P     | Cohesive  | 28                       | 1.29           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 847                      | 14.39                  | 28                                | Cohesive   |
| 7         | 733.40            | 730.90               | 17.50               | A-4a NP    | Granular  | 142                      | 1.23           | 174                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1026                     | 16.89                  | 60                                | Granular   |
| 8         | 730.90            | 728.40               | 20.00               | A-4b P     | Cohesive  | 77                       | 1.17           | 77                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1220                     | 19.39                  | 32                                | Cohesive   |
| 9         | 728.40            | 725.90               | 22.50               | A-4b P     | Cohesive  | 94                       | 1.12           | 94                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1414                     | 21.89                  | 32                                | Cohesive   |
| 10        | 725.90            | 723.40               | 25.00               | A-2-4      | Granular  | 83                       | 1.07           | 89                        | 60                             | 140                        | 78                         | 78                    | 194                     | 1608                     | 24.39                  | 60                                | Granular   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) = -0.61

Shaft Top Elev. (ft) = 747.79

Boring Top Elev. (ft) = 748.40

Post Spacing (ft) = 24

Barrier Height (ft) = 13.00

Transverse Slope = 3:1

Ex. Ground Elev.= 748.40

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 741.29'               |          |          |          |          |          |          |          |          |          |

C CT.: 3

G CT.: 0

N dsgn: 19

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 748.40            | 745.40               | 3.00                | A-6b       | Cohesive  | 12                       | 2.00           | 12                        | 12                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.39                   | 12                                | Cohesive   |
| 2         | 745.40            | 743.40               | 5.00                | A-6b       | Cohesive  | 12                       | 1.72           | 12                        | 12                             | 120                        | 58                         | 58                    | 115                     | 230                      | 4.39                   | 12                                | Cohesive   |
| 3         | 743.40            | 740.90               | 7.50                | A-6b       | Cohesive  | 32                       | 1.57           | 32                        | 32                             | 128                        | 66                         | 66                    | 164                     | 370                      | 6.89                   | 32                                | Cohesive   |
| 4         | 740.90            | 738.40               | 10.00               | A-6a       | Cohesive  | 28                       | 1.44           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 534                      | 9.39                   | 28                                | Cohesive   |
| 5         | 738.40            | 735.90               | 12.50               | A-6a       | Cohesive  | 28                       | 1.35           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 698                      | 11.89                  | 28                                | Cohesive   |
| 6         | 735.90            | 733.40               | 15.00               | A-6a       | Cohesive  | 32                       | 1.28           | 32                        | 32                             | 128                        | 66                         | 66                    | 164                     | 862                      | 14.39                  | 32                                | Cohesive   |
| 7         | 733.40            | 730.90               | 17.50               | A-4a P     | Cohesive  | 102                      | 1.22           | 102                       | 32                             | 140                        | 78                         | 78                    | 194                     | 1041                     | 16.89                  | 32                                | Cohesive   |
| 8         | 730.90            | 728.40               | 20.00               | A-2-4      | Granular  | 90                       | 1.16           | 105                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1235                     | 19.39                  | 60                                | Granular   |
| 9         | 728.40            | 725.90               | 22.50               | A-2-4      | Granular  | 103                      | 1.11           | 115                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1429                     | 21.89                  | 60                                | Granular   |
| 10        | 725.90            | 723.40               | 25.00               | A-4a P     | Cohesive  | 78                       | 1.07           | 78                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1623                     | 24.39                  | 32                                | Cohesive   |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |



Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-0.61  
747.79  
748.40  
24  
14.00  
4:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

726.70  
61  
748.40

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 741.29'               |          |          |          |          |          |          |          |          |          |

C CT.: 3  
G CT.: 0  
N dsgn: 19

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 748.40            | 745.40               | 3.00                | A-7-6      | Cohesive  | 13                       | 2.00           | 13                        | 13                             | 120                        | 58                         | 58                    | 173                     | 86                       | 2.39                   | 13                                | Cohesive   |
| 2         | 745.40            | 743.40               | 5.00                | A-7-6      | Cohesive  | 13                       | 1.72           | 13                        | 13                             | 120                        | 58                         | 58                    | 115                     | 230                      | 4.39                   | 13                                | Cohesive   |
| 3         | 743.40            | 740.90               | 7.50                | A-7-6      | Cohesive  | 30                       | 1.57           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 370                      | 6.89                   | 30                                | Cohesive   |
| 4         | 740.90            | 738.40               | 10.00               | A-6a       | Cohesive  | 28                       | 1.44           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 534                      | 9.39                   | 28                                | Cohesive   |
| 5         | 738.40            | 735.90               | 12.50               | A-6a       | Cohesive  | 31                       | 1.35           | 31                        | 31                             | 128                        | 66                         | 66                    | 164                     | 698                      | 11.89                  | 31                                | Cohesive   |
| 6         | 735.90            | 733.40               | 15.00               | A-6a       | Cohesive  | 27                       | 1.28           | 27                        | 27                             | 125                        | 63                         | 63                    | 157                     | 858                      | 14.39                  | 27                                | Cohesive   |
| 7         | 733.40            | 730.90               | 17.50               | A-4a P     | Cohesive  | 72                       | 1.22           | 72                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1034                     | 16.89                  | 32                                | Cohesive   |
| 8         | 730.90            | 728.40               | 20.00               | A-1-b      | Granular  | 106                      | 1.17           | 123                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1228                     | 19.39                  | 60                                | Granular   |
| 9         | 728.40            | 726.70               | 21.70               | A-1-b      | Granular  | 127                      | 1.12           | 143                       | 60                             | 140                        | 78                         | 78                    | 132                     | 1390                     | 21.09                  | 60                                | Granular   |
| 10        | 726.70            | 725.90               | 22.50               | Rock       |           | 127                      |                |                           |                                |                            |                            |                       |                         |                          | 21.89                  |                                   |            |
| 11        | 725.90            | 724.40               | 24.00               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 23.39                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-1.61  
747.79  
749.40  
24  
13.00  
5:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

725.90  
78  
749.40

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                | 8.0 ft   |          |          |          |          |          |          |          |          |
| 741.29'               | 739.79'  |          |          |          |          |          |          |          |          |

C CT.: 4C CT.: 4

G CT.: 0G CT.: 0

N dsgn: 14N dsgn: 14

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N <sub>160</sub><br>(bpf) | Adj. N <sub>160</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 749.40            | 746.40               | 3.00                | A-7-6      | Cohesive  | 9                        | 2.00           | 9                         | 9                              | 118                        | 56                         | 56                    | 167                     | 83                       | 1.39                   | 9                                 | Cohesive   |
| 2         | 746.40            | 744.40               | 5.00                | A-7-6      | Cohesive  | 10                       | 1.73           | 10                        | 10                             | 120                        | 58                         | 58                    | 115                     | 224                      | 3.39                   | 10                                | Cohesive   |
| 3         | 744.40            | 741.90               | 7.50                | A-7-6      | Cohesive  | 24                       | 1.58           | 24                        | 24                             | 125                        | 63                         | 63                    | 157                     | 360                      | 5.89                   | 24                                | Cohesive   |
| 4         | 741.90            | 739.40               | 10.00               | A-6a       | Cohesive  | 13                       | 1.46           | 13                        | 13                             | 120                        | 58                         | 58                    | 144                     | 511                      | 8.39                   | 13                                | Cohesive   |
| 5         | 739.40            | 736.90               | 12.50               | A-4a P     | Cohesive  | 30                       | 1.37           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 665                      | 10.89                  | 30                                | Cohesive   |
| 6         | 736.90            | 734.40               | 15.00               | A-4a P     | Cohesive  | 43                       | 1.30           | 43                        | 32                             | 130                        | 68                         | 68                    | 169                     | 831                      | 13.39                  | 32                                | Cohesive   |
| 7         | 734.40            | 731.90               | 17.50               | A-4a P     | Cohesive  | 71                       | 1.23           | 71                        | 32                             | 140                        | 78                         | 78                    | 194                     | 1013                     | 15.89                  | 32                                | Cohesive   |
| 8         | 731.90            | 729.40               | 20.00               | A-4a NP    | Granular  | 162                      | 1.17           | 190                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1207                     | 18.39                  | 60                                | Granular   |
| 9         | 729.40            | 727.20               | 22.20               | A-4a NP    | Granular  | 100                      | 1.12           | 112                       | 60                             | 140                        | 78                         | 78                    | 171                     | 1389                     | 20.59                  | 60                                | Granular   |
| 10        | 727.20            | 724.90               | 24.50               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 22.89                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |

Cut (ft) =  
Shaft Top Elev. (ft) =  
Boring Top Elev. (ft) =  
Post Spacing (ft) =  
Barrier Height (ft) =  
Transverse Slope =

-1.51  
748.79  
750.30  
24  
13.00  
4:1

Rock Elev. (ft)=  
Rock UCS (psi)=  
Ex. Ground Elev.=

726.80  
85  
750.30

| Foundation Depth (ft) |          |          |          |          |          |          |          |          |          |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Trial 01              | Trial 02 | Trial 03 | Trial 04 | Trial 05 | Trial 06 | Trial 07 | Trial 08 | Trial 09 | Trial 10 |
| 6.5 ft                |          |          |          |          |          |          |          |          |          |
| 742.29'               |          |          |          |          |          |          |          |          |          |

C CT.: 4  
G CT.: 0  
N dsgn: 19

| Layer No. | Top Elev.<br>(ft) | Bottom Elev.<br>(ft) | Layer Depth<br>(ft) | Soil Class | Soil Type | N <sub>60</sub><br>(bpf) | C <sub>N</sub> | N1 <sub>60</sub><br>(bpf) | Adj. N1 <sub>60</sub><br>(bpf) | γ <sub>tot.</sub><br>(pcf) | γ <sub>sat.</sub><br>(pcf) | γ'<br>(eff.)<br>(pcf) | σ <sub>v</sub><br>(psf) | σ' <sub>v</sub><br>(psf) | Depth Cut Fill<br>(ft) | N <sub>60</sub> Cut Fill<br>(bpf) | Soil Class |
|-----------|-------------------|----------------------|---------------------|------------|-----------|--------------------------|----------------|---------------------------|--------------------------------|----------------------------|----------------------------|-----------------------|-------------------------|--------------------------|------------------------|-----------------------------------|------------|
| 1         | 750.30            | 747.30               | 3.00                | A-6b       | Cohesive  | 10                       | 2.00           | 10                        | 10                             | 120                        | 58                         | 58                    | 173                     | 86                       | 1.49                   | 10                                | Cohesive   |
| 2         | 747.30            | 745.30               | 5.00                | A-6b       | Cohesive  | 9                        | 1.73           | 9                         | 9                              | 118                        | 56                         | 56                    | 111                     | 228                      | 3.49                   | 9                                 | Cohesive   |
| 3         | 745.30            | 742.80               | 7.50                | A-4a P     | Cohesive  | 30                       | 1.57           | 30                        | 30                             | 128                        | 66                         | 66                    | 164                     | 366                      | 5.99                   | 30                                | Cohesive   |
| 4         | 742.80            | 740.30               | 10.00               | A-4a P     | Cohesive  | 28                       | 1.45           | 28                        | 28                             | 128                        | 66                         | 66                    | 164                     | 530                      | 8.49                   | 28                                | Cohesive   |
| 5         | 740.30            | 737.80               | 12.50               | A-4a P     | Cohesive  | 38                       | 1.35           | 38                        | 32                             | 130                        | 68                         | 68                    | 169                     | 697                      | 10.99                  | 32                                | Cohesive   |
| 6         | 737.80            | 735.30               | 15.00               | A-4a P     | Cohesive  | 34                       | 1.28           | 34                        | 32                             | 128                        | 66                         | 66                    | 164                     | 863                      | 13.49                  | 32                                | Cohesive   |
| 7         | 735.30            | 732.80               | 17.50               | A-4a P     | Cohesive  | 46                       | 1.22           | 46                        | 32                             | 135                        | 73                         | 73                    | 182                     | 1036                     | 15.99                  | 32                                | Cohesive   |
| 8         | 732.80            | 730.30               | 20.00               | A-4a NP    | Granular  | 96                       | 1.17           | 112                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1224                     | 18.49                  | 60                                | Granular   |
| 9         | 730.30            | 727.80               | 22.50               | A-4a NP    | Granular  | 149                      | 1.12           | 166                       | 60                             | 140                        | 78                         | 78                    | 194                     | 1418                     | 20.99                  | 60                                | Granular   |
| 10        | 727.80            | 725.80               | 24.50               | Rock       |           | 100                      |                |                           |                                |                            |                            |                       |                         |                          | 22.99                  |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |
|           |                   |                      |                     |            |           |                          |                |                           |                                |                            |                            |                       |                         |                          |                        |                                   |            |