

PROJECT DESCRIPTION

THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) HAS PROPOSED CONSTRUCTION OF A NOISE BARRIER ALONG INTERSTATE 75 IN BOWLING GREEN, WOOD COUNTY, OHIO. THE NOISE BARRIER IS TO BE LOCATED ON THE WEST SIDE OF I-75 FROM APPROXIMATE STATION 741+00 TO 769+00 NEAR STATE ROUTE 64/105 (E WOOSTER STREET).

HISTORIC RECORDS

HISTORICAL RECORDS WERE NOT AVAILABLE FOR THE PROJECT BEING CONSIDERED.

GEOLOGY

THE PROJECT SITE IS LOCATED IN THE WOODVILLE LAKE-PLAIN REEFS. THE WOODVILLE LAKE PLAIN REEFS REGION IS DESCRIBED AS THIN TO ABSENT WISCONSINAN AGE WAVE PLAINED CLAY TILL, LACUSTRINE DEPOSITS, AND SAND OVER SILURIAN AGE REEFAL LOCKPORT DOLOMITE.

SUBSURFACE EXPLORATION

FIFTEEN BORINGS WERE ADVANCED BETWEEN AUGUST 19TH AND AUGUST 23RD, 2013. BORINGS WERE ADVANCED AT APPROXIMATELY THE PROPOSED ENDS OF THE WALL, AND ALONG THE PROPOSED WALL ALIGNMENT USING A SPACING OF APPROXIMATELY 200 FEET. BORINGS WERE LOCATED BETWEEN AN EXISTING DITCH AND THE RIGHT OF WAY FENCE LINE.

THE BORINGS WERE ADVANCED USING 3.25-INCH INSIDE DIAMETER HOLLOW-STEM AUGERS. STANDARD PENETRATION TEST (SPT) SAMPLES WERE OBTAINED USING A CME 55 LC TRACK RIG WITH A CALIBRATED AUTOMATIC HAMMER. SPT SAMPLES WERE OBTAINED AT 2.5-FOOT INTERVALS TO THE TOP OF BEDROCK. BEDROCK WAS ENCOUNTERED AT DEPTHS RANGING FROM 5 TO 14.5 FEET BELOW EXISTING GROUND SURFACE AT THOSE DEPTHS, NO SIZED ROCK CORING EQUIPMENT WAS USED TO CORE AT LEAST 5 FEET INTO BEDROCK. AT THE CONCLUSION OF DRILLING OPERATIONS, THE BOREHOLES WERE GROUTED IN ACCORDANCE WITH THE ODOT SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS.

EXPLORATION FINDINGS

THE SOILS ENCOUNTERED IN THE BORINGS WERE PRIMARILY COHESIVE, CLASSIFYING AS A-6b (26%), A-6a (18%), A-4a (21%), A-4b(4%), A-7-6 (19%), A-2-6 (7%) AND A-2-4 (5%). NATURAL IN-SITU MOISTURE CONTENTS FOR THE FINE-GRAINED SOILS VARIED FROM 6 TO 22 PERCENT, WITH MOST RANGING FROM 11 TO 19 PERCENT. SPT N VALUES VARIED FROM 5 TO MORE THAN 50 BLOWS PER FOOT, WITH MOST VALUES IN THE VERY STIFF TO HARD RANGE.

BEDROCK WAS ENCOUNTERED AT DEPTHS RANGING FROM 5 TO 14.5 FEET BELOW THE EXISTING GROUND SURFACE AND AT LEAST 5 FEET OF BEDROCK SAMPLE WAS OBTAINED FROM EACH BORING. BEDROCK UNCONFINED COMPRESSIVE STRENGTH TEST RESULTS RANGED FROM 7,100 PSI TO 24,350 PSI.

GROUNDWATER WAS ENCOUNTERED IN THREE OF THE BORINGS (B-009-0-13 TO B-011-0-13) AT DEPTHS RANGING FROM 10 TO 11 FEET BELOW THE EXISTING GROUND SURFACE.

SPECIFICATIONS

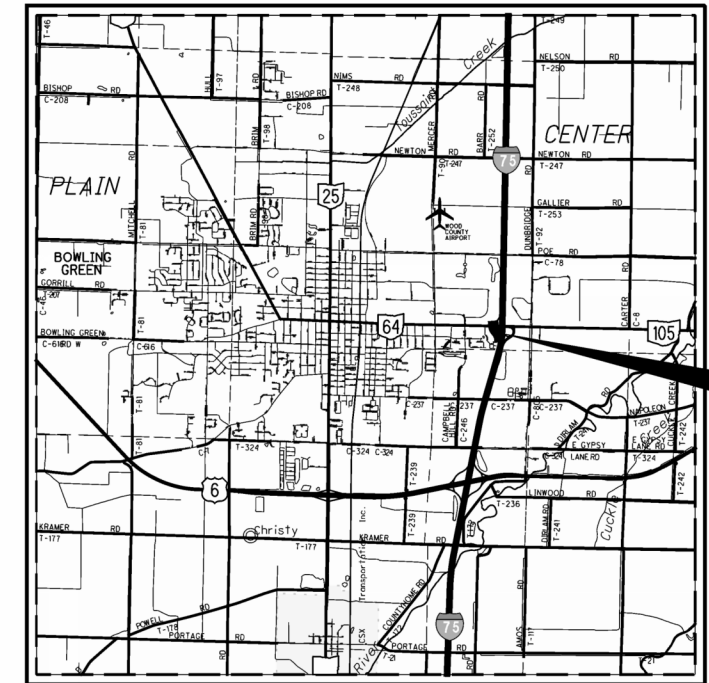
THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JULY 2011 AND ODOT BRIDGE DESIGN MANUAL, DATED JULY 2007.

AVAILABLE INFORMATION

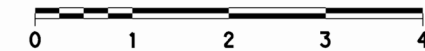
ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE AT 317 E. POE ROAD, BOWLING GREEN, OH 43002, OR IN THE OFFICE OF GEOTECHNICAL ENGINEERING OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET, COLUMBUS, OH 43223.

LEGEND

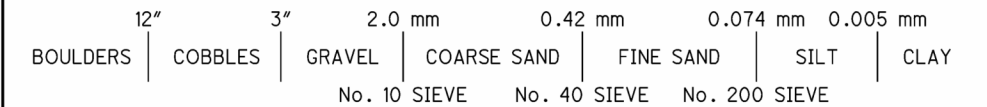
| DESCRIPTION | ODOT CLASS | CLASSIFIED MECH./VISUAL | |
|---|--|-------------------------|----|
| GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT | A-2-4 | 2 | 1 |
| GRAVEL AND/OR STONE FRAGMENTS, WITH SAND, SILT AND CLAY | A-2-6 | 0 | 4 |
| SANDY SILT | A-4a | 10 | 2 |
| SILT | A-4b | 1 | 1 |
| SILT AND CLAY | A-6a | 6 | 4 |
| SILTY CLAY | A-6b | 11 | 4 |
| CLAY | A-7-6 | 6 | 5 |
| | TOTAL | 36 | 21 |
| BOULDERY ZONE | VISUAL | | |
| DOLOMITE | VISUAL | | |
| WEATHERED DOLOMITE | VISUAL | | |
| TOPSOIL | VISUAL | | |
| EXPLORATION LOCATION - PLAN VIEW | | | |
| DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY. | | | |
| N_{60} | INDICATES CORRECTED STANDARD PENETRATION RESISTANCE FOR 60% EFFICIENCY. | | |
| WC | INDICATES WATER CONTENT IN PERCENT. | | |
| NP | INDICATES A NON-PLASTIC SAMPLE. | | |
| SS | INDICATES A SPLIT SPOON SAMPLE, STANDARD PENETRATION TEST. | | |
| TR | INDICATES TOP OF ROCK. | | |
| UCR | UNCONFINED COMPRESSIVE STRENGTH OF ROCK SPECIMEN (TSF). | | |
| ⊕ | INDICATES A NON-PLASTIC SOIL WITH WATER CONTENT EQUAL OR GREATER TO 25 PERCENT. | | |
| ● | INDICATES A PLASTIC SOIL WITH WATER CONTENT GREATER THAN LIQUID LIMIT MINUS THREE. | | |
| W— | INDICATES FREE WATER. | | |



LOCATION MAP
SCALE IN MILES



PARTICLE SIZE DEFINITIONS



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DESIGN AGENCY
STANTEC CONSULTING SERVICES INC.
COLUMBUS, OHIO

PID NO.
95435

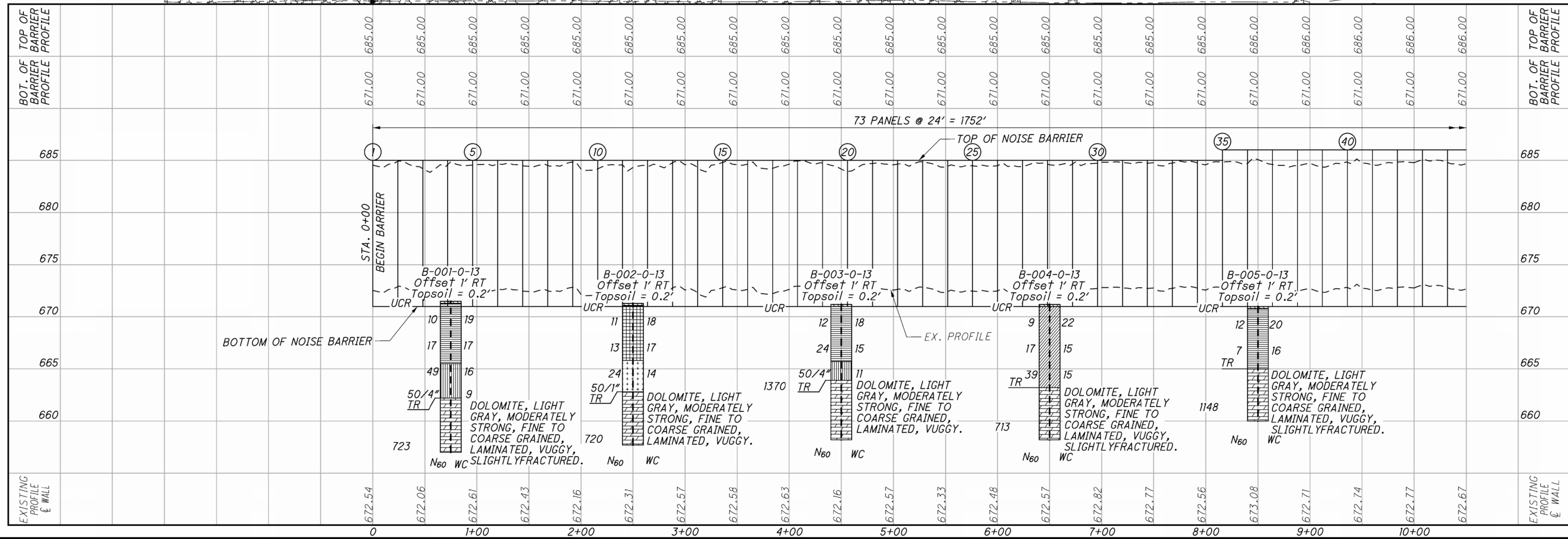
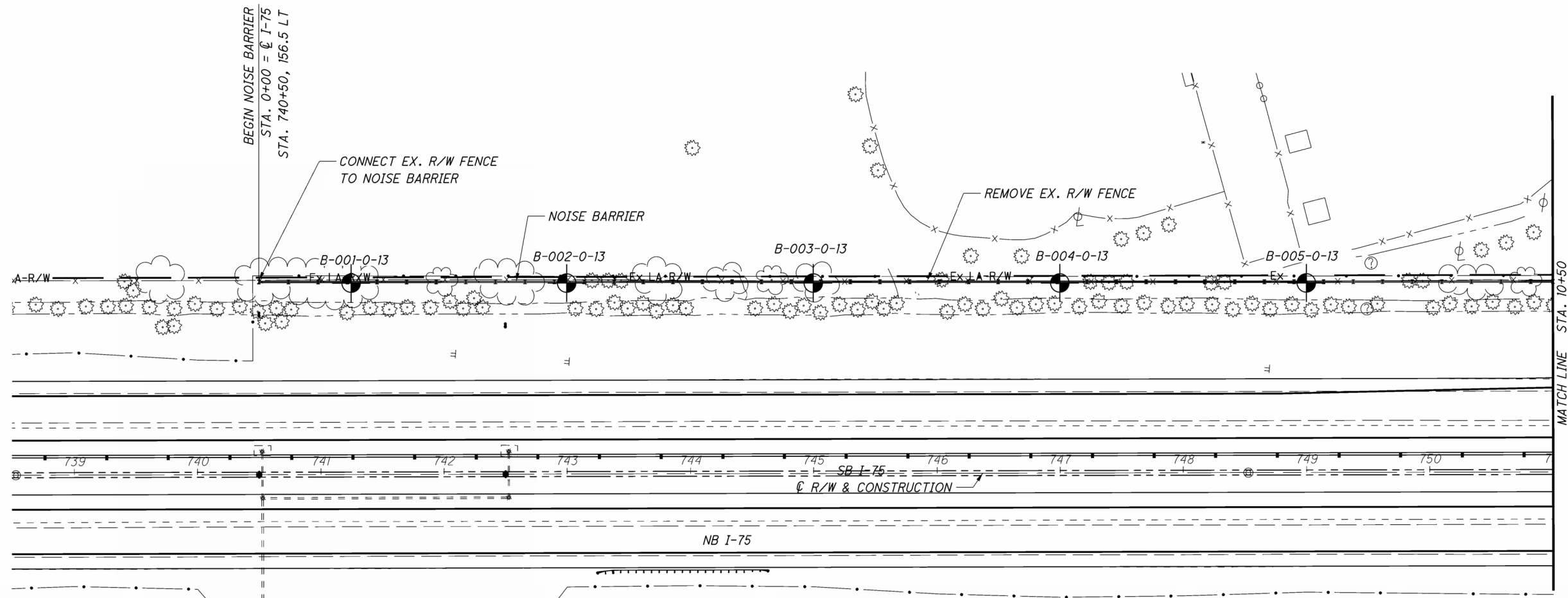
**STRUCTURE FOUNDATION EXPLORATION
NOISE BARRIER**

WOO-75-11.18

1 / 14

RECON. - CN 6/18/13
DRILLING - STOCK DRILLING, CN 8/19-23/13
DRAWN - LA, MSJ 11/13
REVIEWED - RLW 11/20/13

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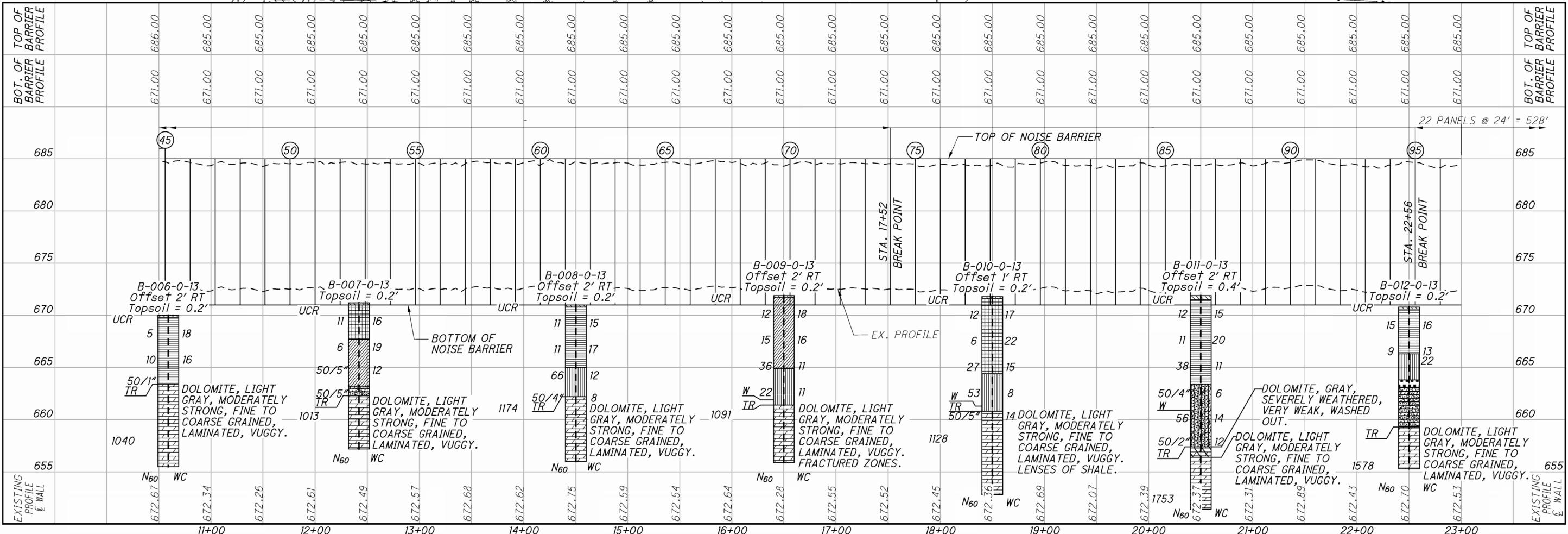
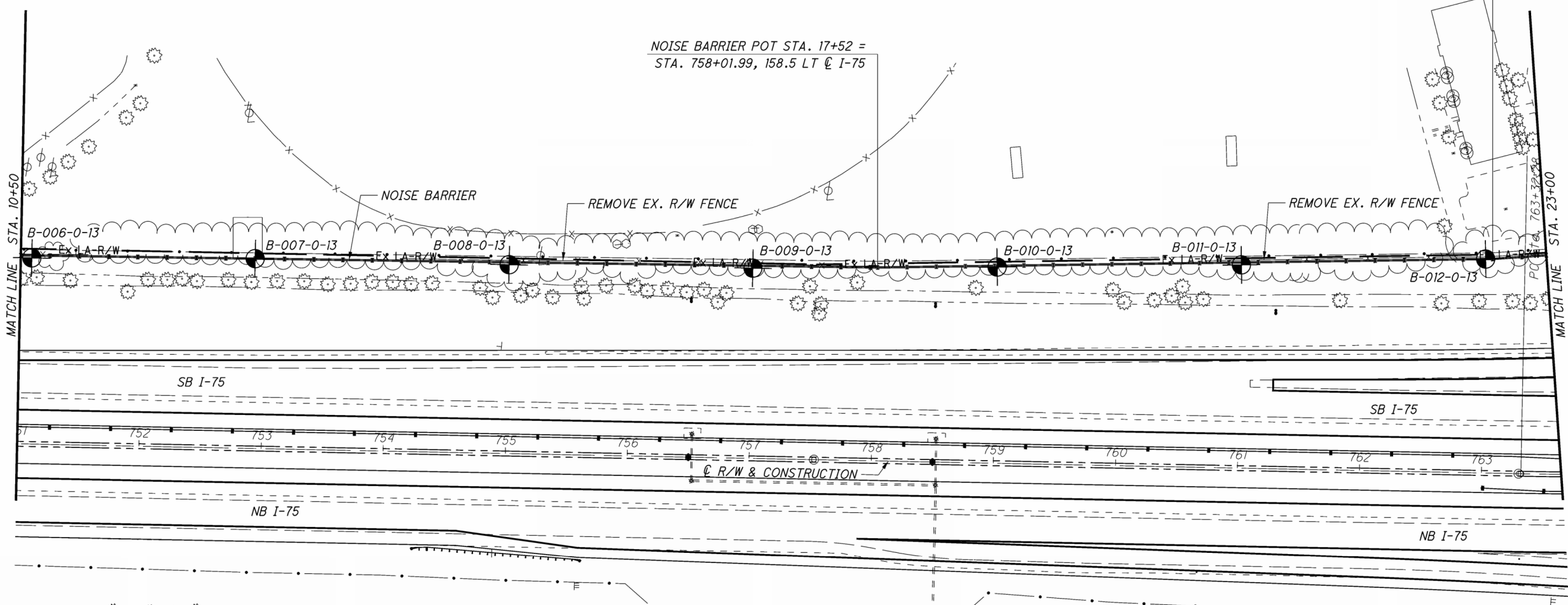
PLAN AND PROFILE - NOISEWALL
STA. 0+00 TO STA. 10+50

W00-75-10.61

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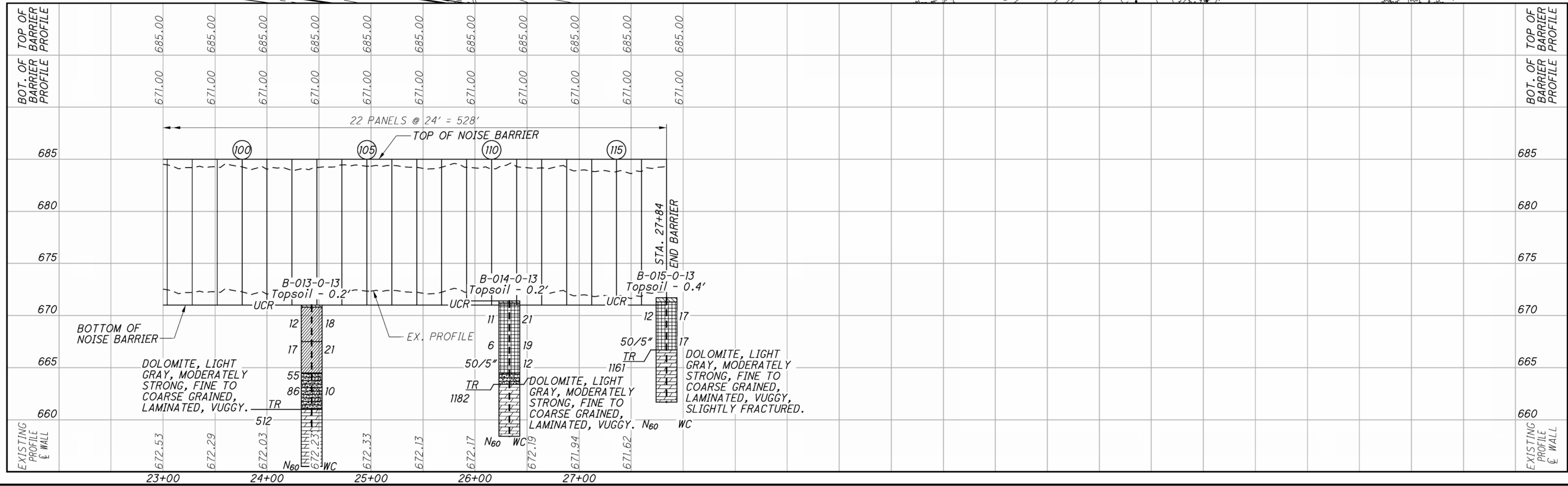
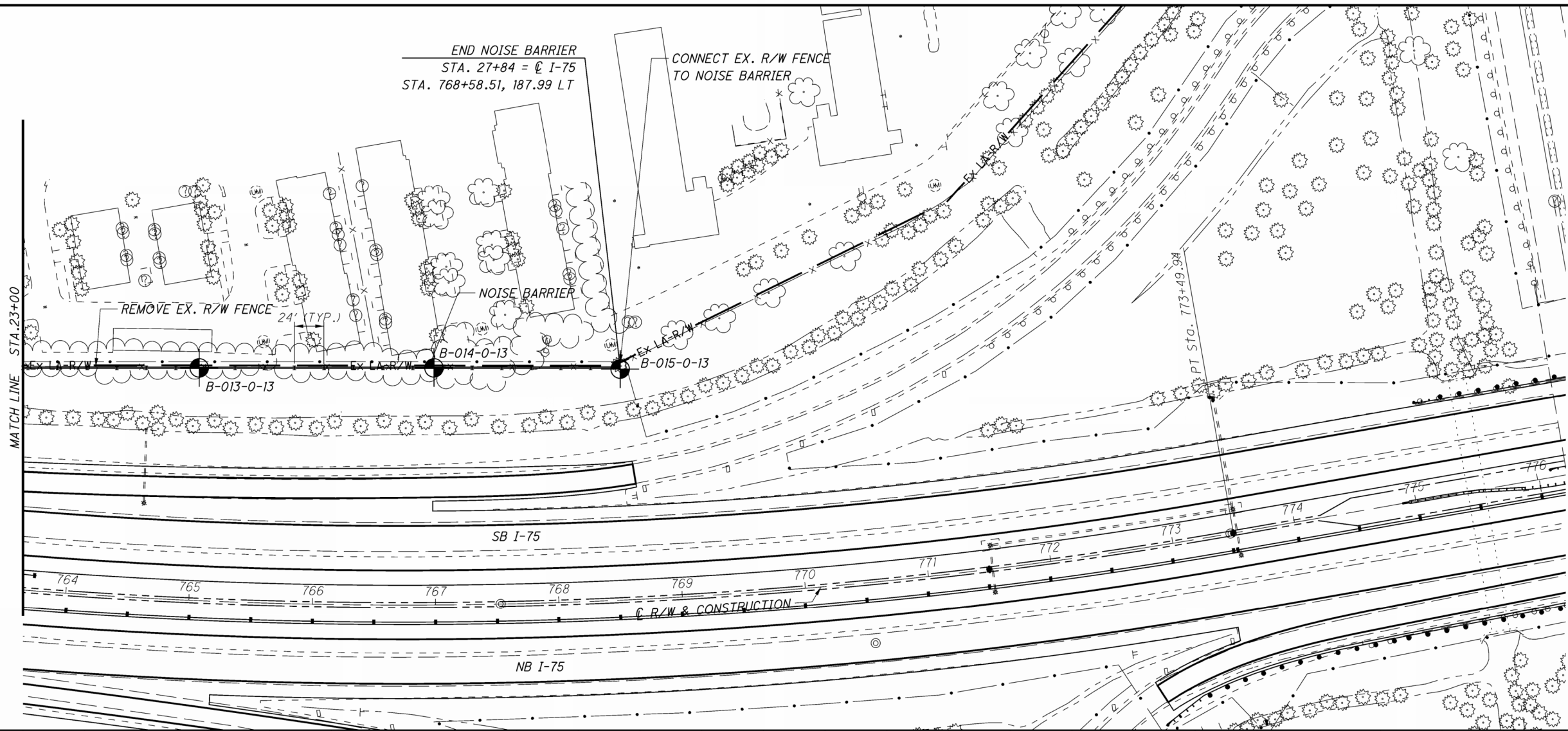
NOISE BARRIER POT STA. 22+56 =
STA. 763+05.70, 175.5 LT @ I-75

NOISE BARRIER POT STA. 17+52 =
STA. 758+01.99, 158.5 LT @ I-75



PLAN AND PROFILE - NOISEWALL
STA. 10+50 TO STA. 23+00

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PLAN AND PROFILE - NOISEWALL

STA. 23+00 TO STA. 27+84

WOO-75-10.61

4 / 14

372
556

0 50 100
HORIZONTAL SCALE IN FEET

DRAWN: MSJ
CHECKED: RLW

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

| | | | | | | | | | | | | | | | | |
|--|---|---------------------------|--------------------------------------|----------------------------|----------|------|----|----|----|----|----|----|----|----|----------------|------|
| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 0+75, 1 RT | EXPLORATION ID: B-001-0-13 | | | | | | | | | | | | |
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | | | | | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.5 (MSL) EOB: 14.5 ft. | PAGE: 1 OF 1 | | | | | | | | | | | | |
| START: 8/23/13 END: 8/23/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 620740.312 N, 1661253.412 E | | | | | | | | | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | | | | | | | | | |
| TOPSOIL | ELEV. 671.5 | DEPTHS | SPT/ROD | REC SAMPLE ID | HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | ODOT CLASS (G) | SEAL |
| HARD, MOTTLED BROWN AND GRAY, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, DAMP TO MOIST | 671.3 | 1 | 2 | | | | | | | | | | | | | |
| | | 2 | 4 | 10 | 4.5+ | 2 | 4 | 14 | 31 | 49 | 39 | 18 | 21 | 19 | A-6b (12) | |
| | | 3 | | | | | | | | | | | | | | |
| | | 4 | 3 | 17 | 100 | 2 | 4 | 14 | 31 | 49 | 39 | 18 | 21 | 17 | A-6b (12) | |
| | | 5 | 9 | | | | | | | | | | | | | |
| | 665.5 | 6 | 4 | 10 | 49 | 87 | 9 | 17 | 33 | 30 | 21 | 12 | 9 | 16 | A-4a (6) | |
| HARD, DARK BROWN, SANDY SILT, SOME CLAY, LITTLE GRAVEL, MOIST | | 7 | 30 | | | | | | | | | | | | | |
| | | 8 | | | | | | | | | | | | | | |
| | 662.2 | 9 | 5 | 50/4" | - | 88 | 9 | 17 | 33 | 30 | 21 | 12 | 9 | 9 | A-4a (6) | |
| DOLOMITE, LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY, SLIGHTLY FRACTURED. | | 10 | | | | | | | | | | | | | | |
| | | 11 | | | | | | | | | | | | | | |
| | | 12 | 66 | | 90 | NQ-1 | | | | | | | | | CORE | |
| | 657.0 | 13 | | | | | | | | | | | | | | |
| | | 14 | | | | | | | | | | | | | | |
| | | EOB | | | | | | | | | | | | | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| | | | | | | | | | | | | | | | | |
|--|---|---------------------------|--------------------------------------|----------------------------|----------|------|------|----|----|----|----|----|----|----|----------------|------------|
| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 2+50, 1 RT | EXPLORATION ID: B-002-0-13 | | | | | | | | | | | | |
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | | | | | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.3 (MSL) EOB: 13.6 ft. | PAGE: 1 OF 1 | | | | | | | | | | | | |
| START: 8/23/13 END: 8/23/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 620932.464 N, 1661309.005 E | | | | | | | | | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | | | | | | | | | |
| TOPSOIL | ELEV. 671.3 | DEPTHS | SPT/ROD | REC SAMPLE ID | HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | ODOT CLASS (G) | SEAL |
| HARD, MOTTLED BROWN AND GRAY, CLAY, SOME SILT, LITTLE SAND, DAMP | 671.1 | 1 | 3 | | | | | | | | | | | | | |
| | | 2 | 5 | 11 | 80 | SS-1 | 0 | 3 | 13 | 25 | 59 | 47 | 20 | 27 | 18 | A-7-6 (16) |
| | | 3 | 4 | | | | | | | | | | | | | |
| | | 4 | 3 | 13 | 13 | SS-2 | - | - | - | - | - | - | - | - | 17 | A-7-6 (V) |
| | 665.8 | 5 | 7 | | | | | | | | | | | | | |
| HARD, DARK GRAY, SILT, SOME CLAY, LITTLE SAND, MOIST | | 6 | 4 | 24 | 67 | SS-3 | 4.5+ | 7 | 5 | 12 | 52 | 24 | 20 | 14 | 6 | A-4b (8) |
| | | 7 | 11 | | | | | | | | | | | | | |
| | 662.8 | 8 | | | | | | | | | | | | | | |
| DOLOMITE, LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY. | | 9 | 50/1" | - | 100 | SS-4 | - | - | - | - | - | - | - | - | - | A-4b (V) |
| | | 10 | | | | | | | | | | | | | | |
| | | 11 | 72 | | - | NQ-1 | | | | | | | | | | CORE |
| | 657.7 | 12 | | | | | | | | | | | | | | |
| | | 13 | | | | | | | | | | | | | | |
| | | EOB | | | | | | | | | | | | | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| | | | | | | | | | | | | | | | | |
|--|---|---------------------------|--------------------------------------|----------------------------|----------|------|------|----|----|----|----|----|----|----|----------------|----------|
| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 4+50, 1 RT | EXPLORATION ID: B-003-0-13 | | | | | | | | | | | | |
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | | | | | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.2 (MSL) EOB: 13.0 ft. | PAGE: 1 OF 1 | | | | | | | | | | | | |
| START: 8/23/13 END: 8/23/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 621125.119 N, 1661365.668 E | | | | | | | | | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | | | | | | | | | |
| TOPSOIL | ELEV. 671.2 | DEPTHS | SPT/ROD | REC SAMPLE ID | HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | ODOT CLASS (G) | SEAL |
| HARD, MOTTLED BROWN AND GRAY, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, DAMP TO MOIST | 671.0 | 1 | 3 | | | | | | | | | | | | | |
| | | 2 | 5 | 12 | 87 | SS-1 | 4.5+ | - | - | - | - | - | - | - | 18 | A-6b (V) |
| | | 3 | 5 | | | | | | | | | | | | | |
| | | 4 | 2 | 24 | 100 | SS-2 | 4.5+ | 5 | 14 | 35 | 41 | 32 | 16 | 15 | A-6b (10) | |
| | 665.7 | 5 | 7 | 13 | | | | | | | | | | | | |
| HARD, DARK GRAY, SANDY SILT, SOME CLAY, LITTLE GRAVEL, DAMP | | 6 | 4 | | | | | | | | | | | | | |
| | 663.9 | 7 | 9 | 50/4" | 100 | SS-3 | 4.5+ | 11 | 9 | 18 | 37 | 25 | 19 | 12 | 7 | A-4a (5) |
| DOLOMITE, LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY. | | 8 | | | | | | | | | | | | | | |
| | | 9 | | | | | | | | | | | | | | |
| | 658.2 | 10 | 75 | | 98 | NQ-1 | | | | | | | | | | CORE |
| | | 11 | | | | | | | | | | | | | | |
| | | 12 | | | | | | | | | | | | | | |
| | | 13 | | | | | | | | | | | | | | |
| | | EOB | | | | | | | | | | | | | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

| | | | | | | | | | | | | | | | |
|--|---|---------------------------|--------------------------------------|----------------------------|------|------|----|----|----|----|----|----|----|----------------|-------------|
| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 6+50, 1 RT | EXPLORATION ID: B-004-0-13 | | | | | | | | | | | |
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | | | | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.2 (MSL) EOB: 13.0 ft. | PAGE: 1 OF 1 | | | | | | | | | | | |
| START: 8/22/13 END: 8/22/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 621317.144 N, 1661421.387 E | | | | | | | | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | | | | | | | | |
| TOPSOIL | ELEV. 671.2 | DEPTHS | SPT/ROD | REC SAMPLE HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | ODOT CLASS (G) | HOLE SEALED |
| HARD, MOTTLED BROWN AND GRAY, SILT AND CLAY, SOME SAND, LITTLE GRAVEL, DAMP TO MOIST | 671.0 | 1 | 3 | | | | | | | | | | | | |
| | | 2 | 4 | 13 | SS-1 | 7 | 5 | 12 | 33 | 43 | - | - | 22 | A-6a (V) | |
| | | 3 | | | | | | | | | | | | | |
| | | 4 | 5 | 17 | SS-2 | 4.5+ | 8 | 16 | 30 | 36 | 28 | 14 | 15 | A-6a (8) | |
| | | 5 | 9 | | | | | | | | | | | | |
| | | 6 | 5 | 11 | SS-3 | 4.5+ | 7 | 14 | 36 | 39 | 31 | 16 | 15 | A-6a (10) | |
| | 663.2 | 7 | 21 | 39 | | | | | | | | | | | |
| | | 8 | | | | | | | | | | | | | |
| DOLOMITE , LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY, SLIGHTLY FRACTURED. | | 9 | | | | | | | | | | | | | |
| | | 10 | 76 | 100 | NQ-1 | | | | | | | | | CORE | |
| | 658.2 | 11 | | | | | | | | | | | | | |
| | | 12 | | | | | | | | | | | | | |
| | | 13 | | | | | | | | | | | | | |
| | | EOB | | | | | | | | | | | | | |

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| | | | | | | | | | | | | | | | |
|--|---|---------------------------|--------------------------------------|----------------------------|------|------|----|----|----|----|----|----|----|----------------|-------------|
| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 8+50, 1 RT | EXPLORATION ID: B-005-0-13 | | | | | | | | | | | |
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | | | | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.0 (MSL) EOB: 11.0 ft. | PAGE: 1 OF 1 | | | | | | | | | | | |
| START: 8/22/13 END: 8/22/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 621504.447 N, 1661475.531 E | | | | | | | | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | | | | | | | | |
| TOPSOIL | ELEV. 671.0 | DEPTHS | SPT/ROD | REC SAMPLE HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | ODOT CLASS (G) | HOLE SEALED |
| HARD, MOTTLED BROWN AND GRAY, SILTY CLAY, SOME SAND, TRACE GRAVEL, DAMP TO MOIST | 670.8 | 1 | 4 | | | | | | | | | | | | |
| | | 2 | 5 | 12 | SS-1 | - | - | - | - | - | - | - | 20 | A-6b (V) | |
| | | 3 | 5 | | | | | | | | | | | | |
| | | 4 | 2 | 7 | SS-2 | 4.5+ | 3 | 7 | 15 | 35 | 40 | 32 | 16 | A-6b (10) | |
| | | 5 | 3 | | | | | | | | | | | | |
| | 665.0 | 6 | | | | | | | | | | | | | |
| | | 7 | | | | | | | | | | | | | |
| DOLOMITE , LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY, SLIGHTLY FRACTURED. | | 8 | 60 | 96 | NQ-1 | | | | | | | | | CORE | |
| | 660.0 | 9 | | | | | | | | | | | | | |
| | | 10 | | | | | | | | | | | | | |
| | | 11 | | | | | | | | | | | | | |
| | | 12 | | | | | | | | | | | | | |
| | | 13 | | | | | | | | | | | | | |
| | | 14 | | | | | | | | | | | | | |
| | | EOB | | | | | | | | | | | | | |

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| | | | | | | | | | | | | | | | |
|--|---|---------------------------|--------------------------------------|----------------------------|------|----------|----|----|----|----|----|----|----|----------------|-------------|
| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 10+59, 2 RT | EXPLORATION ID: B-006-0-13 | | | | | | | | | | | |
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | | | | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 670.0 (MSL) EOB: 14.5 ft. | PAGE: 1 OF 1 | | | | | | | | | | | |
| START: 8/21/13 END: 8/21/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 621700.822 N, 1661533.141 E | | | | | | | | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | | | | | | | | |
| TOPSOIL | ELEV. 670.0 | DEPTHS | SPT/ROD | REC SAMPLE HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | ODOT CLASS (G) | HOLE SEALED |
| VERY STIFF TO HARD, MOTTLED BROWN AND GRAY, SILTY CLAY, SOME SAND, TRACE GRAVEL, DAMP TO MOIST | 669.8 | 1 | 4 | | | | | | | | | | | | |
| | | 2 | 2 | 5 | SS-1 | 2.5-4.5+ | 5 | 19 | 28 | 43 | - | - | 18 | A-6b (V) | |
| | | 3 | | | | | | | | | | | | | |
| | | 4 | 2 | 10 | SS-2 | 4.5+ | 2 | 7 | 16 | 32 | 43 | 36 | 17 | A-6b (12) | |
| | | 5 | 5 | | | | | | | | | | | | |
| | 663.4 | 6 | 27 | 0 | SS-3 | - | - | - | - | - | - | - | - | | |
| | | 7 | 50/1" | | | | | | | | | | | | |
| DOLOMITE , LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY. | | 8 | | | | | | | | | | | | | |
| | | 9 | | | | | | | | | | | | | |
| | | 10 | | | | | | | | | | | | | |
| | | 11 | 91 | 100 | NQ-1 | | | | | | | | | CORE | |
| | 655.5 | 12 | | | | | | | | | | | | | |
| | | 13 | | | | | | | | | | | | | |
| | | 14 | | | | | | | | | | | | | |
| | | EOB | | | | | | | | | | | | | |

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT



OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 12+42 | EXPLORATION ID: B-007-0-13 |
|--|---|---------------------------|--------------------------------------|----------------------------|
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.2 (MSL) EOB: 14.0 ft. | PAGE: 1 OF 1 |
| START: 8/21/13 END: 8/21/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 621885.849 N, 1661582.242 E | |
| MATERIAL DESCRIPTION AND NOTES | | | | |
| TOPSOIL | ELEV. 671.2 | DEPTHS | SPT/ROD | REC SAMPLE ID |
| HARD, MOTTLED BROWN AND GRAY, CLAY, SOME SILT, LITTLE SAND, TRACE GRAVEL, DAMP | 671.0 | 1 | 3 | |
| | | 2 | 4 | SS-1 |
| | | 3 | 5 | |
| | 667.7 | 4 | | |
| VERY STIFF TO HARD, MOTTLED BROWN AND GRAY, SILT AND CLAY, SOME SAND, LITTLE GRAVEL, DAMP | | 5 | 3 | SS-2 |
| | | 6 | 2 | |
| | | 7 | 3 | |
| | | 8 | 50/5" | |
| | 663.2 | 9 | | |
| VERY DENSE, DARK GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, SILT, AND CLAY, GLACIAL TILL, DAMP | 662.3 | 10 | 50/5" | SS-4 |
| DOLOMITE, LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY. | | 11 | | |
| | | 12 | 98 | NQ-1 |
| | | 13 | | |
| | 657.2 | 14 | | |
| | | EOB | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 14+50.2 RT | EXPLORATION ID: B-008-0-13 |
|---|---|---------------------------|--------------------------------------|----------------------------|
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.0 (MSL) EOB: 15.3 ft. | PAGE: 1 OF 1 |
| START: 8/21/13 END: 8/21/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 622082.682 N, 1661640.062 E | |
| MATERIAL DESCRIPTION AND NOTES | | | | |
| TOPSOIL | ELEV. 671.0 | DEPTHS | SPT/ROD | REC SAMPLE ID |
| VERY STIFF TO HARD, MOTTLED BROWN AND GRAY, SILTY CLAY, SOME SAND, TRACE GRAVEL, DAMP | 670.8 | 1 | 3 | |
| | | 2 | 4 | SS-1 |
| | | 3 | 5 | |
| | | 4 | 2 | SS-2 |
| | | 5 | 3 | |
| | | 6 | 6 | |
| | 665.0 | 7 | 24 | |
| HARD, DARK BROWN, SANDY SILT, LITTLE CLAY, LITTLE GRAVEL, DAMP | | 8 | 30 | |
| | | 9 | | |
| | 662.2 | 10 | 8 | SS-4 |
| DOLOMITE, LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY. | | 11 | 50/4" | |
| | | 12 | | |
| | | 13 | 83 | NQ-1 |
| | | 14 | | |
| | 656.0 | 15 | | |
| | | EOB | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 16+50.2 RT | EXPLORATION ID: B-009-0-13 |
|--|---|---------------------------|--------------------------------------|----------------------------|
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.9 (MSL) EOB: 16.0 ft. | PAGE: 1 OF 1 |
| START: 8/20/13 END: 8/20/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 622277.312 N, 1661695.786 E | |
| MATERIAL DESCRIPTION AND NOTES | | | | |
| TOPSOIL | ELEV. 671.9 | DEPTHS | SPT/ROD | REC SAMPLE ID |
| HARD, MOTTLED BROWN AND GRAY, SILT AND CLAY, SOME SAND, TRACE GRAVEL, DAMP | 671.7 | 1 | 5 | SS-1 |
| | | 2 | 5 | |
| | | 3 | 5 | |
| | | 4 | 2 | SS-2 |
| | | 5 | 4 | |
| | | 6 | 8 | |
| | | 7 | 13 | SS-3 |
| HARD, DARK GRAY, SANDY SILT, SOME CLAY, LITTLE GRAVEL, MOIST TO WET | 664.9 | 8 | 16 | |
| | | 9 | 4 | SS-4 |
| | | 10 | 8 | |
| | | 11 | 10 | |
| | 661.4 | TR | | |
| | | 12 | | |
| | | 13 | | |
| | | 14 | | |
| | | 15 | | |
| | | 16 | | |
| | 655.9 | EOB | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 18+50.1 RT | EXPLORATION ID: B-010-0-13 |
|---|---|---------------------------|--------------------------------------|----------------------------|
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.8 (MSL) EOB: 19.0 ft. | PAGE: 1 OF 1 |
| START: 8/20/13 END: 8/20/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 622468.939 N, 1661745.032 E | |
| MATERIAL DESCRIPTION AND NOTES | | | | |
| TOPSOIL | ELEV. 671.8 | DEPTHS | SPT/ROD | REC SAMPLE ID |
| HARD, MOTTLED BROWN AND GRAY, CLAY, SOME SILT, LITTLE SAND, TRACE GRAVEL, DAMP TO MOIST | 671.6 | 1 | 3 | |
| | | 2 | 4 | SS-1 |
| | | 3 | 6 | |
| | | 4 | 2 | SS-2 |
| | | 5 | 2 | |
| | | 6 | 3 | |
| | | 7 | 10 | SS-3 |
| HARD, DARK GRAY, SANDY SILT, LITTLE CLAY, SOME GRAVEL, MOIST TO WET | 664.4 | 8 | 12 | |
| | | 9 | 13 | SS-4 |
| | | 10 | 16 | |
| | | 11 | 27 | |
| | | 12 | 43 | SS-5 |
| | | 13 | 50/51 | |
| | | 14 | | |
| | | 15 | | |
| | | 16 | | |
| | | 17 | | |
| | | 18 | | |
| | | 19 | | |
| | 652.8 | EOB | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT



WOO-75-11.18

STRUCTURE FOUNDATION EXPLORATION
NOISE BARRIER

DRAWN: MSJ
CHECKED: RLW

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

| PROJECT: WOO-75-11.18 TYPE: NOISE WALL PID: 95435 BR ID: N/A START: 8/19/13 END: 8/20/13 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | STOCK DRILL RIG: CME 45B STOCK | STATION / OFFSET: 20+50.2 RT | EXPLORATION ID B-011-0-13 | | | | | | | | | | | |
|--|---|--------------------------------|------------------------------|------------------------------|------|----|----|----|----|----|----|----|----|-----------------|-----------|
| AND NOTES | | | | | | | | | | | | | | | |
| MATERIAL DESCRIPTION | ELEV. | SPT / ROD | REC SAMPLE ID (%) | HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | HOLE CLASS (GI) | SEALED |
| TOPSOIL HARD, BROWN, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, DAMP TO MOIST | 671.9 671.5 | 3 5 5 | 12 | SS-1 | 4 | 4 | 14 | 31 | 47 | 39 | 18 | 21 | 15 | A-6b (12) | |
| VERY DENSE, GRAY, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, GLACIAL TILL, MOIST TO WET | 663.4 | 3 3 6 | 11 | SS-2 | 4 | 4 | 14 | 31 | 47 | 39 | 18 | 21 | 20 | A-6b (12) | |
| | | 6 13 18 | 38 | SS-3 | 4.5+ | 4 | 9 | 29 | 40 | - | - | - | - | 11 | A-6b (V) |
| DOLOMITE, GRAY, SEVERELY WEATHERED, VERY WEAK, WASHED OUT. | 657.4 | 40 42 50/4" | - | SS-4 | - | 42 | 16 | 20 | 10 | 17 | 13 | 4 | 6 | A-2-4 (0) | |
| | | 22 40 50/2" | - | SS-6 | - | - | - | - | - | - | - | - | - | 12 | A-2-4 (V) |
| DOLOMITE, LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY. | 656.4 | 6 20 26 | 56 | SS-5 | - | 42 | 16 | 20 | 10 | 17 | 13 | 4 | 14 | A-2-4 (0) | |
| | | 60 | 80 | NQ-2 | - | - | - | - | - | - | - | - | - | CORE | |
| | 651.4 | | | | | | | | | | | | | CORE | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| PROJECT: WOO-75-11.18 TYPE: NOISE WALL PID: 95435 BR ID: N/A START: 8/19/13 END: 8/19/13 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | STOCK DRILL RIG: CME 45B STOCK | STATION / OFFSET: 22+50 | EXPLORATION ID B-012-0-13 | | | | | | | | | | | |
|--|---|--------------------------------|-------------------------|------------------------------|------|----|----|----|----|----|----|----|----|-----------------|--------|
| AND NOTES | | | | | | | | | | | | | | | |
| MATERIAL DESCRIPTION | ELEV. | SPT / ROD | REC SAMPLE ID (%) | HP (tsf) | GR | CS | FS | SI | CL | LL | PL | PI | WC | HOLE CLASS (GI) | SEALED |
| TOPSOIL HARD, MOTTLED BROWN AND GRAY, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, DAMP | 670.8 670.6 | 4 6 6 | 15 | SS-1 | 4 | 4 | 15 | 35 | 42 | 37 | 17 | 20 | 16 | A-6b (12) | |
| HARD, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, MOIST TO WET | 666.3 | 3 3 4 | 9 | SS-2 | 4.5+ | 8 | 7 | 13 | 31 | 41 | 37 | 17 | 20 | A-6b (11) | |
| | | 50 71 | - | SS-3 | - | - | - | - | - | - | - | - | - | - | CORE |
| BOULDER ZONE, CORED GRANITE VERY DENSE, DARK GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, SILT, AND CLAY, GLACIAL TILL | 663.8 663.1 | 32 | 47 | NQ | - | - | - | - | - | - | - | - | - | A-2-6 (V) CORE | |
| | | 80 | 100 | NQ | - | - | - | - | - | - | - | - | - | CORE | |
| DOLOMITE, LIGHT GRAY, MODERATELY STRONG, FINE TO COARSE GRAINED, LAMINATED, VUGGY. | 659.3 | 73 | 90 | NQ | - | - | - | - | - | - | - | - | - | CORE | |
| | | | | | | | | | | | | | | | CORE |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 24+43 | EXPLORATION ID: B-013-0-13 | | | | |
|--------------------------------|---|---------------------------|--------------------------------------|----------------------------|-----------|----|----------------|------|
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.0 (MSL) EOB: 15.5 ft. | PAGE: 1 OF 1 | | | | |
| START: 8/19/13 END: 8/19/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 6233042.063 N, 1661881.881 E | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | |
| ELEV. | DEPTHS | SPT/ RQD | REC SAMPLE HP (tsf) | GRADATION (%) | ATTEMBERG | WC | HOLE CLASS (G) | SEAL |
| 671.0 | | | | | | | | |
| 670.8 | 1 | 4 | | | | | | |
| | 2 | 6 | 12 | SS-1 | - | - | - | 18 |
| | 3 | 4 | | | | | | |
| 667.5 | 4 | 3 | 17 | SS-2 | 4.5+ | 5 | 7 | 15 |
| | 5 | 9 | | | | | | |
| | 6 | | | | | | | |
| 664.5 | 7 | 22 | 55 | SS-3 | - | - | - | - |
| | 8 | 23 | | | | | | |
| | 9 | 5 | 20 | SS-4 | - | 25 | 15 | 12 |
| | 10 | 50 | | | | | | |
| 661.0 | TR | | | | | | | |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| | 13 | 91 | 100 | NQ-1 | | | | |
| | 14 | | | | | | | |
| 655.5 | EOB | | | | | | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 26+33 | EXPLORATION ID: B-014-0-13 | | | | |
|--------------------------------|---|---------------------------|--------------------------------------|----------------------------|-----------|----|----------------|------|
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.4 (MSL) EOB: 13.0 ft. | PAGE: 1 OF 1 | | | | |
| START: 8/19/13 END: 8/19/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 623232.432 N, 1661918.520 E | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | |
| ELEV. | DEPTHS | SPT/ RQD | REC SAMPLE HP (tsf) | GRADATION (%) | ATTEMBERG | WC | HOLE CLASS (G) | SEAL |
| 671.4 | | | | | | | | |
| 671.2 | 1 | 4 | | | | | | |
| | 2 | 5 | 11 | SS-1 | 3.5-4.5+ | 2 | 2 | 13 |
| | 3 | 4 | | | | | | |
| | 4 | 2 | 6 | SS-2 | 1.5-2 | 8 | 12 | 16 |
| | 5 | 3 | | | | | | |
| | 6 | | | | | | | |
| 664.5 | 7 | 7 | 50/51 | SS-3 | - | - | - | - |
| | 8 | 0 | | NQ-1 | | | | |
| 663.4 | TR | | | | | | | |
| | 9 | | | | | | | |
| | 10 | | | | | | | |
| | 11 | | | | | | | |
| 658.4 | EOB | | | | | | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

| PROJECT: WOO-75-11.18 | DRILLING FIRM / OPERATOR: STOCK DR / R. STOCK | DRILL RIG: CME 45B STOCK | STATION / OFFSET: 27+84, 1' RT | EXPLORATION ID: B-015-0-13 | | | | |
|--------------------------------|---|---------------------------|--------------------------------------|----------------------------|-----------|----|----------------|------|
| TYPE: NOISE WALL | SAMPLING FIRM / LOGGER: STANTEC / C. NISING | HAMMER: SAFETY HAMMER | ALIGNMENT: NOISE BARRIER | | | | | |
| PID: 95435 BR ID: N/A | DRILLING METHOD: 3.25" HSA / NQ | CALIBRATION DATE: 3/28/13 | ELEVATION: 671.7 (MSL) EOB: 10.0 ft. | PAGE: 1 OF 1 | | | | |
| START: 8/19/13 END: 8/19/13 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 73.5 | COORD: 623385.600 N, 1661942.898 E | | | | | |
| MATERIAL DESCRIPTION AND NOTES | | | | | | | | |
| ELEV. | DEPTHS | SPT/ RQD | REC SAMPLE HP (tsf) | GRADATION (%) | ATTEMBERG | WC | HOLE CLASS (G) | SEAL |
| 671.7 | | | | | | | | |
| 671.3 | 1 | 4 | | | | | | |
| | 2 | 4 | 12 | SS-1 | 4.0-4.5 | 8 | 14 | 14 |
| | 3 | 6 | | | | | | |
| | 4 | 3 | | | | | | |
| 666.7 | 5 | 3 | 50/51 | SS-2 | 4.5-4.5+ | 3 | 4 | 14 |
| | 6 | | | | | | | |
| | 7 | | | | | | | |
| | 8 | | | | | | | |
| 661.7 | EOB | 78 | 100 | NQ-1 | | | | |

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT



WOO-75-11.18

STRUCTURE FOUNDATION EXPLORATION
NOISE BARRIER

DRAWN: MSJ
CHECKED: RLV

UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard, shale stringers, vuggs Lab ID UCR-64
 Hole Number B-001-0-13 Depth (ft) 13.7'-14.1' Date Received 08-28-2013

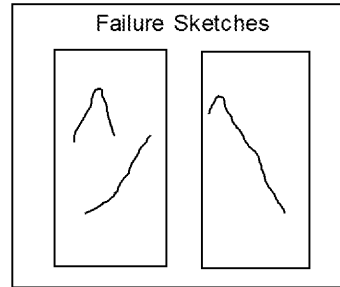
Temperature (°C) 22.2 Moisture Condition As received, moist Date Tested 09-12-2013

Side Planeness Fail Height (in) 4.608 Wet Unit Weight (pcf) 162.4
 Perpendicularity Pass Diameter (in) 1.848 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.682 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 98
 Peak Load (lbf) 26927

Failure Type Undetermined

Compressive Strength (psi) 10040
 Compressive Strength (psf) 1445760
 Compressive Strength (tsf) 723



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-67
 Hole Number B-003-0-13 Depth (ft) 7.7'-8.0' Date Received 08-28-2013

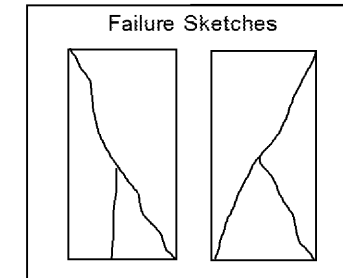
Temperature (°C) 22.2 Moisture Condition As received, moist Date Tested 09-12-2013

Side Planeness Pass Height (in) 3.789 Wet Unit Weight (pcf) 169.4
 Perpendicularity Pass Diameter (in) 1.840 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.660 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 99
 Peak Load (lbf) 50625

Failure Type Cone and Shear

Compressive Strength (psi) 19030
 Compressive Strength (psf) 2740320
 Compressive Strength (tsf) 1370



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard, vuggs Lab ID UCR-66
 Hole Number B-002-0-13 Depth (ft) 12.8'-13.2' Date Received 08-28-2013

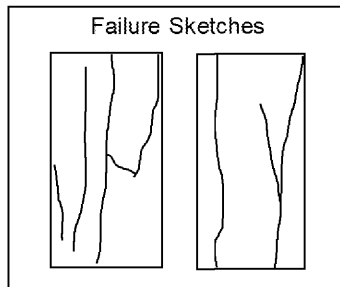
Temperature (°C) 22.2 Moisture Condition As received, moist Date Tested 09-12-2013

Side Planeness Fail Height (in) 4.289 Wet Unit Weight (pcf) 165.4
 Perpendicularity Pass Diameter (in) 1.843 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.668 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 105
 Peak Load (lbf) 26691

Failure Type Undetermined

Compressive Strength (psi) 10010
 Compressive Strength (psf) 1441440
 Compressive Strength (tsf) 720



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-68
 Hole Number B-004-0-13 Depth (ft) 11.5'-12.0' Date Received 08-28-2013

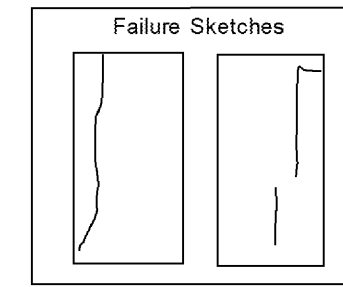
Temperature (°C) 22.3 Moisture Condition As received, moist Date Tested 09-12-2013

Side Planeness Fail Height (in) 3.952 Wet Unit Weight (pcf) 162.5
 Perpendicularity Pass Diameter (in) 1.857 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.708 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 101
 Peak Load (lbf) 26817

Failure Type Undetermined

Compressive Strength (psi) 9900
 Compressive Strength (psf) 1425600
 Compressive Strength (tsf) 713



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SOIL PROFILE
LABORATORY TEST DATA

WOO-75-11.18



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

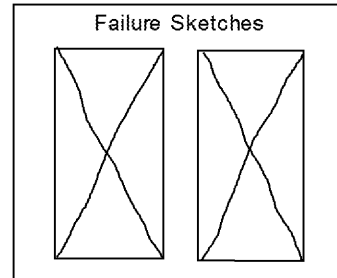
PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-69
 Hole Number B-005-0-13 Depth (ft) 9.5'-9.8' Date Received 08-28-2013
 Temperature (°C) 22.4 Moisture Condition As received, moist Date Tested 09-12-2013
 Side Planeness Pass Height (in) 3.891 Wet Unit Weight (pcf) 163.2
 Perpendicularity Pass Diameter (in) 1.861 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.720 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lbf/sec) 98
 Peak Load (lbf) 43359

Failure Type Cone

Compressive Strength (psi) 15940
 Compressive Strength (psf) 2295360
 Compressive Strength (tsf) 1148



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

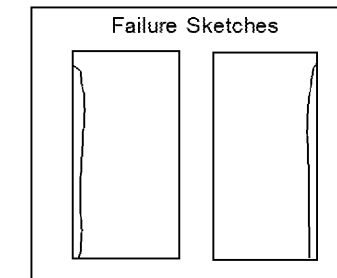
PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-72
 Hole Number B-007-0-13 Depth (ft) 10.7'-11.0' Date Received 08-28-2013
 Temperature (°C) 21.6 Moisture Condition As received, moist Date Tested 09-13-2013
 Side Planeness Fail Height (in) 4.043 Wet Unit Weight (pcf) 164.4
 Perpendicularity Pass Diameter (in) 1.866 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.734 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lbf/sec) 106
 Peak Load (lbf) 38471

Failure Type Undetermined

Compressive Strength (psi) 14070
 Compressive Strength (psf) 2026080
 Compressive Strength (tsf) 1013



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

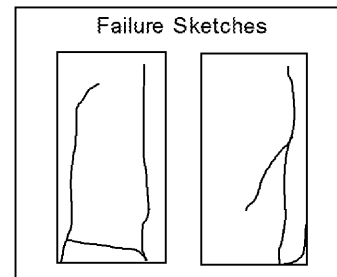
PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard, shale stringers Lab ID UCR-71
 Hole Number B-006-0-13 Depth (ft) 11.9'-12.3' Date Received 08-28-2013
 Temperature (°C) 20.8 Moisture Condition As received, moist Date Tested 09-13-2013
 Side Planeness Pass Height (in) 4.459 Wet Unit Weight (pcf) 166.4
 Perpendicularity Pass Diameter (in) 1.865 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.733 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lbf/sec) 102
 Peak Load (lbf) 39483

Failure Type Undetermined

Compressive Strength (psi) 14450
 Compressive Strength (psf) 2080800
 Compressive Strength (tsf) 1040



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

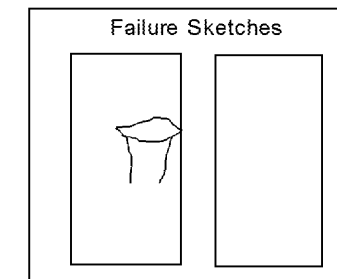
PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-73
 Hole Number B-008-0-13 Depth (ft) 9.7'-10.1' Date Received 08-28-2013
 Temperature (°C) 21.7 Moisture Condition As received, moist Date Tested 09-13-2013
 Side Planeness Pass Height (in) 4.314 Wet Unit Weight (pcf) 157.5
 Perpendicularity Pass Diameter (in) 1.862 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.724 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lbf/sec) 99
 Peak Load (lbf) 44428

Failure Type Undetermined

Compressive Strength (psi) 16310
 Compressive Strength (psf) 2348640
 Compressive Strength (tsf) 1174



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SOIL PROFILE
LABORATORY TEST DATA

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UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-74
 Hole Number B-009-0-13 Depth (ft) 11.2'-11.6' Date Received 08-28-2013

Temperature (°C) 21.7 Moisture Condition As received, moist Date Tested 09-13-2013

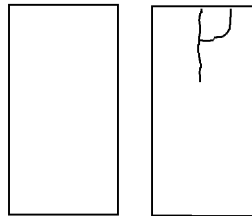
Side Planeness Fail Height (in) 4.478 Wet Unit Weight (pcf) 154.9
 Perpendicularity Pass Diameter (in) 1.864 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.729 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 98
 Peak Load (lb) 41346

Failure Type Undetermined

Compressive Strength (psi) 15150
 Compressive Strength (psf) 2181600
 Compressive Strength (tsf) 1091

Failure Sketches



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-76
 Hole Number B-011-0-13 Depth (ft) 19.3'-19.7' Date Received 08-28-2013

Temperature (°C) 21.8 Moisture Condition As received, moist Date Tested 09-13-2013

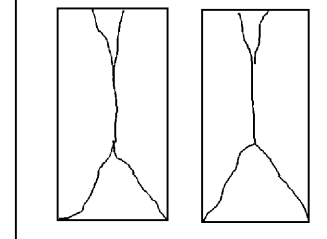
Side Planeness Pass Height (in) 4.419 Wet Unit Weight (pcf) 159.0
 Perpendicularity Pass Diameter (in) 1.861 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.720 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 96
 Peak Load (lb) 66228

Failure Type Cone

Compressive Strength (psi) 24350
 Compressive Strength (psf) 3506400
 Compressive Strength (tsf) 1753

Failure Sketches



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-75
 Hole Number B-010-0-13 Depth (ft) 13.4'-13.8' Date Received 08-28-2013

Temperature (°C) 21.7 Moisture Condition As received, moist Date Tested 09-13-2013

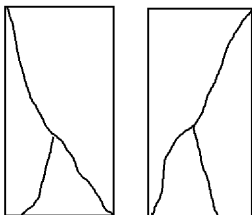
Side Planeness Pass Height (in) 4.428 Wet Unit Weight (pcf) 158.4
 Perpendicularity Pass Diameter (in) 1.858 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.712 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 96
 Peak Load (lb) 42490

Failure Type Cone and Shear

Compressive Strength (psi) 15670
 Compressive Strength (psf) 2256480
 Compressive Strength (tsf) 1128

Failure Sketches



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard, shale stringers Lab ID UCR-77
 Hole Number B-012-0-13 Depth (ft) 15.0'-15.4' Date Received 08-28-2013

Temperature (°C) 21.9 Moisture Condition As received, moist Date Tested 09-13-2013

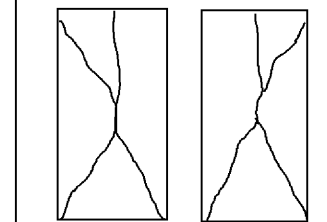
Side Planeness Pass Height (in) 4.470 Wet Unit Weight (pcf) 158.6
 Perpendicularity Pass Diameter (in) 1.858 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.710 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 99
 Peak Load (lb) 59387

Failure Type Cone and Split

Compressive Strength (psi) 21910
 Compressive Strength (psf) 3155040
 Compressive Strength (tsf) 1578

Failure Sketches



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LABORATORY TEST DATA

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UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard Lab ID UCR-78
 Hole Number B-013-0-13 Depth (ft) 10.9'-11.3' Date Received 08-28-2013

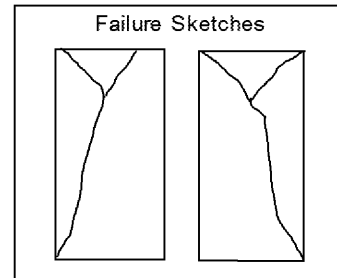
Temperature (°C) 21.5 Moisture Condition As received, moist Date Tested 09-13-2013

Side Planeness Pass Height (in) 4.429 Wet Unit Weight (pcf) 145.9
 Perpendicularity Pass Diameter (in) 1.867 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.737 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 94
 Peak Load (lb) 19443

Failure Type Cone and Shear

Compressive Strength (psi) 7100
 Compressive Strength (psf) 1022400
 Compressive Strength (tsf) 512



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard, shale stringers Lab ID UCR-80
 Hole Number B-015-0-13 Depth (ft) 6.5'-6.9' Date Received 08-28-2013

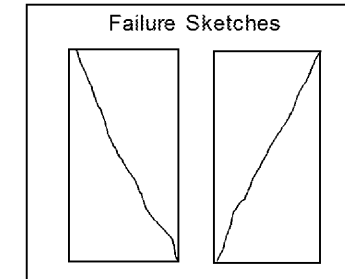
Temperature (°C) 21.9 Moisture Condition As received, moist Date Tested 09-13-2013

Side Planeness Pass Height (in) 4.555 Wet Unit Weight (pcf) 165.6
 Perpendicularity Pass Diameter (in) 1.873 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.755 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 99
 Peak Load (lb) 44428

Failure Type Shear

Compressive Strength (psi) 16120
 Compressive Strength (psf) 2321280
 Compressive Strength (tsf) 1161



UNCONFINED COMPRESSION TEST
OF INTACT ROCK CORE SPECIMENS
(ASTM D 7012, METHOD C)

PROJECT DESIGNATION: WOO-75-11.18_PID_95453

Project Name WOO-75-11.18 Project Number 175523004
 Lithology Dolomite, gray, moderately hard, shale stringers, vuggs Lab ID UCR-79
 Hole Number B-014-0-13 Depth (ft) 9.1'-9.5' Date Received 08-28-2013

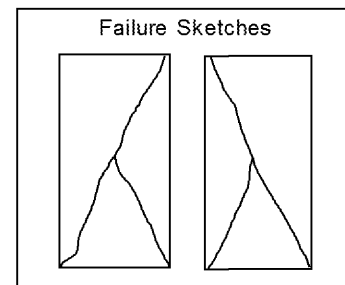
Temperature (°C) 21.3 Moisture Condition As received, moist Date Tested 09-13-2013

Side Planeness Pass Height (in) 4.522 Wet Unit Weight (pcf) 166.3
 Perpendicularity Pass Diameter (in) 1.873 Dry Unit Weight (pcf) N/A
 End Planeness Pass Area (in²) 2.756 Moisture Content (%) N/A
 Parallelism Pass

Loading Rate (lb/sec) 98
 Peak Load (lb) 45233

Failure Type Cone and Shear

Compressive Strength (psi) 16410
 Compressive Strength (psf) 2363040
 Compressive Strength (tsf) 1182



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