

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 52000.I.STR09T1B (P-5206D) F.A. PROJ. N/A

COUNTY ROWAN

PROJECT DESCRIPTION REID TO NORTH KANNAPOLIS ON THE
NCRRNS MAINLINE

SITE DESCRIPTION RETAINING WALL A ON S. CENTRAL AVENUE
(-Y46-) AT STATION 13+00 TO 27+50

CONTENTS

| <u>SHEET</u> | <u>DESCRIPTION</u> |
|--------------|--------------------|
| 1 | TITLE SHEET |
| 2 | LEGEND |
| 3-4 | SITE PLANS |
| 5-7 | PROFILES |
| 8-15 | BORE LOG REPORTS |
| 16 | SITE PHOTOGRAPHS |

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) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL
R. TOOTHMAN

G. LOWDERMILK

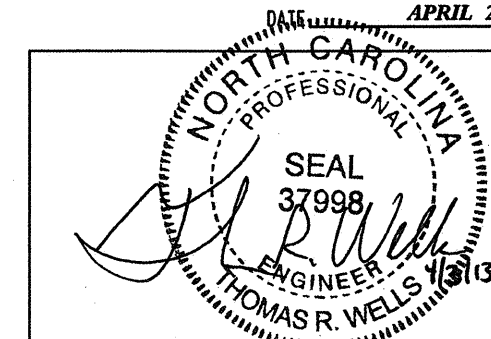
W. FELDER

INVESTIGATED BY **M. FIORA**

CHECKED BY **T. WELLS**

SUBMITTED BY **X. BARRETT**

DATE **APRIL 2013**



PROJECT: 52000.I.STR09T1B ID: P-5206D

0160DEL P10b2

DRAWN BY: **W. FELDER**

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

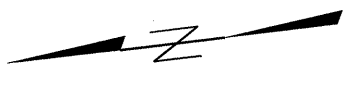
NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

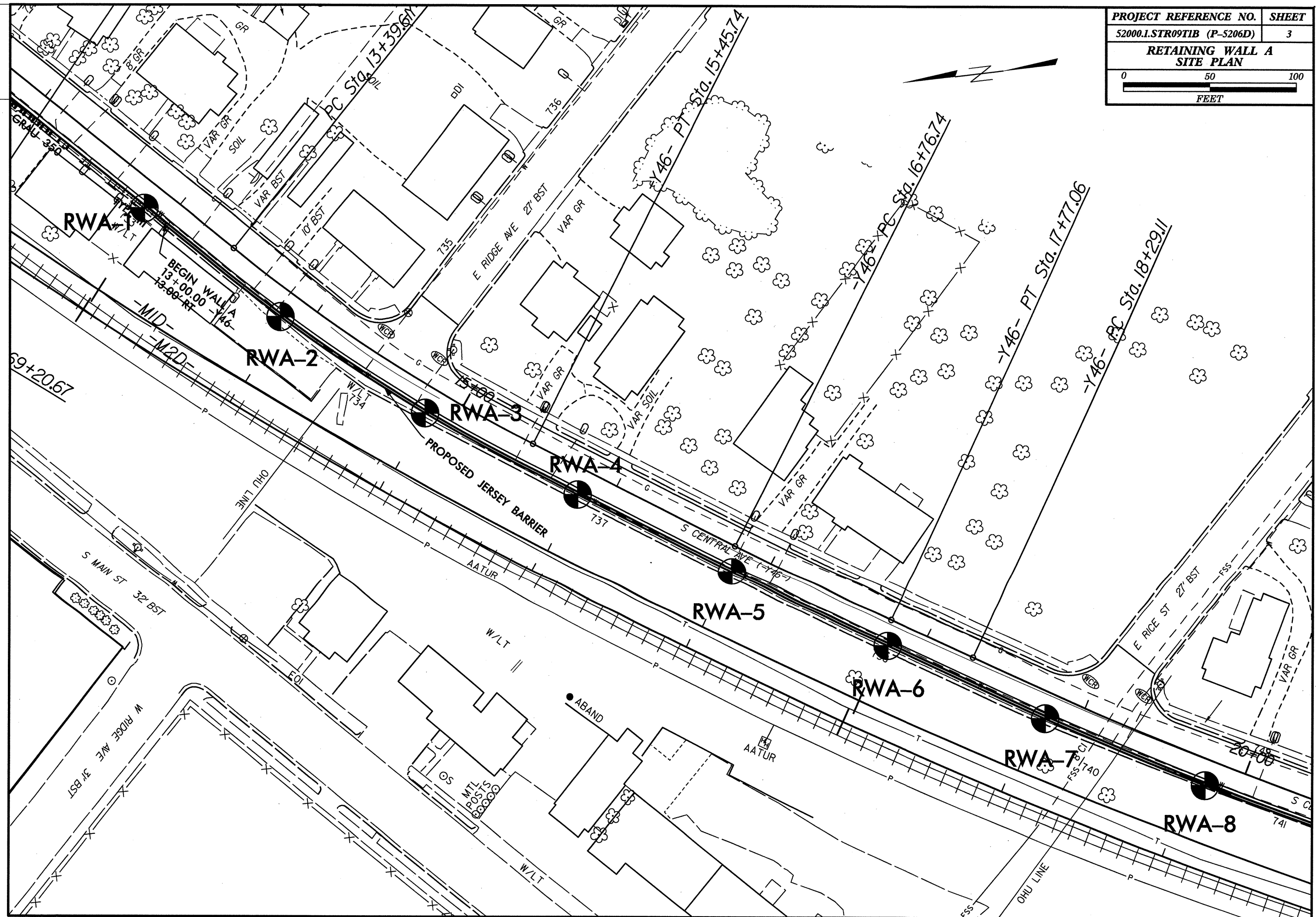
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

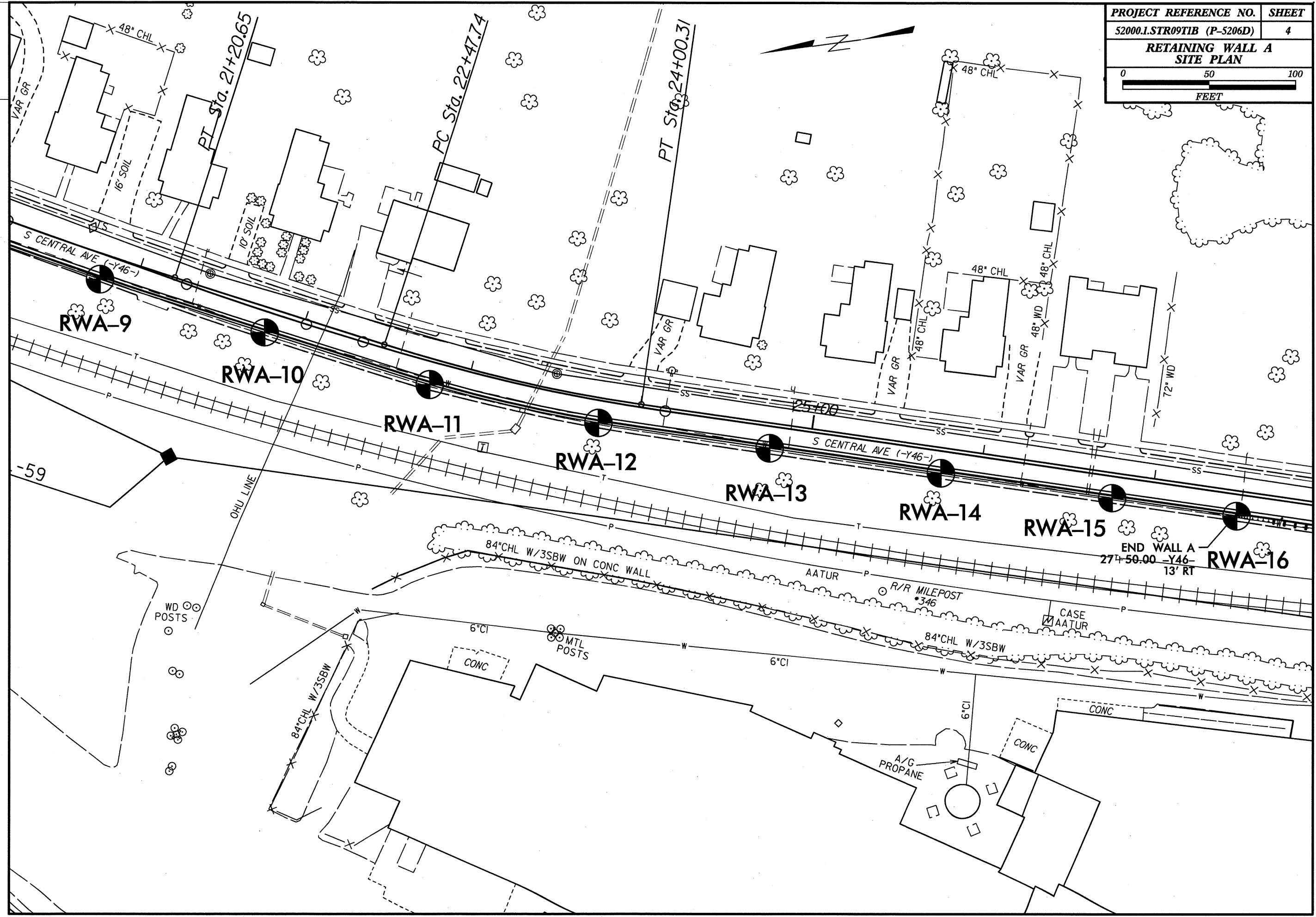
Table with multiple sections: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSION, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, WEATHERING, ROCK HARDNESS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INDURATION.



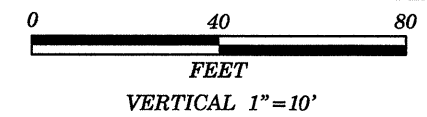
0160DEL P10b2



0160DEL P10b2

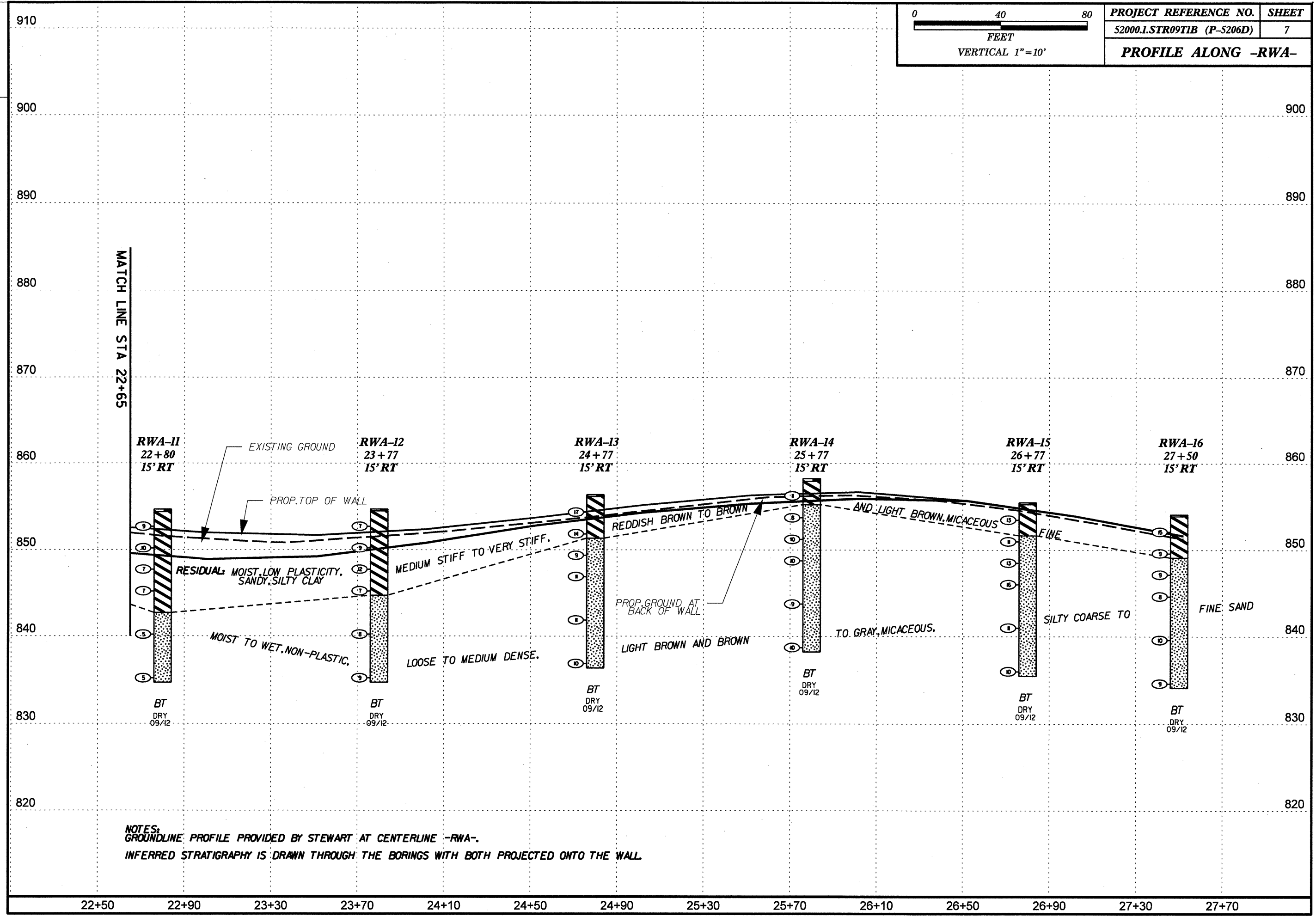


0160DEL P10b2



| | |
|----------------------------|-------|
| PROJECT REFERENCE NO. | SHEET |
| 52000.1.STR09TIB (P-5206D) | 7 |

PROFILE ALONG -RWA-



NOTES:
GROUNDLINE: PROFILE PROVIDED BY STEWART AT CENTERLINE -RWA-.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE WALL.



| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|------|---|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RWA-5 | | STATION 16+83 | | OFFSET 14 ft RT | | ALIGNMENT -Y46- | | | | | | | | | | |
| COLLAR ELEV. 861.6 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,904 | | EASTING 1,520,400 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF/DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/19/12 | | COMP. DATE 09/19/12 | | 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 | | | | | | |
| 865 | | | | | | | | | | | | | | | | |
| 860 | 860.6 | 1.0 | 5 | 5 | 5 | | | | | | | | | 861.6 | 0.0 | GROUND SURFACE |
| | 858.1 | 3.5 | 2 | 3 | 5 | | | | | | | | | | | RESIDUAL Light Brown, Micaceous, Coarse to Fine Sandy, Silty CLAY |
| 855 | 855.6 | 6.0 | 5 | 7 | 8 | | | | | | | | | 855.6 | 6.0 | Light Brown to Gray, Micaceous, Silty Coarse to Fine SAND |
| | 853.1 | 8.5 | 3 | 5 | 5 | | | | | | | | | | | |
| 850 | 848.1 | 13.5 | 3 | 3 | 3 | | | | | | | | | | | |
| 845 | 843.1 | 18.5 | 2 | 3 | 3 | | | | | | | | | 841.6 | 20.0 | Boring Terminated at Elevation 841.6 ft in Silty SAND Note: Asphalt (0.0 feet to 0.2 feet) |

| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|------|---|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RWA-6 | | STATION 17+82 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | | |
| COLLAR ELEV. 860.5 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,836 | | EASTING 1,520,356 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF/DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/19/12 | | COMP. DATE 09/19/12 | | 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 | | | | | | |
| 865 | | | | | | | | | | | | | | | | |
| 860 | 859.5 | 1.0 | 2 | 2 | 2 | | | | | | | | | 860.5 | 0.0 | GROUND SURFACE |
| | 857.0 | 3.5 | WOH | 2 | 2 | | | | | | | | | | | RESIDUAL Light Brown to Reddish Brown, Micaceous, Coarse to Fine Sandy, Silty CLAY |
| 855 | 854.5 | 6.0 | 5 | 6 | 9 | | | | | | | | | | | |
| | 852.0 | 8.5 | 5 | 7 | 10 | | | | | | | | | | | |
| 850 | 847.0 | 13.5 | 10 | 100/0.5 | | | | | | | | | | | | |
| 845 | 842.0 | 18.5 | WOH | 2 | 2 | | | | | | | | | 840.5 | 20.0 | Boring Terminated at Elevation 840.5 ft in Silty SAND Note: Asphalt (0.0 feet to 0.2 feet) |



| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | |
|---|-----------------|---------------------|--------------------------|-------------------------|-----------------------|------------------------|-----------------|----|----|-----------|-----|---------------------------|---|------|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | |
| BORING NO. | STATION | OFFSET | ALIGNMENT | | | 0 HR. | Dry | | | | | | | |
| RWA-7 | 18+81 | 15 ft RT | -Y46- | | | 24 HR. | FIAD | | | | | | | |
| COLLAR ELEV. 859.8 ft | | TOTAL DEPTH 20.0 ft | NORTHING 656,753 | EASTING 1,520,303 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/19/12 | COMP. DATE 09/19/12 | 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 |
| 860 | | | | | | | | | | | | 859.8 | GROUND SURFACE | 0.0 |
| | 858.8 | 1.0 | 3 | 5 | 8 | | | | | | M | | RESIDUAL Reddish Brown, Micaceous, Coarse to Fine Sandy, Silty CLAY | |
| | 856.3 | 3.5 | 5 | 8 | 9 | | | | | | M | | | |
| 855 | 853.8 | 6.0 | 3 | 8 | 10 | | | | | | M | | | |
| | 851.3 | 8.5 | 5 | 8 | 11 | | | | | | M | | | |
| 850 | | | | | | | | | | | | | | |
| | 846.3 | 13.5 | 2 | 3 | 4 | | | | | | M | | Light Brown to Gray, Micaceous, Silty Coarse to Fine SAND | 13.0 |
| 845 | | | | | | | | | | | | | | |
| | 841.3 | 18.5 | 2 | 2 | 4 | | | | | | W | | | |
| 840 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | Boring Terminated at Elevation 839.8 ft in Silty SAND | |
| | | | | | | | | | | | | | Note: Asphalt (0.0 feet to 0.1 feet) | |

| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | |
|---|-----------------|---------------------|--------------------------|-------------------------|-----------------------|------------------------|-----------------|----|----|-----------|-----|---------------------------|---|-----|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | |
| BORING NO. | STATION | OFFSET | ALIGNMENT | | | 0 HR. | Dry | | | | | | | |
| RWA-8 | 19+81 | 15 ft RT | -Y46- | | | 24 HR. | FIAD | | | | | | | |
| COLLAR ELEV. 859.6 ft | | TOTAL DEPTH 20.0 ft | NORTHING 656,665 | EASTING 1,520,253 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | COMP. DATE 09/20/12 | 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 |
| 860 | | | | | | | | | | | | 859.6 | GROUND SURFACE | 0.0 |
| | 858.6 | 1.0 | 3 | 6 | 6 | | | | | | M | | RESIDUAL Reddish Brown, Micaceous, Coarse to Fine Sandy, Silty CLAY | |
| | 856.1 | 3.5 | 3 | 4 | 4 | | | | | | M | | Light Brown to Gray, Micaceous, Silty Coarse to Fine SAND | 3.0 |
| 855 | 853.6 | 6.0 | 3 | 4 | 5 | | | | | | M | | | |
| | 851.1 | 8.5 | 3 | 3 | 4 | | | | | | M | | | |
| 850 | | | | | | | | | | | | | | |
| | 846.1 | 13.5 | 2 | 3 | 3 | | | | | | W | | | |
| 845 | | | | | | | | | | | | | | |
| | 841.1 | 18.5 | 2 | 3 | 3 | | | | | | W | | | |
| 840 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | Boring Terminated at Elevation 839.6 ft in Silty SAND | |
| | | | | | | | | | | | | | Note: Asphalt (0.0 feet to 0.1 feet) | |



| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|-----|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. RWA-9 | | STATION 20+80 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | |
| COLLAR ELEV. 858.7 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,580 | | EASTING 1,520,207 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | |
| 860 | | | | | | | | | | | | | | 858.7 | 0.0 |
| | 857.7 | 1.0 | 4 | 5 | 5 | 10 | | | | | | M | | | |
| 855 | 855.2 | 3.5 | 3 | 3 | 5 | 8 | | | | | | M | | | |
| | 852.7 | 6.0 | 3 | 4 | 5 | 9 | | | | | | M | | | |
| 850 | 850.2 | 8.5 | 3 | 3 | 4 | 7 | | | | | | M | | | |
| | 845.2 | 13.5 | 2 | 3 | 4 | 7 | | | | | | M | | | |
| 845 | 845.2 | 13.5 | 2 | 3 | 4 | 7 | | | | | | M | | | |
| | 840.2 | 18.5 | 2 | 2 | 4 | 6 | | | | | | W | | | |
| 840 | 840.2 | 18.5 | 2 | 2 | 4 | 6 | | | | | | W | | | |
| Boring Terminated at Elevation 838.7 ft in Silty SAND | | | | | | | | | | | | | | | |
| Note: Asphalt (0.0 feet to 0.2 feet) | | | | | | | | | | | | | | | |

| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|-----|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. RWA-10 | | STATION 21+79 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | |
| COLLAR ELEV. 856.8 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,491 | | EASTING 1,520,160 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | |
| 860 | | | | | | | | | | | | | | 856.8 | 0.0 |
| | 855.8 | 1.0 | 4 | 4 | 6 | 10 | | | | | | M | | | |
| 855 | 855.8 | 1.0 | 4 | 4 | 6 | 10 | | | | | | M | | | |
| | 853.3 | 3.5 | 3 | 4 | 5 | 9 | | | | | | M | | | |
| 850 | 850.8 | 6.0 | 3 | 4 | 6 | 7 | | | | | | M | | | |
| | 848.3 | 8.5 | 3 | 3 | 4 | 7 | | | | | | M | | | |
| 845 | 848.3 | 8.5 | 3 | 3 | 4 | 7 | | | | | | M | | | |
| | 843.3 | 13.5 | 2 | 3 | 3 | 6 | | | | | | W | | | |
| 845 | 843.3 | 13.5 | 2 | 3 | 3 | 6 | | | | | | W | | | |
| | 838.3 | 18.5 | WOH | 2 | 2 | 4 | | | | | | W | | | |
| 840 | 838.3 | 18.5 | WOH | 2 | 2 | 4 | | | | | | W | | | |
| Boring Terminated at Elevation 836.8 ft in Silty SAND | | | | | | | | | | | | | | | |
| Note: Asphalt (0.0 feet to 0.2 feet) | | | | | | | | | | | | | | | |

NCDOT BORE DOUBLE 124366.GPJ NC_DOT.GDT 4/3/13



| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|------|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RWA-11 | | STATION 22+80 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | | |
| COLLAR ELEV. 854.4 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,388 | | EASTING 1,520,113 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | | |
| 855 | | | | | | | | | | | | | | 854.4 | GROUND SURFACE | 0.0 |
| | 853.4 | 1.0 | 3 | 4 | 5 | | | | | | | | M | | RESIDUAL Reddish Brown to Light Brown, Micaceous, Fine Sandy, Silty CLAY | |
| 850 | 850.9 | 3.5 | 3 | 4 | 6 | | | | | | | | M | | | |
| | 848.4 | 6.0 | 3 | 3 | 4 | | | | | | | | M | | | |
| 845 | 845.9 | 8.5 | 3 | 3 | 4 | | | | | | | | M | | | |
| | 840.9 | 13.5 | WOH | 2 | 3 | | | | | | | | W | | Light Brown, Micaceous, Silty Coarse to Fine SAND | 12.0 |
| 835 | 835.9 | 18.5 | 2 | 2 | 3 | | | | | | | | W | | | 20.0 |
| Boring Terminated at Elevation 834.4 ft in Silty SAND | | | | | | | | | | | | | | | | |
| Note: Asphalt (0.0 feet to 0.3 feet) | | | | | | | | | | | | | | | | |

| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|---|------|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RWA-12 | | STATION 23+77 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | | |
| COLLAR ELEV. 854.7 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,303 | | EASTING 1,520,083 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | | |
| 855 | | | | | | | | | | | | | | 854.7 | GROUND SURFACE | 0.0 |
| | 853.7 | 1.0 | 3 | 3 | 4 | | | | | | | | M | | RESIDUAL Reddish Brown, Micaceous, Fine Sandy, Silty CLAY | |
| 850 | 851.2 | 3.5 | 3 | 4 | 5 | | | | | | | | M | | | |
| | 848.7 | 6.0 | 3 | 4 | 8 | | | | | | | | M | | | |
| 845 | 846.2 | 8.5 | 2 | 3 | 4 | | | | | | | | M | | | |
| | 841.2 | 13.5 | 3 | 4 | 4 | | | | | | | | M | | Light Brown, Micaceous, Silty Coarse to Fine SAND | 10.0 |
| 835 | 836.2 | 18.5 | 3 | 4 | 5 | | | | | | | | W | | | 20.0 |
| Boring Terminated at Elevation 834.7 ft in Silty SAND | | | | | | | | | | | | | | | | |
| Note: Asphalt (0.0 feet to 0.2 feet) | | | | | | | | | | | | | | | | |

NCDOT BORE DOUBLE 124366.GPJ_NC_DOT.GDT 4/3/13



| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|--|--------------------------------------|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. RWA-13 | | STATION 24+77 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | |
| COLLAR ELEV. 856.6 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,210 | | EASTING 1,520,054 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | |
| 860 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 856.6 | GROUND SURFACE 0.0 |
| 855 | 855.6 | 1.0 | 5 | 7 | 10 | | | | | | | | M | RESIDUAL Reddish Brown to Brown, Micaceous, Fine Sandy, Silty CLAY | |
| | 853.1 | 3.5 | 5 | 6 | 8 | | | | | | | | M | | |
| 850 | 850.6 | 6.0 | 3 | 4 | 5 | | | | | | | | M | Gray, Micaceous, Silty Coarse to Fine SAND | 5.0 |
| | 848.1 | 8.5 | 3 | 5 | 6 | | | | | | | | M | | |
| 845 | | | | | | | | | | | | | M | | |
| | 843.1 | 13.5 | 3 | 5 | 6 | | | | | | | | M | | |
| 840 | | | | | | | | | | | | | M | | |
| | 838.1 | 18.5 | 3 | 5 | 5 | | | | | | | | W | Boring Terminated at Elevation 836.6 ft in Silty SAND | 20.0 |
| | | | | | | | | | | | | | | | Note: Asphalt (0.0 feet to 0.2 feet) |

| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|---|---|------|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RWA-14 | | STATION 25+77 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | | |
| COLLAR ELEV. 858.4 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,115 | | EASTING 1,520,026 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | | |
| 860 | | | | | | | | | | | | | | | | |
| | 857.4 | 1.0 | 4 | 5 | 6 | | | | | | | | M | GROUND SURFACE 0.0 | | |
| 855 | 854.9 | 3.5 | 3 | 4 | 4 | | | | | | | | M | RESIDUAL Light Brown, Micaceous, Fine Sandy, Silty CLAY | 3.0 | |
| | 852.4 | 6.0 | 4 | 4 | 6 | | | | | | | | M | Gray, Micaceous, Silty Coarse to Fine SAND | | |
| 850 | 849.9 | 8.5 | 3 | 5 | 5 | | | | | | | | M | | | |
| 845 | 844.9 | 13.5 | 4 | 4 | 5 | | | | | | | | M | | | |
| 840 | 839.9 | 18.5 | 3 | 5 | 5 | | | | | | | | M | | | |
| | | | | | | | | | | | | | | 838.4 | Boring Terminated at Elevation 838.4 ft in Silty SAND | 20.0 |
| | | | | | | | | | | | | | | | Note: Asphalt (0.0 feet to 0.3 feet) | |



| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|--|--------------------------------------|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. RWA-15 | | STATION 26+77 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | |
| COLLAR ELEV. 856.6 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 656,019 | | EASTING 1,519,995 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | |
| 860 | | | | | | | | | | | | | | | |
| 855 | 855.6 | 1.0 | 4 | 6 | 7 | | | | | | | | M | 856.6 GROUND SURFACE 0.0 | |
| | 853.1 | 3.5 | 3 | 4 | 7 | | | | | | | | M | RESIDUAL Reddish Brown, Micaceous, Fine Sandy, Silty CLAY | |
| 850 | 850.6 | 6.0 | 3 | 5 | 8 | | | | | | | | M | 852.8 Brown to Gray, Micaceous, Silty Coarse to Fine SAND 3.8 | |
| | 848.1 | 8.5 | 5 | 7 | 9 | | | | | | | | M | | |
| 845 | | | | | | | | | | | | | M | | |
| | 843.1 | 13.5 | 3 | 5 | 6 | | | | | | | | M | | |
| 840 | | | | | | | | | | | | | M | | |
| | 838.1 | 18.5 | 3 | 5 | 5 | | | | | | | | W | 836.6 Boring Terminated at Elevation 836.6 ft in Silty SAND 20.0 | |
| | | | | | | | | | | | | | | | Note: Asphalt (0.0 feet to 0.2 feet) |

| WBS 52000.1.STR09T1B | | TIP P-5206D | | COUNTY ROWAN | | GEOLOGIST Fiora, M. E. | | | | | | | | | |
|---|-----------------|--------------------------|------------|-----------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|--|--------------------------------------|
| SITE DESCRIPTION Reid to North Kannapolis on the NCRR/NS Mainline: Retaining Wall A | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. RWA-16 | | STATION 27+50 | | OFFSET 15 ft RT | | ALIGNMENT -Y46- | | | | | | | | | |
| COLLAR ELEV. 854.1 ft | | TOTAL DEPTH 20.0 ft | | NORTHING 655,978 | | EASTING 1,519,964 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI9435 CME-55 93% 12/08/2011 | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | | |
| DRILLER Toothman, R. E. | | START DATE 09/20/12 | | COMP. DATE 09/20/12 | | 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 | | | | | |
| 855 | | | | | | | | | | | | | | | |
| | 853.1 | 1.0 | 7 | 7 | 8 | | | | | | | | M | 854.1 GROUND SURFACE 0.0 | |
| 850 | 850.6 | 3.5 | 4 | 4 | 5 | | | | | | | | M | RESIDUAL Reddish Brown to Brown, Micaceous, Fine Sandy, Silty CLAY | |
| | 848.1 | 6.0 | 4 | 4 | 5 | | | | | | | | M | 849.1 Brown to Gray, Micaceous, Silty Coarse to Fine SAND 5.0 | |
| 845 | 845.6 | 8.5 | 3 | 4 | 4 | | | | | | | | M | | |
| | 840.6 | 13.5 | 4 | 5 | 5 | | | | | | | | M | | |
| 835 | 835.6 | 18.5 | 3 | 4 | 5 | | | | | | | | W | 834.1 Boring Terminated at Elevation 834.1 ft in Silty SAND 20.0 | |
| | | | | | | | | | | | | | | | Note: Asphalt (0.0 feet to 0.2 feet) |

NCDOT BORE DOUBLE 124366.GPJ NC_DOT.GDT 4/3/13

NCDOT Project No. 52000.1.STR09T1B TIP No. P-5206D
Reid to North Kannapolis on the NCRR/NS Mainline
Rowan County, North Carolina
SUMMARY OF LABORATORY TEST DATA

| Boring Number | Sample Depth (ft.) | Sample No.* | Natural Moisture Content (%) | AASHTO Class (Group Index) | N-Value (blows/ft.) | Atterberg Limits | | | Gradation Results | | | | | | | |
|---------------|--------------------|-------------|------------------------------|----------------------------|---------------------|------------------|------|------|-------------------|----------------|-----------------|---------------------|-----------------|---------------|----------|----------|
| | | | | | | L.L. | P.L. | P.I. | Pass #10 Sieve | Pass #40 Sieve | Pass #200 Sieve | Retained #270 Sieve | Coarse Sand (%) | Fine Sand (%) | Silt (%) | Clay (%) |
| RWB-7 | 3.5 – 5.0 | 1 | NA | A-7-6 (13) | 17 | 55 | 29 | 26 | 88.8 | 70.6 | 58.7 | NA | NA | NA | NA | NA |
| RWB-10 | 1.0 – 2.5 | 2 | NA | A-7-5 (9) | 10 | 53 | 38 | 15 | 100.0 | 100.0 | 60.0 | NA | NA | NA | NA | NA |

SS = Split-Barrel Sample (ASTM-D-1586)
ST = Shelby Tube (Undisturbed) Sample
S = Grab Sample
NP -- Non Plastic
NA-- Non Applicable

Page: 1 of 1

Lab Technician:


Joshua D. Fregosi

NCDOT Certification No.: 111-05-1203

0160DELP10b2

SITE PHOTOGRAPHS



View Looking Upsation along Retaining Wall A alignment from Station 13+00



View Looking Downstation along Retaining Wall A alignment from Station 19+81



View Looking Upsation along Retaining Wall A alignment from Station 19+81



View Looking Downstation along Retaining Wall A alignment from Station 27+50