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REFERENCE: B-5548

PROJECT: 55048

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | B-5548 | 1 | 19 |

STRUCTURE
SUBSURFACE INVESTIGATION

CONTENTS

| SHEET NO. | DESCRIPTION |
|-----------|----------------------|
| 1 | TITLE SHEET |
| 2 | LEGEND |
| 3 | SITE PLAN |
| 4-7 | CROSS SECTION(S) |
| 8-13 | BORE AND CORE LOG(S) |
| 14-19 | CORE PHOTOS |

COUNTY CABARRUS
 PROJECT DESCRIPTION BRIDGE NO. 103 OVER
DUTCH BUFFALO CREEK ON NC 49 BETWEEN
SR 1006 AND SR 2444
 SITE DESCRIPTION _____

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

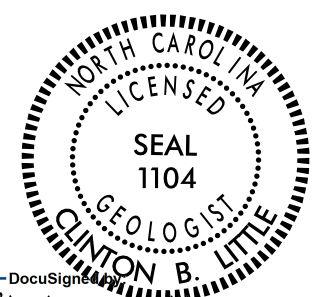
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- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

J.K. STICKNEY
C.L. SMITH
M.R. MOORE
R.W. TODD
R.J. TUCKER
R.S. HINSON

INVESTIGATED BY J.E. BEVERLY
 DRAWN BY J.E. BEVERLY *JEB*
 CHECKED BY C.B. LITTLE
 SUBMITTED BY C.B. LITTLE
 DATE FEBRUARY 2016



DocuSign
 Clinton B. Little
 930443D5AC8E452...

2/24/2016

SIGNATURE DATE

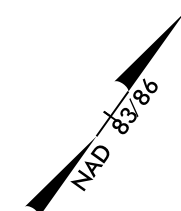
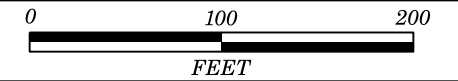
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

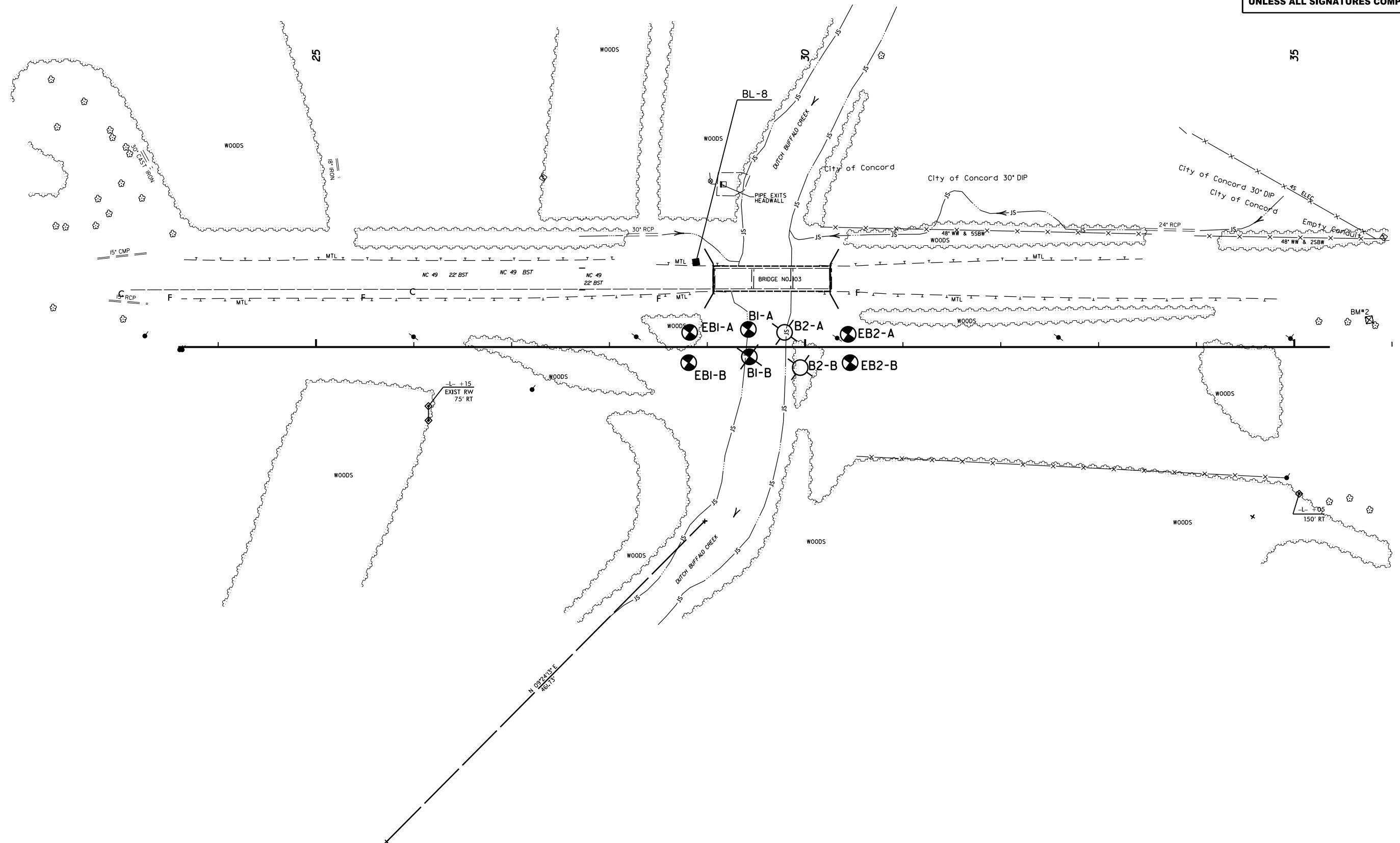
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

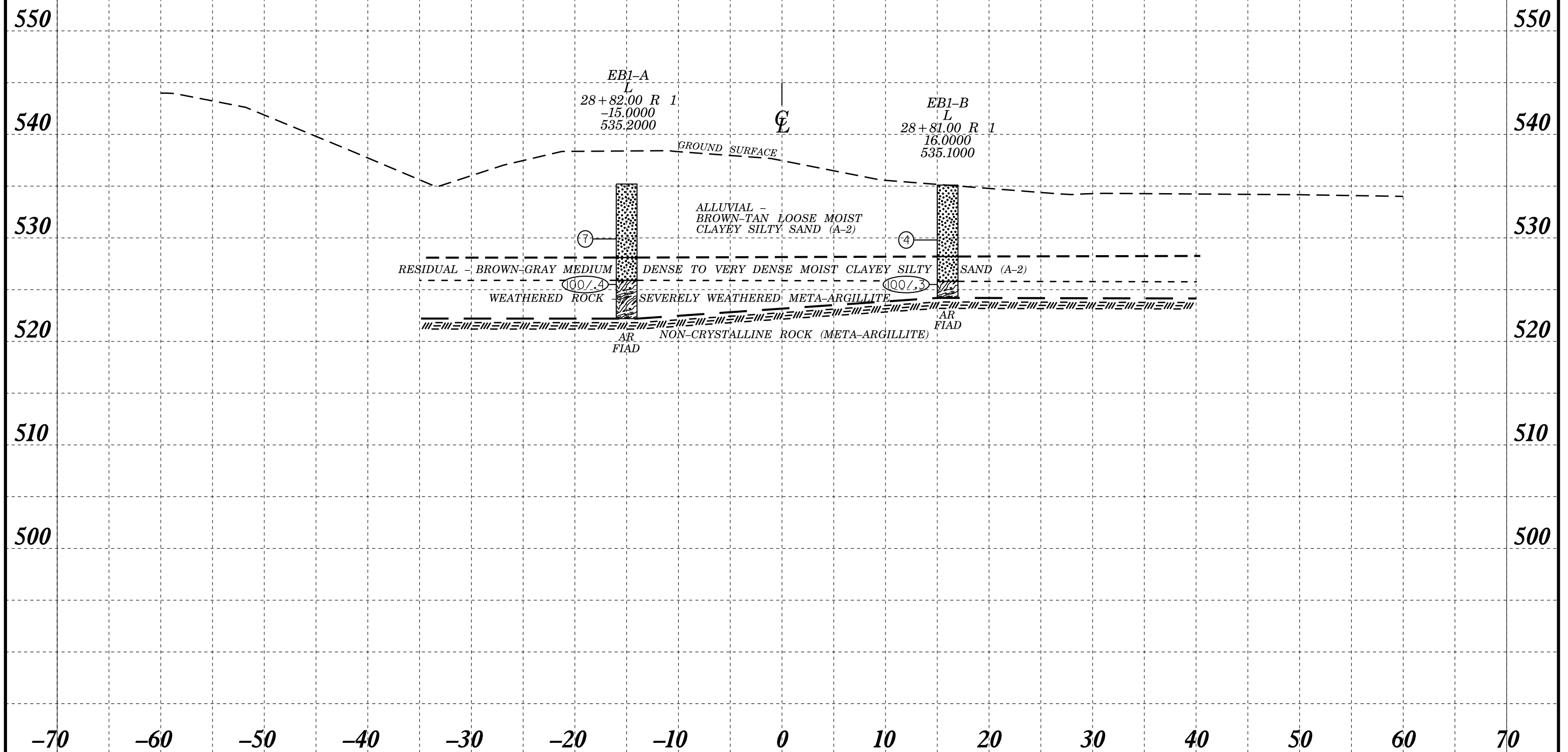
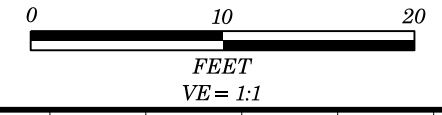
Table with multiple columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INUNDATION, PLASTICITY, COLOR.

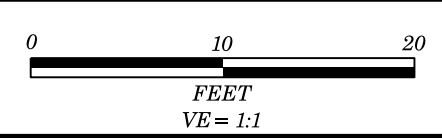
SITE PLAN



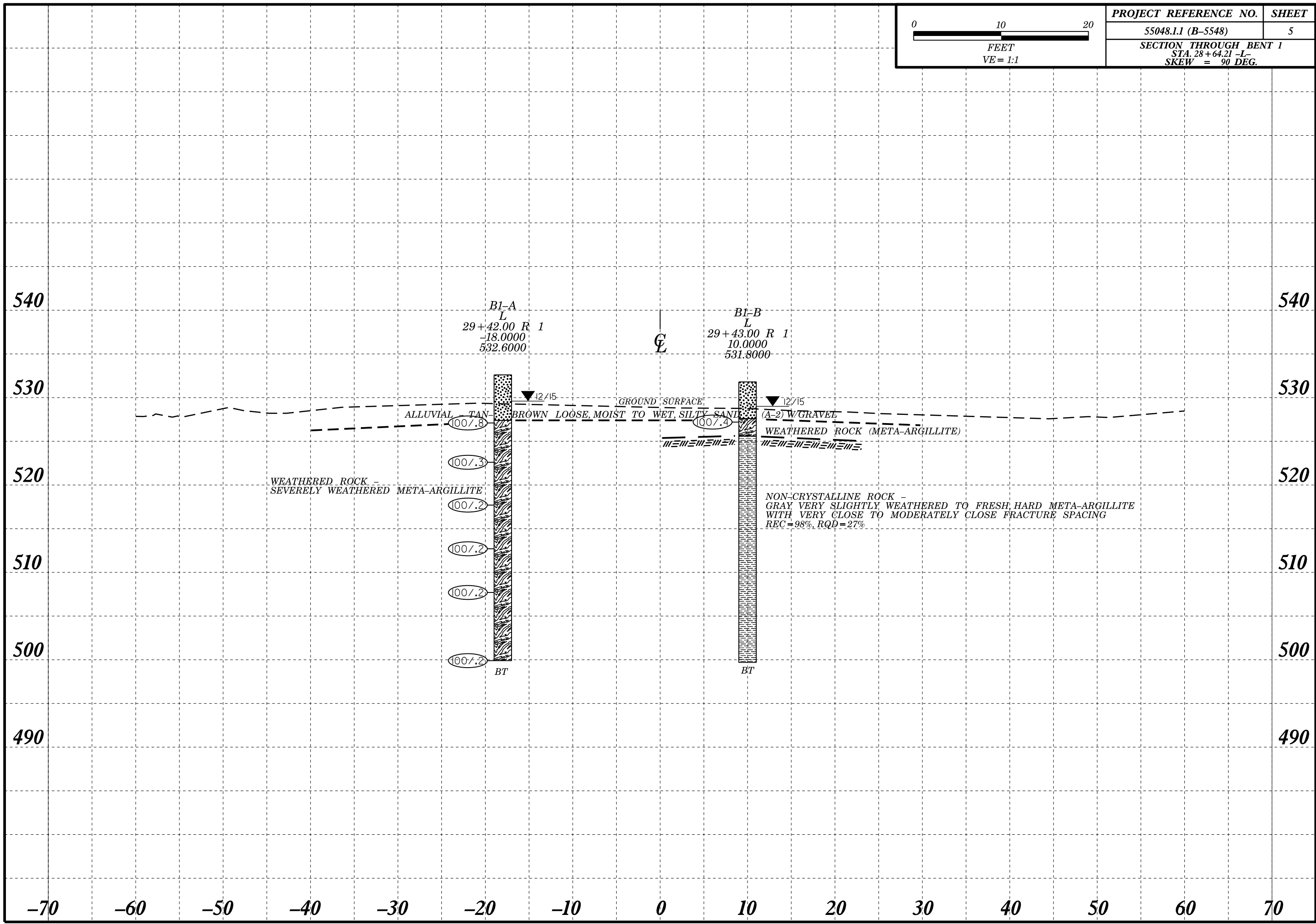
**DOCUMENT NOT CONSIDERED FINAL
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| | |
|------------------------|-------|
| PROJECT REFERENCE NO. | SHEET |
| 55048.11 (B-5548) | 5 |
| SECTION THROUGH BENT 1 | |
| STA. 28+64.21 -L- | |
| SKEW = 90 DEG. | |



BI-A
L
29+42.00 R 1
-18.0000
532.6000

BI-B
L
29+43.00 R 1
10.0000
531.8000

ALLUVIAL TAN

BROWN LOOSE, MOIST TO WET SILTY SAND

(A-2) W/ GRAVEL

WEATHERED ROCK (META-ARGILLITE)

WEATHERED ROCK - SEVERELY WEATHERED META-ARGILLITE

NON-CRYSTALLINE ROCK - GRAY VERY SLIGHTLY WEATHERED TO FRESH HARD META-ARGILLITE WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING
REC = 98%, RQD = 27%

100/.3

100/.2

100/.2

100/.2

100/.2

BT

BT

540

540

530

530

520

520

510

510

500

500

490

490

-70

-60

-50

-40

-30

-20

-10

0

10

20

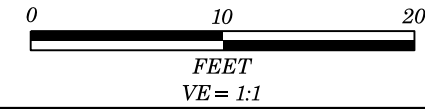
30

40

50

60

70



550

540

530

520

510

500

490

540

530

520

510

500

490

-70

-60

-50

-40

-30

-20

-10

0

10

20

30

40

50

60

70

B2-A
L

29+79.00 R 1
-15.0000
527.6000



BT
FIAD

CL

GROUND SURFACE

B2-B
L

29+95.00 R 1
21.0000
533.1000

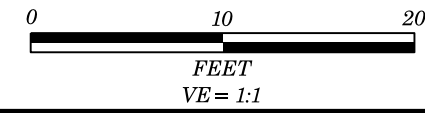


BT
FIAD

ALLUVIAL - BROWN SOFT WET SANDY SILT (A-4)

NON-CRYSTALLINE ROCK -
GRAY MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD
META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING
REC = 76%, RQD = 6%

NON-CRYSTALLINE ROCK -
GRAY MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD
META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING
REC = 53% RQD = 10%



550

540

530

520

510

500

550

540

530

520

510

500

-70

-60

-50

-40

-30

-20

-10

0

10

20

30

40

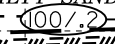
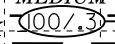
50

60

70

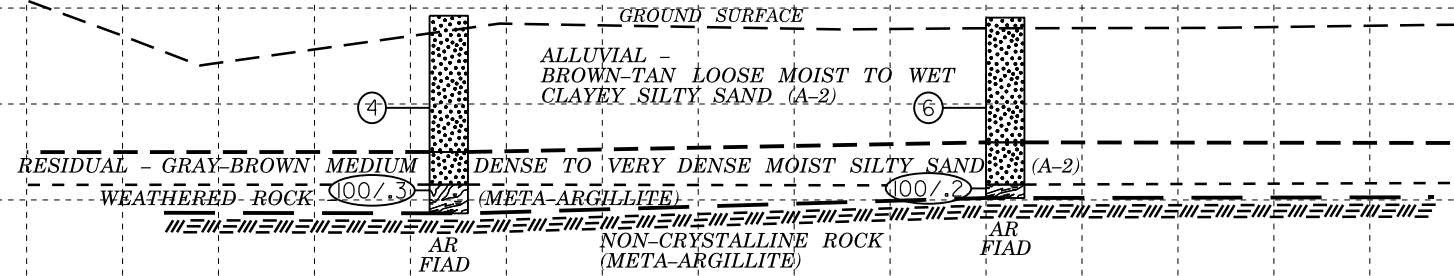
EB2-A
L
30+44.00-R-1
-13.0000
534.6000

EB2-B
L
30+46.00-R-1
16.0000
534.5000



AR
FIAD

AR
FIAD



GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | |
|--|-----------------|---------------------|------------|--------------------------|-------|---------------------------|-----------------|----|----|-----|-----------|---------|---------------------------|------------|------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. EB1-A | | STATION 28+82 | | OFFSET 15 ft LT | | ALIGNMENT -L- | | | | | | | | | |
| COLLAR ELEV. 535.2 ft | | TOTAL DEPTH 13.0 ft | | NORTHING 613,229 | | EASTING 1,579,735 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550X 84% 05/15/2015 | | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 12/16/15 | | COMP. DATE 12/16/15 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 540 | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | 535.2 | 0.0 |
| 530 | 530.9 | 4.3 | 3 | 2 | 5 | | | | | | | M | | | |
| 525 | 525.9 | 9.3 | 100/4 | | | | | | | | | | | 525.9 | 9.3 |
| | | | | | | | | | | | | | | 522.2 | 13.0 |

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | |
|--|-----------------|---------------------|------------|--------------------------|-------|---------------------------|-----------------|----|----|-----|-----------|---------|---------------------------|------------|------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. EB1-B | | STATION 28+81 | | OFFSET 16 ft RT | | ALIGNMENT -L- | | | | | | | | | |
| COLLAR ELEV. 535.1 ft | | TOTAL DEPTH 10.9 ft | | NORTHING 613,203 | | EASTING 1,579,752 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550X 84% 05/15/2015 | | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 12/16/15 | | COMP. DATE 12/16/15 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 540 | | | | | | | | | | | | | | | |
| 535 | | | | | | | | | | | | | | 535.1 | 0.0 |
| 530 | 530.8 | 4.3 | 2 | 3 | 1 | | | | | | | M | | | |
| 525 | 525.8 | 9.3 | 100/3 | | | | | | | | | | | 525.8 | 9.3 |
| | | | | | | | | | | | | | | 524.2 | 10.9 |

NCDOT BORE DOUBLE B5548_GEO_BRDG0103.GPJ NC_DOT.GDT 2/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | | | |
|--|-----------------|-------------------------------|------------|-----------------------|-------|---------------------------|----|----|----|-----|-----------|-----|-----|---------------------------|------------|---|------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | GROUND WTR (ft) | | | | | | | | | | | |
| BORING NO. B1-A | | STATION 29+42 | | OFFSET 18 ft LT | | ALIGNMENT -L- | | | | | | | | | | | |
| COLLAR ELEV. 532.6 ft | | TOTAL DEPTH 32.7 ft | | NORTHING 613,266 | | EASTING 1,579,782 | | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550X 84% 05/15/2015 | | DRILL METHOD NW Casing w/ SPT | | HAMMER TYPE Automatic | | | | | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 12/15/15 | | COMP. DATE 12/15/15 | | SURFACE WATER DEPTH N/A | | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | ELEV. (ft) | DEPTH (ft) | | |
| 535 | | | | | | | | | | | | | | | 532.6 | GROUND SURFACE | 0.0 |
| 530 | | | | | | | | | | | | | | | 527.4 | ALLUVIAL TAN-BROWN LOOSE MOIST SILTY SAND (A-2) | 5.2 |
| | 527.9 | 4.7 | 1 | 100/3 | | | | | | | | | | | | | |
| 525 | | | | | | | | | | | | | | | | | |
| | 522.9 | 9.7 | | 100/3 | | | | | | | | | | | | | |
| 520 | | | | | | | | | | | | | | | | | |
| | 517.9 | 14.7 | | 100/2 | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | | |
| | 512.9 | 19.7 | | 100/2 | | | | | | | | | | | | | |
| 510 | | | | | | | | | | | | | | | | | |
| | 507.9 | 24.7 | | 100/2 | | | | | | | | | | | | | |
| 505 | | | | | | | | | | | | | | | | | |
| | 499.9 | 32.7 | | 100/2 | | | | | | | | | | | 499.9 | Boring Terminated at Elevation 499.9 ft IN SEVERELY WEATHERED META-ARGILLITE ROCK | 32.7 |

NCDOT BORE SINGLE B5548_GEO_BRD0103.GPJ NC_DOT.GDT 2/24/16

GEOTECHNICAL BORING REPORT BORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | | |
|--|-----------------|---------------------|------------|--------------------------------|-------|---------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|---|------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. B1-B | | STATION 29+43 | | OFFSET 10 ft RT | | ALIGNMENT -L- | | | | | | | | | | |
| COLLAR ELEV. 531.8 ft | | TOTAL DEPTH 32.1 ft | | NORTHING 613,244 | | EASTING 1,579,800 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550X 84% 05/15/2015 | | | | DRILL METHOD NW Casing w/ Core | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 12/15/15 | | COMP. DATE 12/15/15 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 535 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 531.8 | GROUND SURFACE | 0.0 |
| 530 | | | | | | | | | | | | | | | ALLUVIAL TAN-BROWN LOOSE WET SILTY SAND (A-2) WITH GRAVEL LAYER FROM 3.5-4.2' | |
| | 527.6 | 4.2 | | | | | | | | | | | | 527.6 | | 4.2 |
| 525 | | | | | | | | | | | | | | 525.6 | WEATHERED ROCK BLUE-GRAY SEVERELY WEATHERED META-ARGILLITE | 6.2 |
| | | | | | | | | | | | | | | | NON-CRYSTALLINE ROCK GRAY VERY SLIGHTLY WEATHERED TO FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING | |
| 520 | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | |
| 510 | | | | | | | | | | | | | | | | |
| 505 | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | 499.7 | Boring Terminated at Elevation 499.7 ft IN META-ARGILLITE ROCK | 32.1 |

NCDOT BORE SINGLE B5548_GEO_BRD0103.GPJ NC_DOT.GDT 2/24/16

GEOTECHNICAL BORING REPORT CORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | |
|--|---------------|---------------------|----------|--------------------------------|-------------|---------------------------|-----------------|-------------|------------|-----|--|------------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | |
| BORING NO. B1-B | | STATION 29+43 | | OFFSET 10 ft RT | | ALIGNMENT -L- | | | | | | |
| COLLAR ELEV. 531.8 ft | | TOTAL DEPTH 32.1 ft | | NORTHING 613,244 | | EASTING 1,579,800 | | | | | | |
| DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550X 84% 05/15/2015 | | | | DRILL METHOD NW Casing w/ Core | | HAMMER TYPE Automatic | | | | | | |
| DRILLER Smith, C.L. | | START DATE 12/15/15 | | COMP. DATE 12/15/15 | | SURFACE WATER DEPTH N/A | | | | | | |
| CORE SIZE NW | | | | TOTAL RUN 25.9 ft | | | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN | | SAMP. NO. | STRATA | | LOG | DESCRIPTION AND REMARKS | DEPTH (ft) |
| | | | | | REC. (ft) % | ROD (ft) % | | REC. (ft) % | ROD (ft) % | | | |
| 525.6 | 525.6 | 6.2 | 3.6 | 3:00/1.0 | (3.6) 100% | (1.2) 33% | | (25.5) 98% | (7.0) 27% | | Begin Coring @ 6.2 ft NON-CRYSTALLINE ROCK GRAY VERY SLIGHTLY WEATHERED TO FRESH, HARD META-ARGILLITE WITH VERY CLOSE TO MODERATELY CLOSE FRACTURE SPACING R1=7, R2=8, R3=10, R4=6, R5=7, RMR=38 ROCK TYPE B | 6.2 |
| | 522.0 | 9.8 | 5.0 | 3:30/1.0 | (5.0) 100% | (1.6) 32% | | | | | | |
| 520 | | | | | | | | | | | | |
| | 517.0 | 14.8 | 5.0 | 3:15/1.0 | (4.8) 96% | (2.4) 48% | | | | | | |
| 515 | | | | | | | | | | | | |
| | 512.0 | 19.8 | 5.0 | 3:45/1.0 | (4.8) 96% | (1.3) 26% | | | | | | |
| 510 | | | | | | | | | | | | |
| | 507.0 | 24.8 | 5.0 | NM | (5.0) 100% | (0.5) 10% | | | | | | |
| 505 | | | | | | | | | | | | |
| | 502.0 | 29.8 | | | | | | | | | | |
| 500 | 499.7 | 32.1 | 2.3 | NM | (2.3) 100% | (0.0) 0% | | | | | Boring Terminated at Elevation 499.7 ft IN META-ARGILLITE ROCK | 32.1 |

NCDOT CORE SINGLE B5548_GEO_BRD0103.GPJ NC_DOT.GDT 2/24/16

GEOTECHNICAL BORING REPORT BORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | | |
|--|-----------------|--------------------------------|------------|-----------------------|-------|---------------------------|----|----|----|-----|-----------|-----|-----|---------------------------|------------|------------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | GROUND WTR (ft) | | | | | | | | | | |
| BORING NO. B2-A | | STATION 29+79 | | OFFSET 15 ft LT | | ALIGNMENT -L- | | | | | | | | | | |
| COLLAR ELEV. 527.6 ft | | TOTAL DEPTH 30.6 ft | | NORTHING 613,285 | | EASTING 1,579,814 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE Drilled in July 1999 | | DRILL METHOD NW Casing w/ Core | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 07/14/99 | | COMP. DATE 07/14/99 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | ELEV. (ft) | DEPTH (ft) |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 530 | | | | | | | | | | | | | | | 527.6 | 0.0 |
| 525 | | | | | | | | | | | | | | | | |
| 520 | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | |
| 510 | | | | | | | | | | | | | | | | |
| 505 | | | | | | | | | | | | | | | | |
| 500 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | 497.0 | 30.6 |
| Boring Terminated at Elevation 497.0 ft IN META-ARGILLITE ROCK This boring from metric project R-2533CC performed in 7/1999 | | | | | | | | | | | | | | | | |

NCDOT BORE SINGLE B5548_GEO_BRDG0103.GPJ_NC_DOT.GDT 2/24/16

GEOTECHNICAL BORING REPORT CORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | |
|--|---------------|--------------------------------|----------|-----------------------|----------|---------------------------|-----------|----------|---------|-----|--|------------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | GROUND WTR (ft) | | | | | | |
| BORING NO. B2-A | | STATION 29+79 | | OFFSET 15 ft LT | | ALIGNMENT -L- | | | | | | |
| COLLAR ELEV. 527.6 ft | | TOTAL DEPTH 30.6 ft | | NORTHING 613,285 | | EASTING 1,579,814 | | | | | | |
| DRILL RIG/HAMMER EFF./DATE Drilled in July 1999 | | DRILL METHOD NW Casing w/ Core | | HAMMER TYPE Automatic | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 07/14/99 | | COMP. DATE 07/14/99 | | SURFACE WATER DEPTH N/A | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN | | SAMP. NO. | STRATA | | LOG | DESCRIPTION AND REMARKS | DEPTH (ft) |
| | | | | | REC. (%) | RQD (%) | | REC. (%) | RQD (%) | | | |
| 527.6 | 527.6 | 0.0 | 4.5 | | (2.9) | (0.4) | | (23.2) | (1.9) | | Ground Surface | |
| 525 | 523.1 | 4.5 | 4.5 | | (3.3) | (0.0) | | 76% | 6% | | NON-CRYSTALLINE ROCK GRAY MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING | |
| 520 | 518.6 | 9.0 | 5.0 | | (4.4) | (0.4) | | 88% | 8% | | | |
| 515 | 513.6 | 14.0 | 4.8 | | (3.3) | (0.0) | | 69% | 0% | | | |
| 510 | 508.8 | 18.8 | 5.0 | | (5.0) | (1.1) | | 100% | 22% | | | |
| 505 | 503.8 | 23.8 | 6.8 | | (4.3) | (0.0) | | 63% | 0% | | | |
| 500 | 497.0 | 30.6 | | | | | | | | | | |
| Boring Terminated at Elevation 497.0 ft IN META-ARGILLITE ROCK This boring from metric project R-2533CC performed in 7/1999 | | | | | | | | | | | | |

NCDOT CORE SINGLE B5548_GEO_BRDG0103.GPJ_NC_DOT.GDT 2/24/16

GEOTECHNICAL BORING REPORT BORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | | |
|--|-----------------|---------------------|------------|--------------------------------|-------|---------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|-----|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. B2-B | | STATION 29+95 | | OFFSET 21 ft RT | | ALIGNMENT -L- | | | | | | | | | | |
| COLLAR ELEV. 533.1 ft | | TOTAL DEPTH 30.2 ft | | NORTHING 613,265 | | EASTING 1,579,848 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE Drilled in July 1999 | | | | DRILL METHOD NW Casing w/ Core | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 07/15/99 | | COMP. DATE 07/15/99 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 535 | | | | | | | | | | | | | | 533.1 | GROUND SURFACE | 0.0 |
| 530 | | | | | | | | | | | | | | 529.8 | ALLUVIAL BROWN SOFT WET SANDY SILT (A-4) | 3.3 |
| 525 | | | | | | | | | | | | | | | NON-CRYSTALLINE ROCK GRAY MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING | |
| 520 | | | | | | | | | | | | | | | | |
| 515 | | | | | | | | | | | | | | | | |
| 510 | | | | | | | | | | | | | | | | |
| 505 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 502.9 | Boring Terminated at Elevation 502.9 ft IN META-ARGILLITE ROCK This boring from metric project R-2533CC performed in 7/1999 | |

NCDOT BORE SINGLE B5548_GEO_BRDG0103.GPJ NC_DOT_GDT 2/24/16

GEOTECHNICAL BORING REPORT CORE LOG

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | |
|--|---------------|---------------------|----------|--------------------------------|--------------|---------------------------|-----------------|---------------|--------------|-----|---|------------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | |
| BORING NO. B2-B | | STATION 29+95 | | OFFSET 21 ft RT | | ALIGNMENT -L- | | | | | | |
| COLLAR ELEV. 533.1 ft | | TOTAL DEPTH 30.2 ft | | NORTHING 613,265 | | EASTING 1,579,848 | | | | | | |
| DRILL RIG/HAMMER EFF./DATE Drilled in July 1999 | | | | DRILL METHOD NW Casing w/ Core | | HAMMER TYPE Automatic | | | | | | |
| DRILLER Smith, C.L. | | START DATE 07/15/99 | | COMP. DATE 07/15/99 | | SURFACE WATER DEPTH N/A | | | | | | |
| CORE SIZE NW | | | | TOTAL RUN 26.9 ft | | | | | | | | |
| ELEV (ft) | RUN ELEV (ft) | DEPTH (ft) | RUN (ft) | DRILL RATE (Min/ft) | RUN | | SAMP. NO. | STRATA | | LOG | DESCRIPTION AND REMARKS | DEPTH (ft) |
| | | | | | REC. (%) | RQD (%) | | REC. (%) | RQD (%) | | | |
| 529.8 | 529.8 | 3.3 | 6.1 | | (1.5) 25% | (0.7) 11% | | (14.3) 53% | (2.6) 10% | | Begin Coring @ 3.3 ft NON-CRYSTALLINE ROCK GRAY MODERATELY WEATHERED TO FRESH, MODERATELY HARD TO HARD META-ARGILLITE WITH VERY CLOSE TO CLOSE FRACTURE SPACING | 3.3 |
| 525 | 523.7 | 9.4 | 4.9 | | (2.0) 41% | (0.0) 0% | | | | | | |
| 520 | 518.8 | 14.3 | 5.0 | | (2.7) 54% | (0.0) 0% | | | | | | |
| 515 | 513.8 | 19.3 | 4.6 | | (3.7) 80% | (0.8) 17% | | | | | | |
| 510 | 509.2 | 23.9 | 6.3 | | (4.4) 70% | (1.1) 17% | | | | | | |
| 505 | 502.9 | 30.2 | | | | | | | | | Boring Terminated at Elevation 502.9 ft IN META-ARGILLITE ROCK This boring from metric project R-2533CC performed in 7/1999 | 30.2 |

NCDOT CORE SINGLE B5548_GEO_BRDG0103.GPJ NC_DOT_GDT 2/24/16

GEOTECHNICAL BORING REPORT

BORE LOG

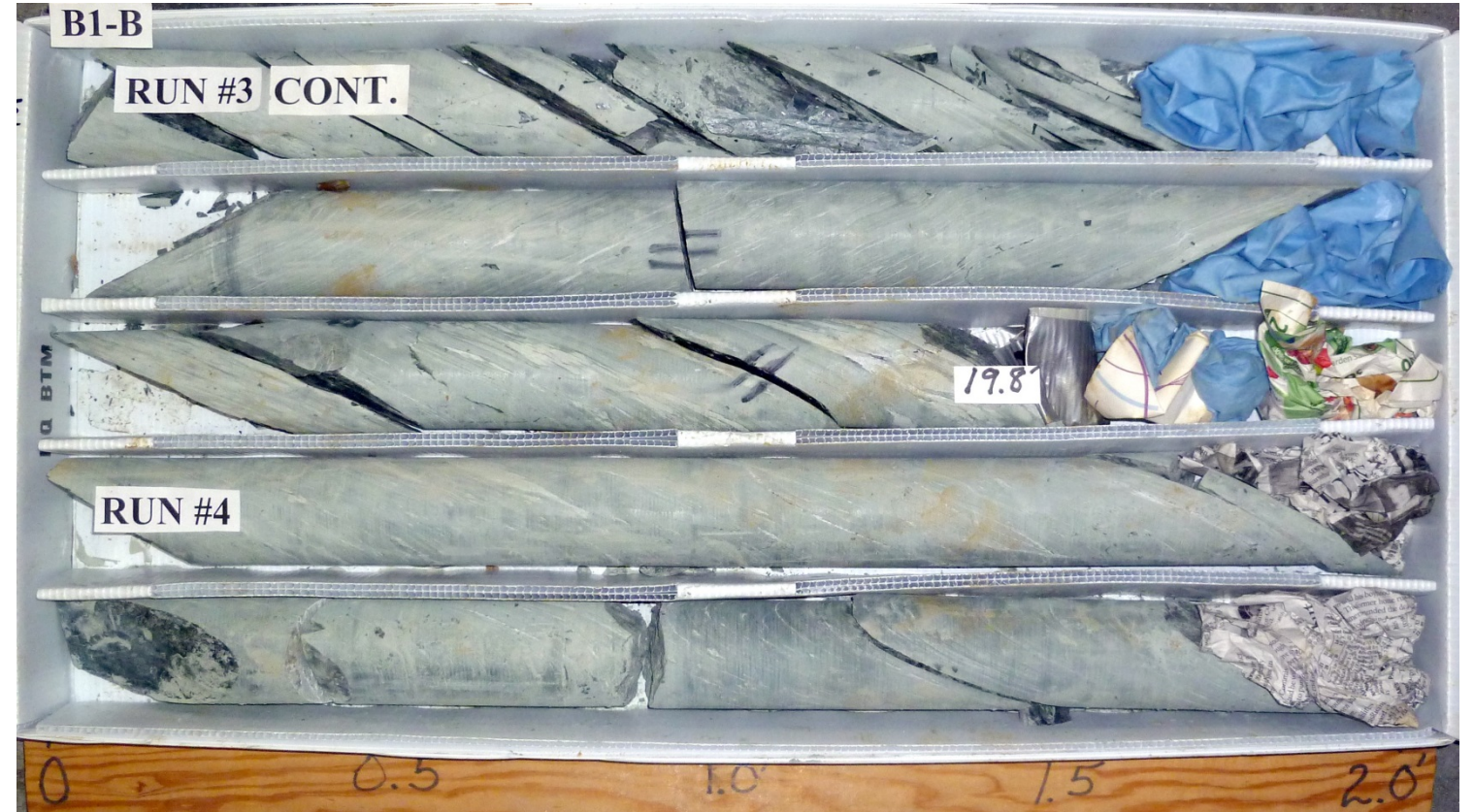
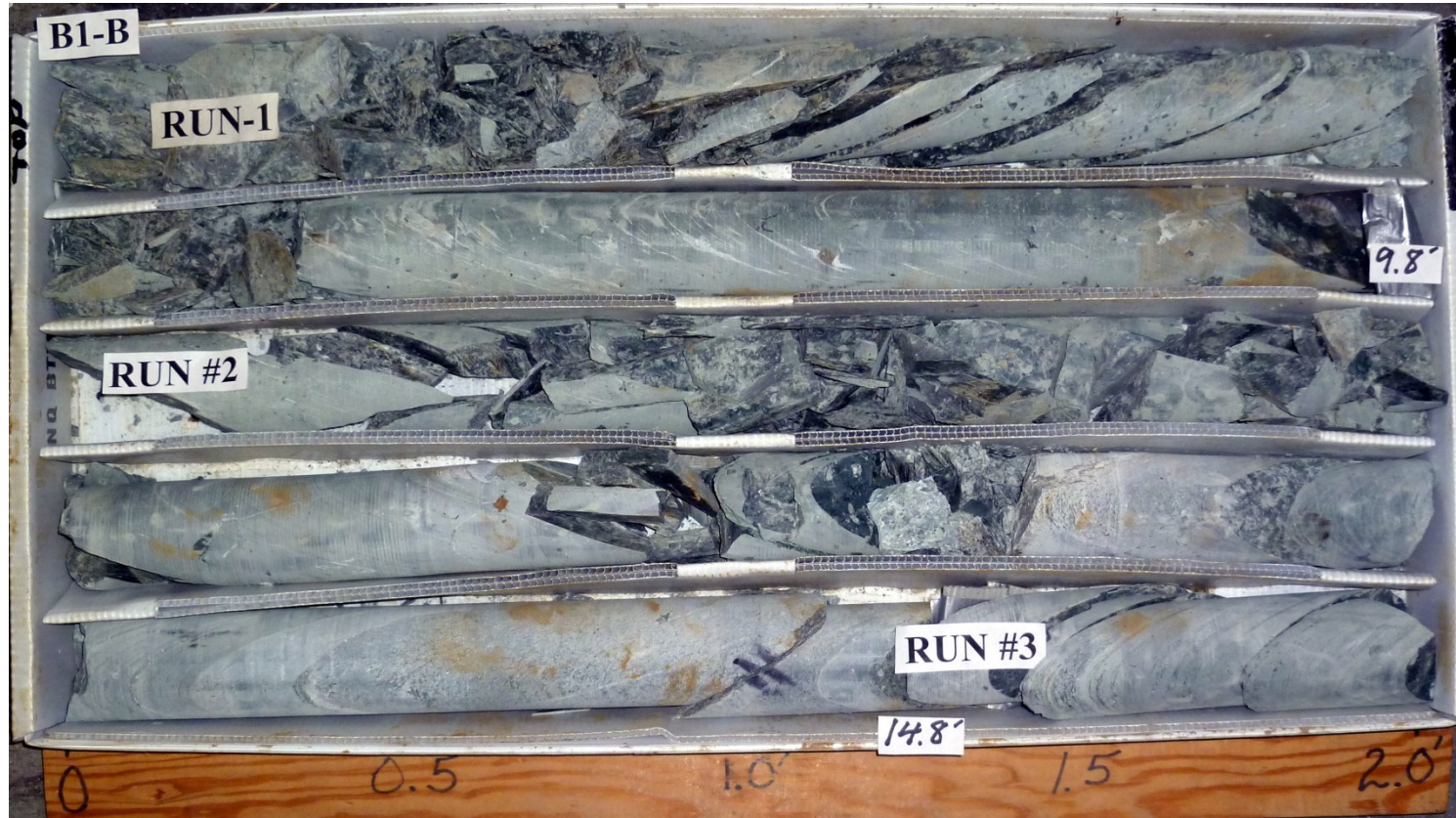
| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | | |
|--|-----------------|---------------------|--------------------------|---------------------|-----------------------|---------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|---|------|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. EB2-A | | STATION 30+44 | | OFFSET 13 ft LT | | ALIGNMENT -L- | | | | | | | | | | |
| COLLAR ELEV. 534.6 ft | | TOTAL DEPTH 10.3 ft | | NORTHING 613,321 | | EASTING 1,579,869 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550X 84% 05/15/2015 | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 12/16/15 | | COMP. DATE 12/16/15 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 535 | | | | | | | | | | | | | | 534.6 | GROUND SURFACE | 0.0 |
| | | | | | | | | | | | | | | | ALLUVIAL BROWN-TAN LOOSE MOIST TO WET CLAYEY SILTY SAND (A-2) | |
| 530 | 530.8 | 3.8 | 1 | 2 | 2 | | | | | | | W | | 527.5 | | 7.1 |
| | | | | | | | | | | | | | | 525.8 | RESIDUAL GRAY-BROWN MEDIUM DENSE TO VERY DENSE MOIST SILTY SAND (A-2) | 8.8 |
| 525 | 525.8 | 8.8 | 100/3 | | | | | | | | | | | 524.3 | WEATHERED ROCK SEVERELY WEATHERED META-ARGILLITE | 10.3 |
| | | | | | | | | | | | | | | | Boring Terminated by Auger Refusal at Elevation 524.3 ft ON META-ARGILLITE ROCK | |

| WBS 55048.1.1 | | TIP B-5548 | | COUNTY CABARRUS | | GEOLOGIST Stickney, J. K. | | | | | | | | | | |
|--|-----------------|---------------------|--------------------------|---------------------|-----------------------|---------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|---|-----|
| SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER DUTCH BUFFALO CREEK | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. EB2-B | | STATION 30+46 | | OFFSET 16 ft RT | | ALIGNMENT -L- | | | | | | | | | | |
| COLLAR ELEV. 534.5 ft | | TOTAL DEPTH 9.4 ft | | NORTHING 613,298 | | EASTING 1,579,887 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550X 84% 05/15/2015 | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER Smith, C.L. | | START DATE 12/16/15 | | COMP. DATE 12/16/15 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 535 | | | | | | | | | | | | | | 534.5 | GROUND SURFACE | 0.0 |
| | | | | | | | | | | | | | | | ALLUVIAL BROWN-TAN LOOSE MOIST TO WET CLAYEY SILTY SAND (A-2) | |
| 530 | 530.8 | 3.7 | 2 | 3 | 3 | | | | | | | W | | 528.0 | | 6.5 |
| | | | | | | | | | | | | | | 525.8 | RESIDUAL GRAY-BROWN MEDIUM DENSE TO VERY DENSE SILTY SAND (A-2) | 8.7 |
| | | | | | | | | | | | | | | 525.1 | WEATHERED ROCK SEVERELY WEATHERED META-ARGILLITE | 9.4 |
| | | | | | | | | | | | | | | | Boring Terminated by Auger Refusal at Elevation 525.1 ft ON META-ARGILLITE ROCK | |

NCDOT BORE DOUBLE B5548_GEO_BRDG0103.GPJ NC_DOT.GDT 2/24/16

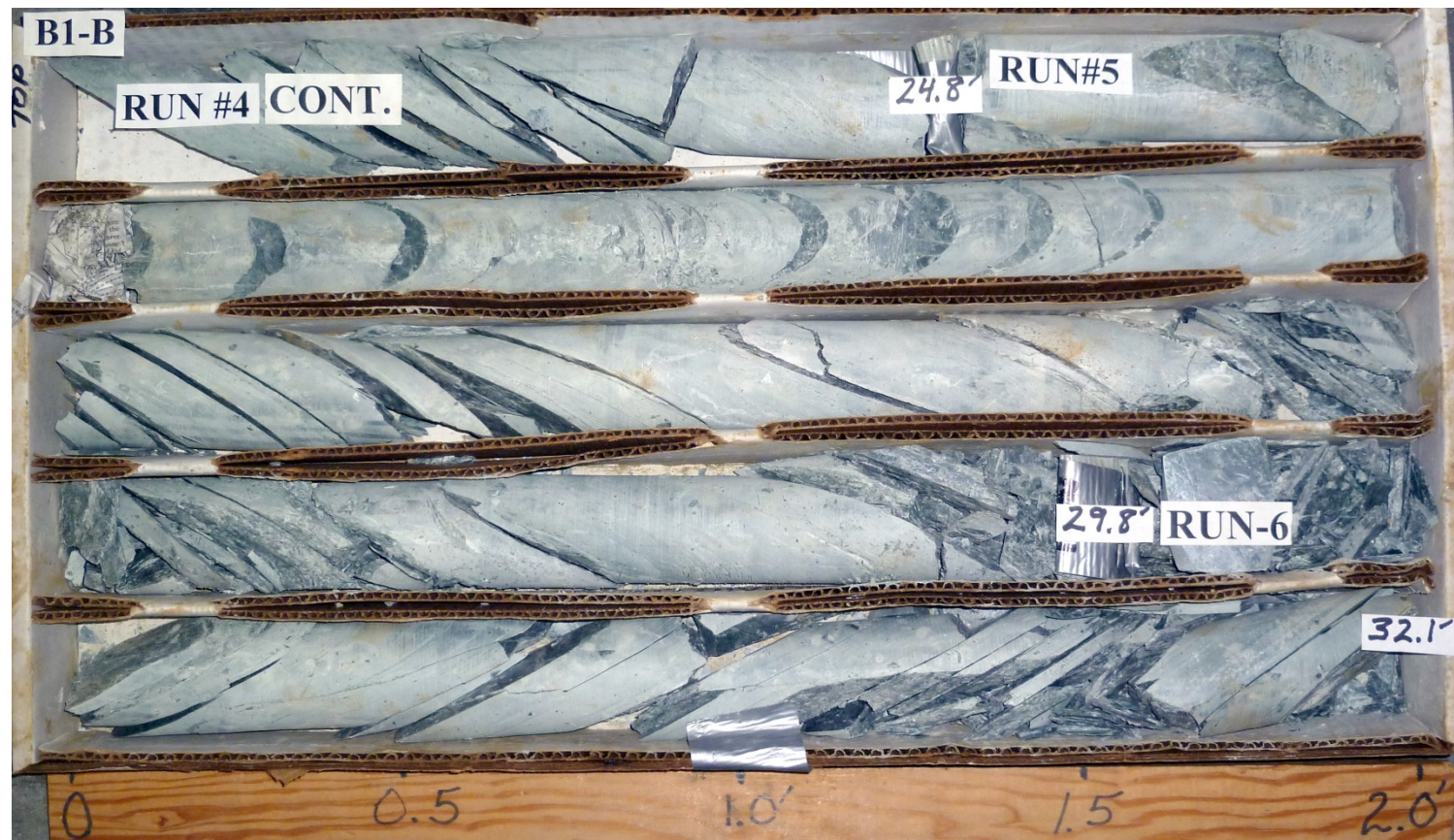
55048.1.1 (B-5548)
CABARRUS COUNTY
BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49 BETWEEN SR 1006 AND SR 2444 (CRUISE RD.)

CORE PHOTOS



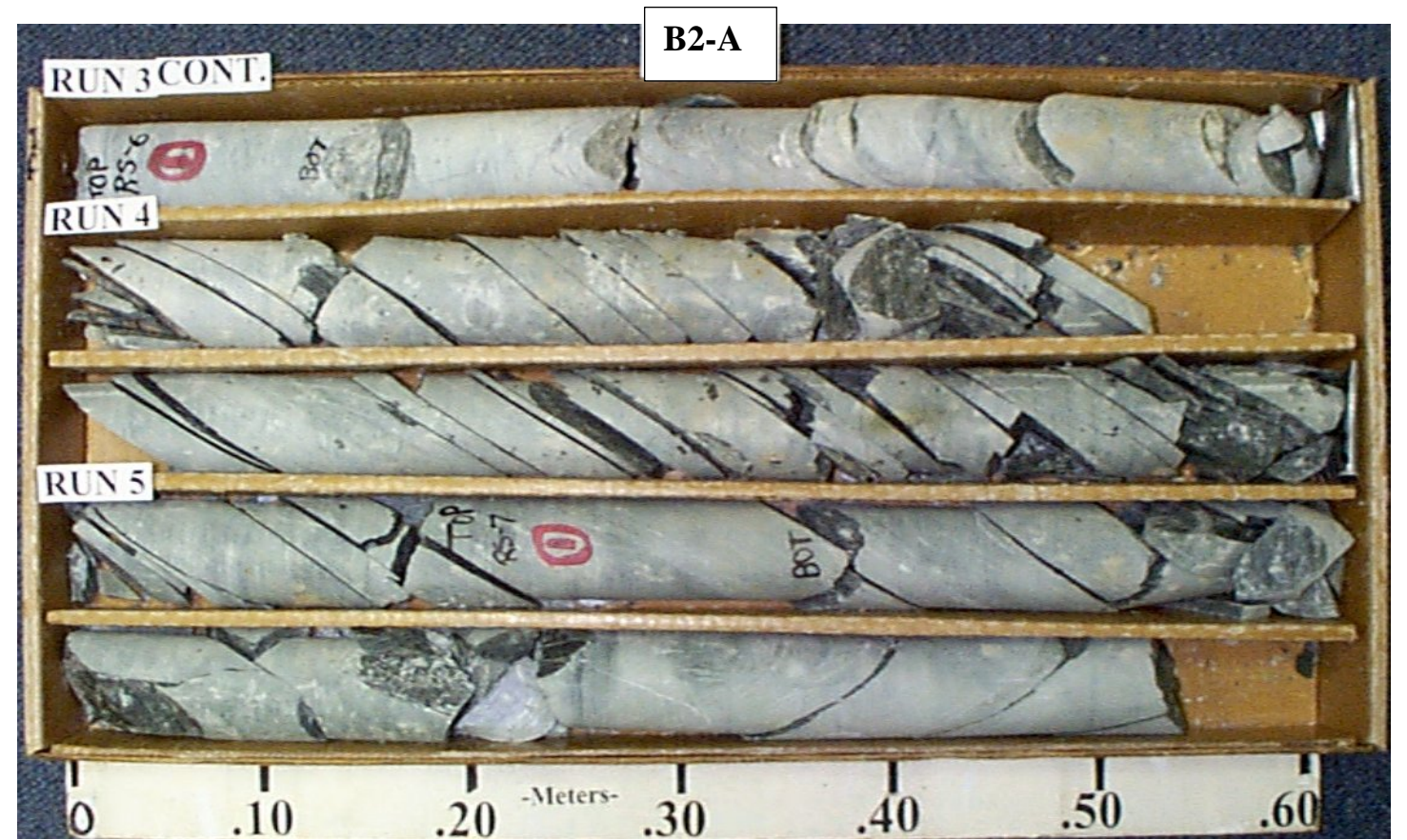
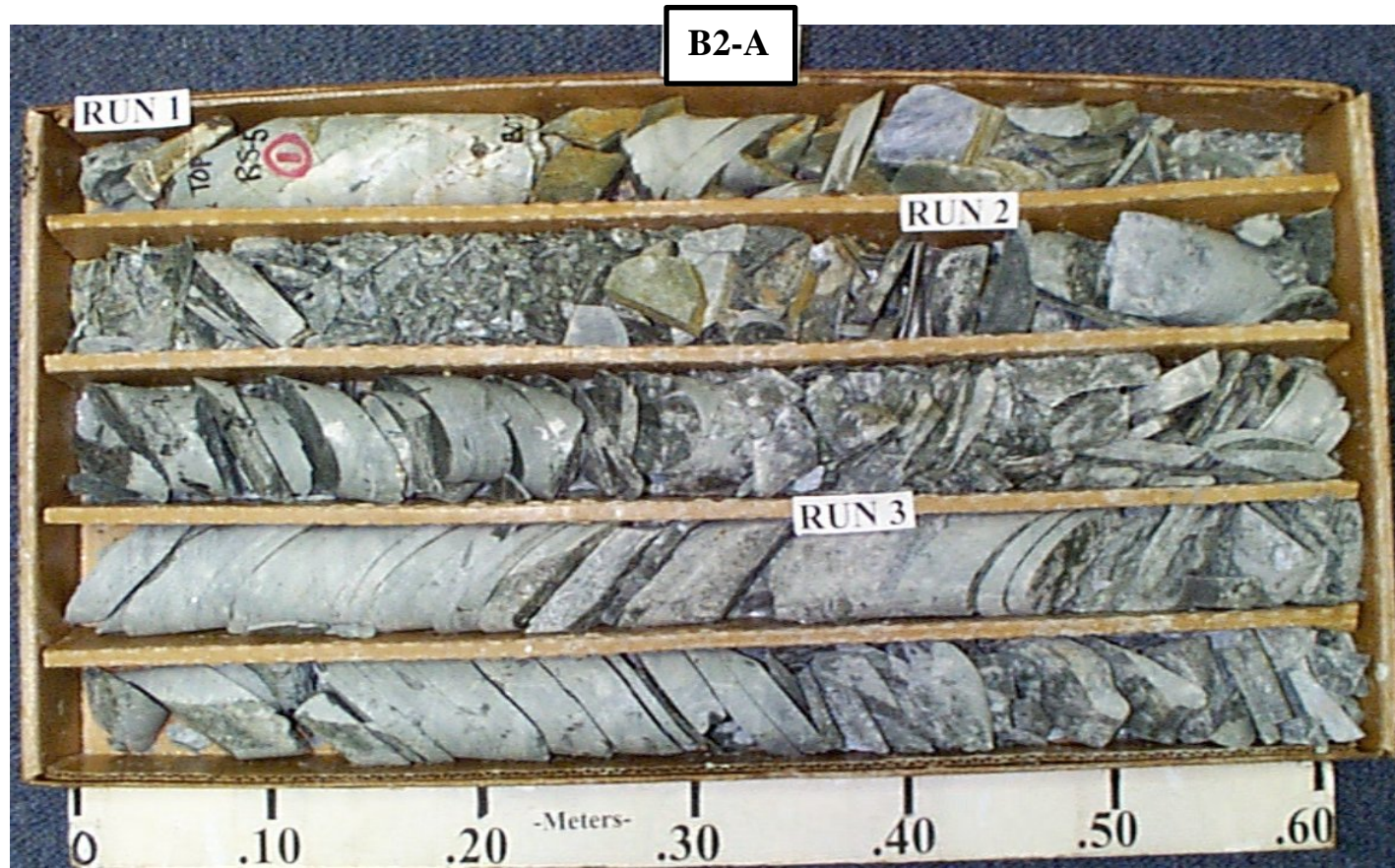
55048.1.1 (B-5548)
CABARRUS COUNTY
BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49 BETWEEN SR 1006 AND SR 2444 (CRUISE RD.)

CORE PHOTOS



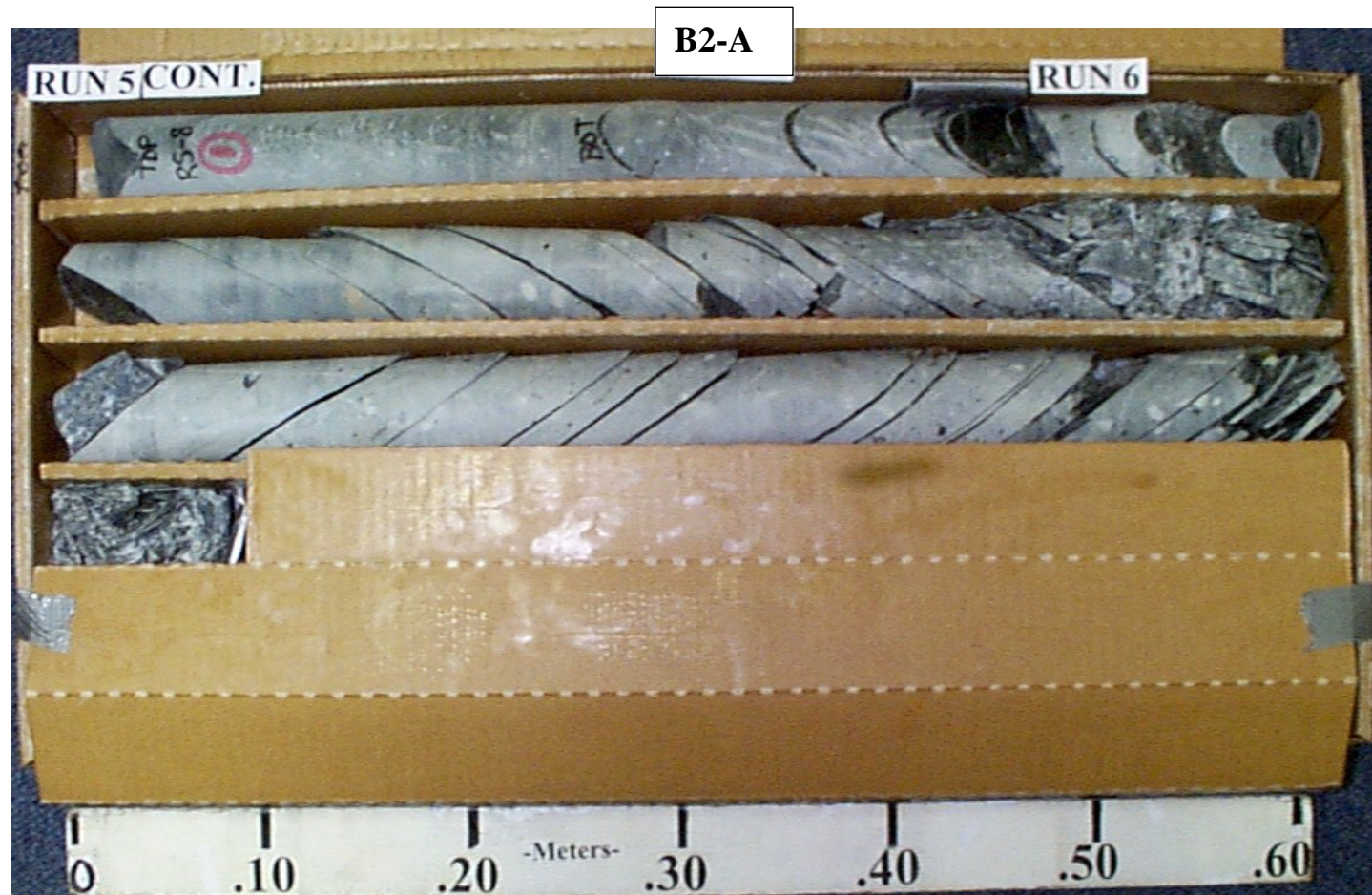
55048.1.1 (B-5548)
CABARRUS COUNTY
BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49 BETWEEN SR 1006 AND SR 2444 (CRUISE RD.)

CORE PHOTOS



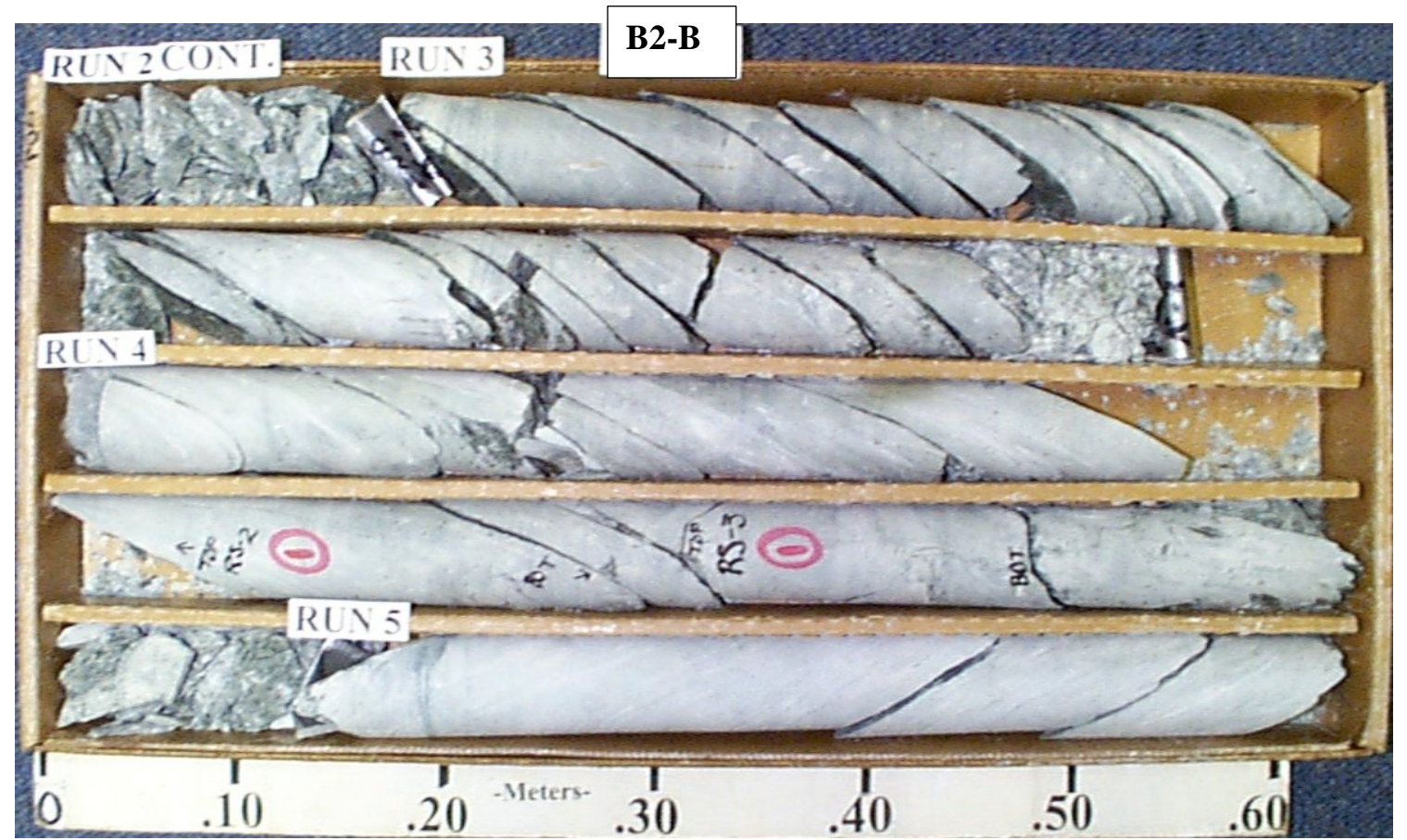
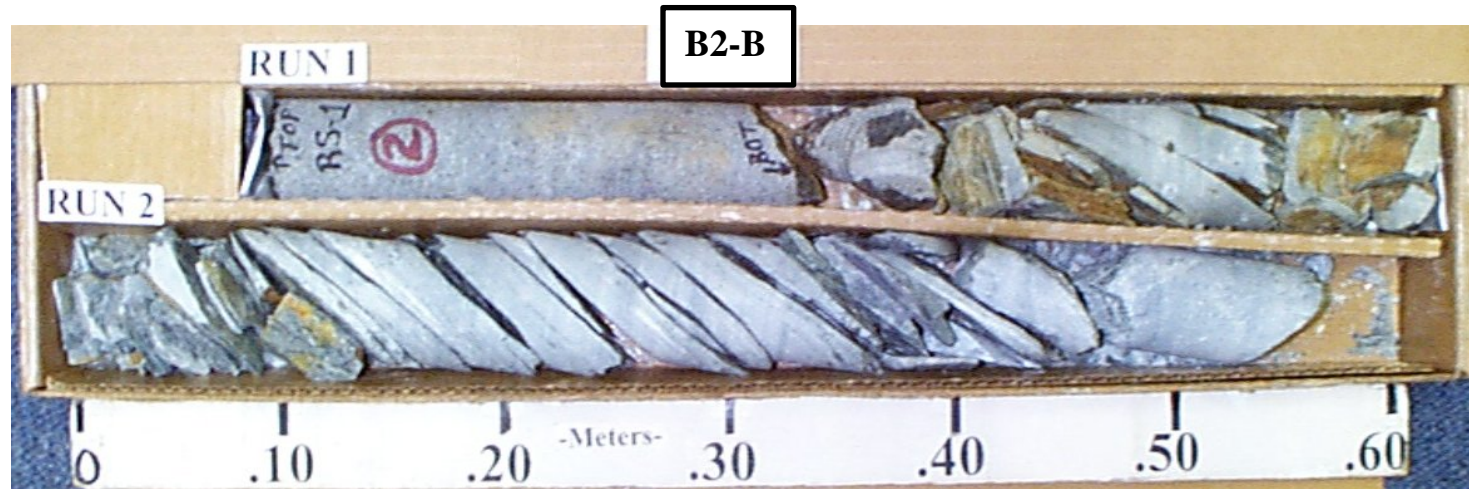
55048.1.1 (B-5548)
CABARRUS COUNTY
BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49 BETWEEN SR 1006 AND SR 2444 (CRUISE RD.)

CORE PHOTOS



55048.1.1 (B-5548)
CABARRUS COUNTY
BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49 BETWEEN SR 1006 AND SR 2444 (CRUISE RD.)

CORE PHOTOS



55048.1.1 (B-5548)
CABARRUS COUNTY
BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49 BETWEEN SR 1006 AND SR 2444 (CRUISE RD.)

CORE PHOTOS

