

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915E	1	14

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY ASHE  
 PROJECT DESCRIPTION US 221 FROM US 221 BYPASS  
TO US 221 BUSINESS/NC 88 IN JEFFERSON

SITE DESCRIPTION SOUND BARRIER WALL NW7B  
FROM -L- STA. 820+00 TO -L- STA. 836+85

**INVENTORY**

**CONTENTS**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3 - 4	SITE PLAN & PROFILE
5 - 13	BORING LOGS
14	SOIL TEST RESULTS

**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.

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 THE 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.

- NOTES:
- 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.
  - 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

D. Goodnight

E. Estep

INVESTIGATED BY RK&K, LLP

DRAWN BY A. Bozorgi

CHECKED BY M. Snyder

SUBMITTED BY RK&K, LLP

DATE December 2018

*Prepared in the Office of:*

**RK&K** RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE, SUITE 350  
 RALEIGH, NORTH CAROLINA 27609  
 NC LICENSE NO. F-0112



DocuSigned by:  
Matthew Snyder 12/17/2018  
 9822EB64E80842E SIGNATURE DATE

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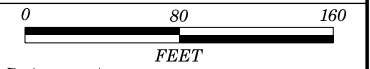
**REFERENCE: R-2915E**

**PROJECT: 34518**

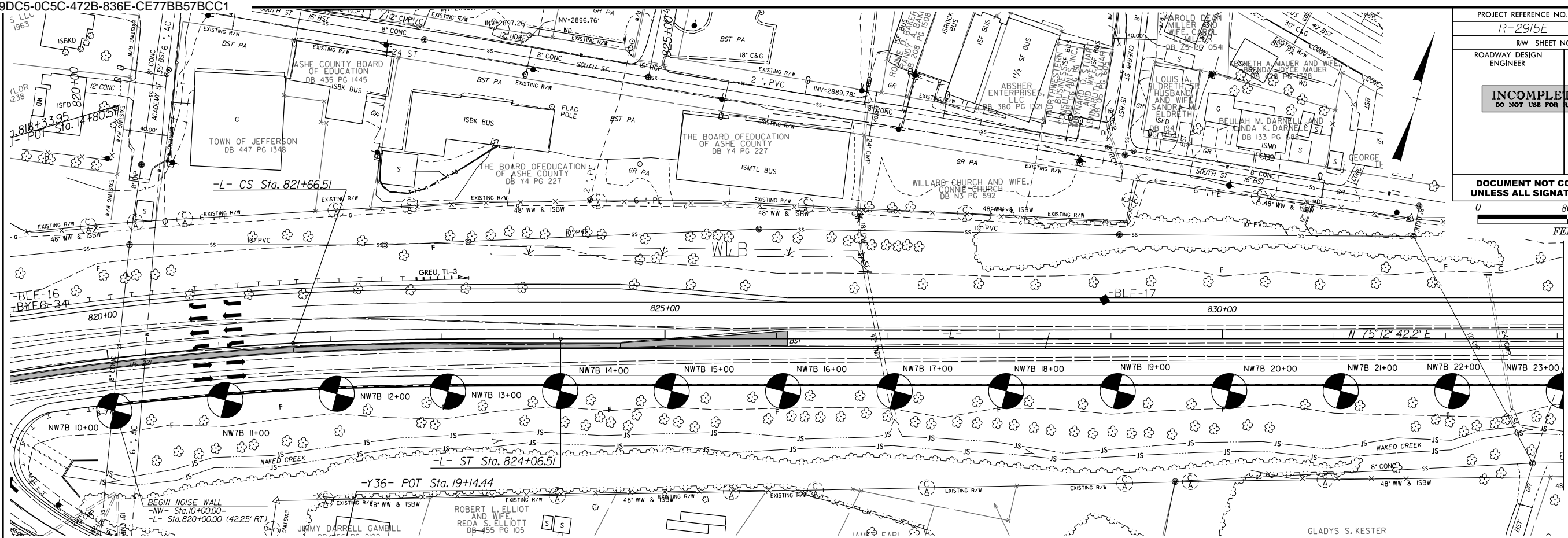
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with 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, INDURATION, PLASTICITY, COLOR.

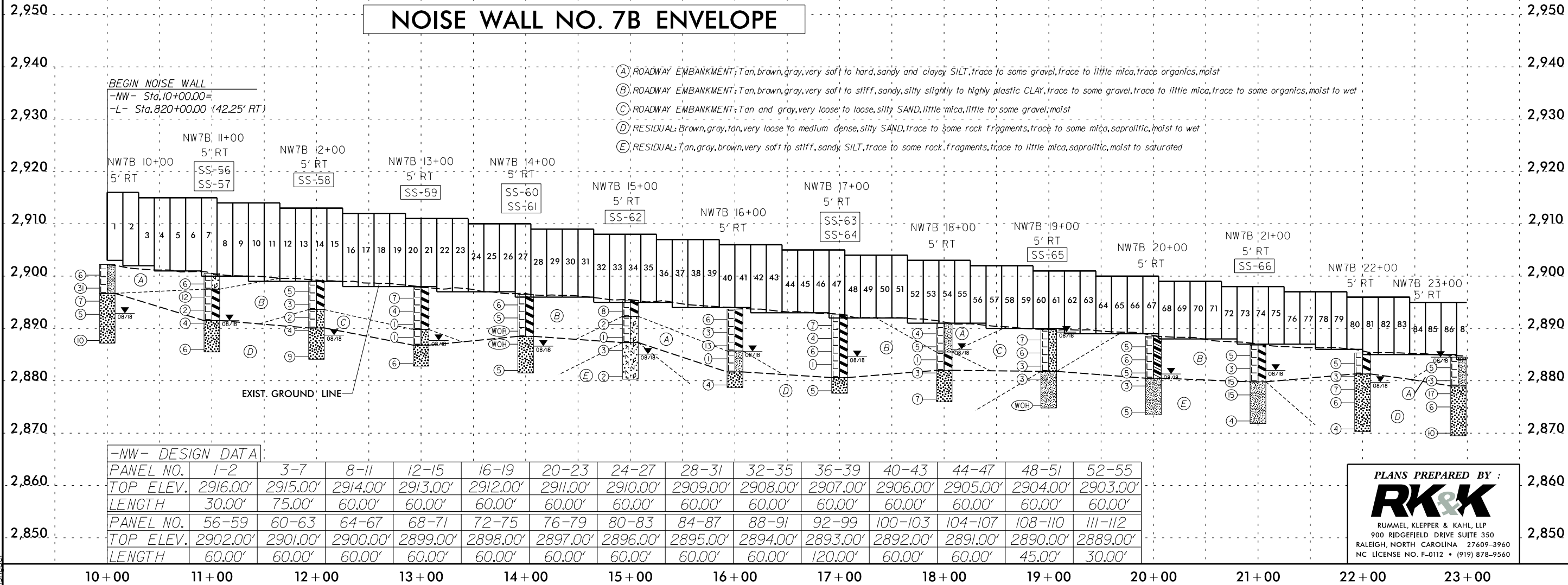
PROJECT REFERENCE NO. R-2915E	SHEET NO. 3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE  
-NW7B- STA. 23+00  
SEE SHEET 4



### NOISE WALL NO. 7B ENVELOPE



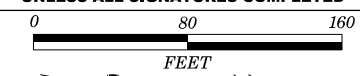
**-NW- DESIGN DATA**

PANEL NO.	1-2	3-7	8-11	12-15	16-19	20-23	24-27	28-31	32-35	36-39	40-43	44-47	48-51	52-55
TOP ELEV.	2916.00'	2915.00'	2914.00'	2913.00'	2912.00'	2911.00'	2910.00'	2909.00'	2908.00'	2907.00'	2906.00'	2905.00'	2904.00'	2903.00'
LENGTH	30.00'	75.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'
PANEL NO.	56-59	60-63	64-67	68-71	72-75	76-79	80-83	84-87	88-91	92-99	100-103	104-107	108-110	111-112
TOP ELEV.	2902.00'	2901.00'	2900.00'	2899.00'	2898.00'	2897.00'	2896.00'	2895.00'	2894.00'	2893.00'	2892.00'	2891.00'	2890.00'	2889.00'
LENGTH	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	60.00'	120.00'	60.00'	60.00'	45.00'	30.00'

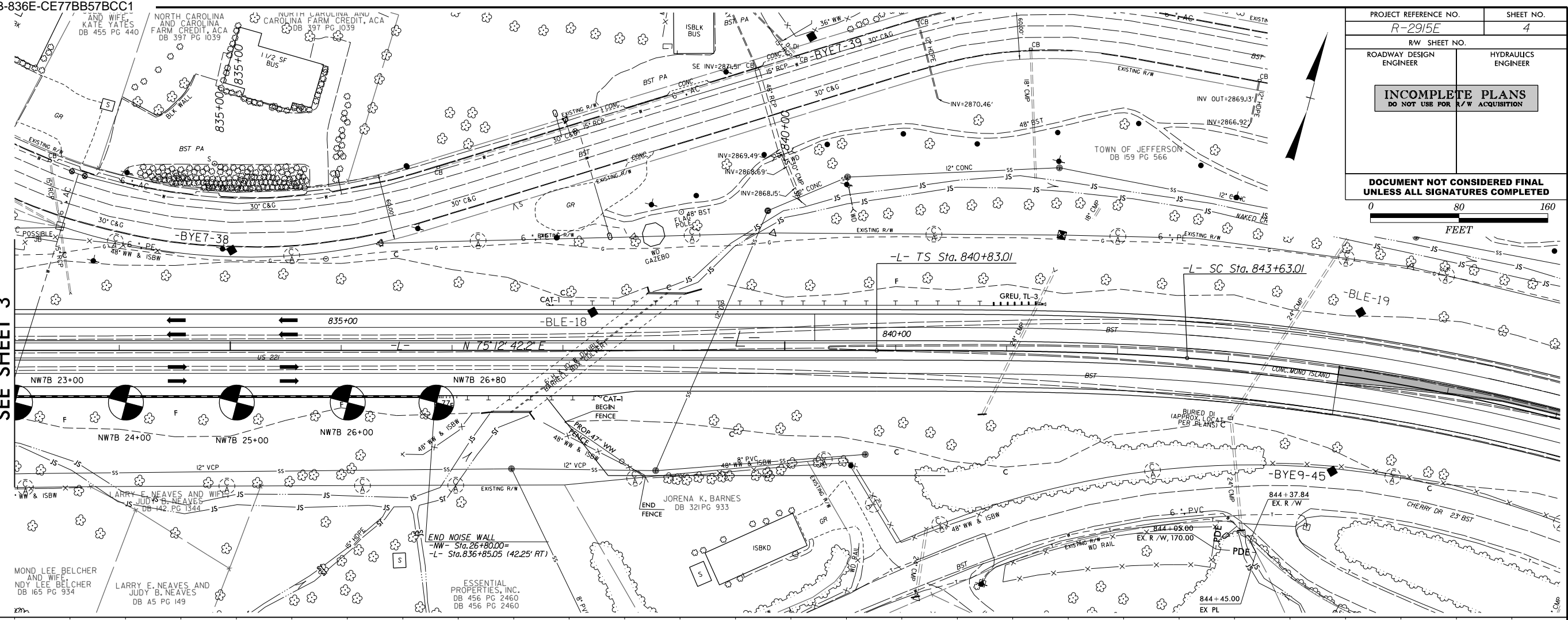
**PLANS PREPARED BY :**  
  
 RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
 RALEIGH, NORTH CAROLINA 27609-3960  
 NC LICENSE NO. F-0112 • (919) 878-9560

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PROJECT REFERENCE NO. <b>R-2915E</b>	SHEET NO. <b>4</b>
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

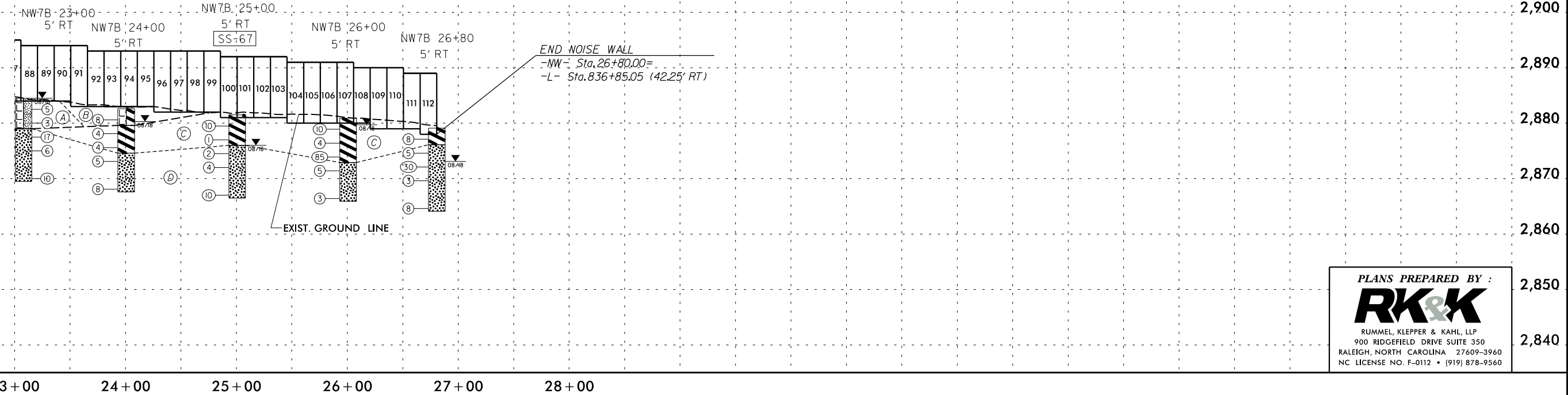


**MATCHLINE**  
**-NW7B- STA. 23+00**  
**SEE SHEET 3**



## NOISE WALL NO. 7B ENVELOPE

- (A) ROADWAY EMBANKMENT: Tan, brown, gray, very soft to hard, sandy and clayey SILT, trace to some gravel, trace to little mica, trace organics, moist
- (B) ROADWAY EMBANKMENT: Tan, brown, gray, very soft to stiff, sandy, silty slightly to highly plastic CLAY, trace to some gravel, trace to little mica, trace to some organics, moist to wet
- (C) RESIDUAL: Tan, brown, very soft to hard, sandy slightly to highly plastic CLAY, trace rock fragments, trace to little mica, saprolitic, moist
- (D) RESIDUAL: Brown, gray, tan, very loose to medium dense, silty SAND, trace to some rock fragments, trace to some mica, saprolitic, moist to wet



PLANS PREPARED BY :

**RK&K**

RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
 RALEIGH, NORTH CAROLINA 27609-3960  
 NC LICENSE NO. F-0112 • (919) 878-9560

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# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 10+00		STATION 10+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,902.2 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,470		EASTING 1,273,197									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 07/31/18		COMP. DATE 07/31/18		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					
2905															
2900	2,901.2	1.0	3	3	3									2,902.2	0.0
	2,898.7	3.5	3	3	28										
2895	2,896.2	6.0	7	3	4									2,896.7	5.5
	2,893.7	8.5	3	2	3										
2890	2,888.7	13.5	4	6	4									2,887.2	15.0
Boring Terminated at Elevation 2,887.2 ft in Residual: silty SAND (A-2-4)															

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 11+00		STATION 11+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,900.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,505		EASTING 1,273,290									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 07/31/18		COMP. DATE 07/31/18		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					
2905															
2900	2,899.5	1.0	2	3	3									2,900.5	0.0
	2,897.0	3.5	2	7	5									2,897.5	3.0
2895	2,894.5	6.0	2	1	1										
	2,892.0	8.5	5	2	2									2,891.5	9.0
2890	2,887.0	13.5	3	3	3									2,885.5	15.0
Boring Terminated at Elevation 2,885.5 ft in Residual: silty SAND (A-2-4)															

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT\_GDT 12/12/18

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight										
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)									
BORING NO. NW7B 12+00		STATION 12+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-										
COLLAR ELEV. 2,899.1 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,536		EASTING 1,273,386										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 07/31/18		COMP. DATE 07/31/18		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						
2900														2,899.1	0.0	GROUND SURFACE
	2,898.1	1.0	3	3	2								M			ROADWAY EMBANKMENT
	2,895.6	3.5	3	2	1								M			Brown, tan, gray, sandy CLAY (A-7-6), little mica, some organics, some gravel
2895	2,893.1	6.0	1	WOH	2								W			Gray, silty SAND (A-2-4), some gravel
	2,890.6	8.5	1	2	2								W			RESIDUAL
2890	2,885.6	13.5	3	4	5								W			Brown-tan, silty SAND (A-2-4), trace rock fragments, saprolitic
2885																Boring Terminated at Elevation 2,884.1 ft in Residual: silty SAND (A-2-4)

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight										
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)									
BORING NO. NW7B 13+00		STATION 13+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-										
COLLAR ELEV. 2,897.8 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,563		EASTING 1,273,482										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 07/31/18		COMP. DATE 07/31/18		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						
2900														2,897.8	0.0	GROUND SURFACE
	2,896.8	1.0	4	4	3								M			ROADWAY EMBANKMENT
	2,894.3	3.5	2	2	2								M			Tan-brown, sandy silty moderately plastic CLAY (A-7-6), trace to little gravel
2895	2,891.8	6.0	1	WOH	1								W			
	2,889.3	8.5	WOH	WOH	1								W			Red-tan, silty SAND (A-2-4)
2890	2,884.3	13.5	2	2	4								W			RESIDUAL
2885																Boring Terminated at Elevation 2,882.8 ft in Residual: silty SAND (A-2-4)

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT.GDT 12/12/18

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 14+00		STATION 14+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,896.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,589		EASTING 1,273,578									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 07/31/18		COMP. DATE 07/31/18		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					
2900															
2895	2,895.5	1.0	2	2	4									2,896.5	0.0
	2,893.0	3.5	1	2	3										
2890	2,890.5	6.0	WOH	WOH	WOH										
	2,888.0	8.5	WOH	1	WOH									2,888.5	8.0
2885	2,883.0	13.5	1	2	3									2,881.5	15.0
Boring Terminated at Elevation 2,881.5 ft in Residual: silty SAND (A-2-5)															

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 15+00		STATION 15+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,895.3 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,615		EASTING 1,273,675									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 07/31/18		COMP. DATE 07/31/18		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					
2900															
2895	2,894.3	1.0	6	4	4									2,895.3	0.0
	2,891.8	3.5	2	1	1									2,892.3	3.0
2890	2,889.3	6.0	1	WOH	1										
	2,886.8	8.5	WOH	1	2									2,887.3	8.0
2885	2,881.8	13.5	1	1	1									2,880.3	15.0
Boring Terminated at Elevation 2,880.3 ft in Residual: sandy SILT (A-5)															

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT\_GDT 12/12/18

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight										
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)									
BORING NO. NW7B 16+00		STATION 16+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-										
COLLAR ELEV. 2,893.7 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,640		EASTING 1,273,772										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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						
2895														2,893.7	0.0	GROUND SURFACE
	2,892.7	1.0														ROADWAY EMBANKMENT
	2,890.2	3.5	3	3	3											Tan to tan-brown, sandy silty CLAY (A-7-5), trace mica, trace to little gravel
2890	2,887.7	6.0	2	1	2											
	2,887.7	6.0	2	5	8											
2885	2,885.2	8.5	1	WOH	1											
	2,885.2	8.5	1	WOH	1											
	2,881.7															
	2,881.7															
2880	2,880.2	13.5	1	1	3											
	2,878.7															
	2,878.7															
Boring Terminated at Elevation 2,878.7 ft in Residual: silty SAND (A-2-4)																

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight										
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)									
BORING NO. NW7B 17+00		STATION 17+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-										
COLLAR ELEV. 2,892.6 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,666		EASTING 1,273,868										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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						
2895														2,892.6	0.0	GROUND SURFACE
	2,891.6	1.0														ROADWAY EMBANKMENT
	2,889.1	3.5	3	3	4											Tan-brown to tan, sandy silty moderately plastic CLAY (A-7-5/A-7-6), trace to little gravel, trace organics
2890	2,886.6	6.0	1	2	2											
	2,886.6	6.0	2	3	3											
2885	2,884.1	8.5	WOH	WOH	1											
	2,884.1	8.5	WOH	WOH	1											
	2,880.6															
	2,880.6															
2880	2,879.1	13.5	2	2	3											
	2,877.6															
	2,877.6															
Boring Terminated at Elevation 2,877.6 ft in Residual: silty SAND (A-2-4)																

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT.GDT 12/12/18



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 18+00		STATION 18+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,891.0 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,691		EASTING 1,273,965									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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					
2895															
2890	2,890.0	1.0	2	2	2									2,891.0	GROUND SURFACE
	2,887.5	3.5	1	2	3								M		ROADWAY EMBANKMENT
	2,885.0	6.0	1	WOH	1								M		Tan, sandy SILT (A-4), little gravel
2885	2,885.0	6.0	1	WOH	1								M	2,885.5	Tan-gray, sandy silty CLAY (A-7-6), little gravel
	2,882.5	8.5	3	2	1								M	2,882.0	RESIDUAL
2880															Gray to tan, silty SAND (A-2-4), saprolitic
	2,877.5	13.5	1	4	3								W	2,876.0	Boring Terminated at Elevation 2,876.0 ft in Residual: silty SAND (A-2-4)

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 19+00		STATION 19+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,889.8 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,717		EASTING 1,274,062									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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					
2890															
	2,888.8	1.0	2	3	4										2,889.8
2885	2,886.3	3.5	2	2	4										GROUND SURFACE
	2,883.8	6.0	1	2	1										ROADWAY EMBANKMENT
	2,881.3	8.5	4	2	1										Tan and gray, silty SAND (A-2-5), little mica, little gravel
2880															RESIDUAL
	2,876.3	13.5	1	WOH	WOH										Gray, fine sandy SILT (A-4), trace rock fragments, saprolitic
2875															Boring Terminated at Elevation 2,874.8 ft in Residual: sandy SILT (A-4)

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT.GDT 12/12/18

# GEOTECHNICAL BORING REPORT BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight										
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)									
BORING NO. NW7B 20+00		STATION 20+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-										
COLLAR ELEV. 2,888.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,742		EASTING 1,274,158										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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						
2890														2,888.5	0.0	GROUND SURFACE
	2,887.5	1.0	3	2	3							M				ROADWAY EMBANKMENT Tan to brown, sandy CLAY (A-6), little gravel
2885	2,885.0	3.5	2	3	3							M				
	2,882.5	6.0	3	3	2							M				
2880	2,880.0	8.5	1	1	2							W		2,880.5	8.0	RESIDUAL Gray, sandy SILT (A-4), little mica, trace rock fragments, saprolitic
2875	2,875.0	13.5	1	2	3							W		2,873.5	15.0	Boring Terminated at Elevation 2,873.5 ft in Residual: sandy SILT (A-4)

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight										
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)									
BORING NO. NW7B 21+00		STATION 21+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-										
COLLAR ELEV. 2,886.8 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,768		EASTING 1,274,255										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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						
2890														2,886.8	0.0	GROUND SURFACE
	2,885.8	1.0	3	2	3							SS-66	31%			ROADWAY EMBANKMENT Tan and brown, sandy highly plastic CLAY (A-7-5), trace gravel, trace organics, little mica
2885	2,883.3	3.5	2	2	1							W				
	2,880.8	6.0	1	WOH	15							W		2,879.8	7.0	RESIDUAL Brown, tan, sandy SILT (A-4), trace mica, some rock fragments, saprolitic
2880	2,878.3	8.5	6	6	9							Sat.				
2875	2,873.3	13.5	1	1	3							W		2,871.8	15.0	Boring Terminated at Elevation 2,871.8 ft in Residual: sandy SILT (A-4)

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT.GDT 12/12/18

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 22+00		STATION 22+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,885.3 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,793		EASTING 1,274,352									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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					
2890															
2885	2,884.3	1.0													
	2,881.8	3.5	2	2	3	5						M			
2880	2,879.3	6.0	2	1	2	3						M			
	2,876.8	8.5	1	1	6	7						W			
2875	2,871.8	13.5	6	3	3	6						W			
			1	2	2	4						W			
Boring Terminated at Elevation 2,870.3 ft in Residual: silty SAND (A-2-4)															

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 23+00		STATION 23+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,884.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,819		EASTING 1,274,448									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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					
2885															
	2,883.5	1.0	1	2	3	5									
2880	2,881.0	3.5	2	2	1	3									
	2,878.5	6.0	1	4	13	13									
2875	2,876.0	8.5	10	3	3	6									
2870	2,871.0	13.5	3	4	6	10									
Boring Terminated at Elevation 2,869.5 ft in Residual: silty SAND (A-2-4)															

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT.GDT 12/12/18

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 24+00		STATION 24+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,882.6 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,844		EASTING 1,274,545									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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					
2885														2,882.6	0.0
														2,881.6	1.0
2880	2,881.6	1.0	2	4	4									2,879.6	3.0
	2,879.1	3.5	2	1	3									2,876.6	6.0
2875	2,876.6	6.0	1	3	1									2,874.6	8.0
	2,874.1	8.5	1	1	4									2,869.1	13.5
2870	2,869.1	13.5	3	3	5										

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight									
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)								
BORING NO. NW7B 25+00		STATION 25+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-									
COLLAR ELEV. 2,881.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,870		EASTING 1,274,642									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 08/01/18		COMP. DATE 08/01/18		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					
2885														2,881.5	0.0
														2,880.5	1.0
2880	2,880.5	1.0	5	5	5									2,878.0	3.5
	2,878.0	3.5	1	WOH	1									2,875.5	6.0
2875	2,875.5	6.0	1	1	1									2,873.0	8.5
	2,873.0	8.5	2	2	2									2,868.0	13.5
2870	2,868.0	13.5	2	4	6										

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT.GDT 12/12/18

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight								
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)							
BORING NO. NW7B 26+00		STATION 26+00		OFFSET 5 ft RT		ALIGNMENT -NW7B-								
COLLAR ELEV. 2,880.9 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,895		EASTING 1,274,738								
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 08/02/18		COMP. DATE 08/02/18		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2885														
2880	2,879.9	1.0	2	4	6									2,880.9 GROUND SURFACE 0.0
	2,877.4	3.5	2	2	2									<b>RESIDUAL</b> Brown, sandy silty CLAY (A-7-6), trace rock fragments
2875	2,874.9	6.0	7	60	25									
	2,872.4	8.5	3	2	3									2,872.9 Brown, silty fine SAND (A-2-4), saprolitic 8.0
2870	2,867.4	13.5	2	1	2									2,865.9 Boring Terminated at Elevation 2,865.9 ft in Residual: silty SAND (A-2-4) 15.0

WBS 34518.1.FR6		TIP R-2915E		COUNTY ASHE		GEOLOGIST D. Goodnight								
SITE DESCRIPTION US 221 From US 221 Bypass to US 221 Business/NC 88 - Sound Barrier Wall NW7B							GROUND WTR (ft)							
BORING NO. NW7B 26+80		STATION 26+80		OFFSET 5 ft RT		ALIGNMENT -NW7B-								
COLLAR ELEV. 2,879.1 ft		TOTAL DEPTH 15.0 ft		NORTHING 980,916		EASTING 1,274,816								
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 95% 03/19/2018			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Estep, J. E.		START DATE 08/02/18		COMP. DATE 08/02/18		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2880														
	2,878.1	1.0	3	4	4									2,879.1 GROUND SURFACE 0.0
2875	2,875.6	3.5	4	3	2									<b>RESIDUAL</b> Tan-brown, sandy CLAY (A-7-6), trace rock fragments 3.0
	2,873.1	6.0	6	21	9									Brown, gray, tan, silty fine SAND (A-2-4), little mica, trace to some rock fragments, saprolitic
2870	2,870.6	8.5	1	1	2									
2865	2,865.6	13.5	2	3	5									2,864.1 Boring Terminated at Elevation 2,864.1 ft in Residual: silty SAND (A-2-4) 15.0

NCDOT BORE DOUBLE R2915E\_GEO\_NW7B.GPJ NC\_DOT\_GDT 12/12/18

**WSB 34518**  
**ID NO. R-2915E**  
**ASHE COUNTY**

**US 221 from US 221 Bypass to US 221 Business/ NC 88 in Jefferson, NC**  
**Sound Barrier Wall NW7B**

<b>SOIL TEST RESULTS</b>															
<i>SAMPLE NO.</i>	<i>STATION</i>	<i>OFFSET</i>	<i>DEPTH INTERVAL</i>	<i>AASHTO CLASS.</i>	<i>L.L.</i>	<i>P.I.</i>	<i>% BY WEIGHT</i>				<i>% PASSING SIEVE</i>			<i>% MOISTURE</i>	<i>% ORGANIC</i>
							<i>C. SAND</i>	<i>F. SAND</i>	<i>SILT</i>	<i>CLAY</i>	<i>10</i>	<i>40</i>	<i>200</i>		
SS-56	11+00	5' RT	1.0-2.5	A-5(3)	47	10	19	39	20	22	100	90	49	26	N/A
SS-57	11+00	5' RT	6.0-7.5	A-7-5(5)	43	12	11	37	22	30	94	89	56	54	N/A
SS-58	12+00	5' RT	6.0-7.5	A-2-4(0)	24	0	18	48	9	25	70	64	29	30	N/A
SS-59	13+00	5' RT	6.0-7.5	A-7-6(14)	50	21	9	25	17	49	96	92	68	33	N/A
SS-60	14+00	5' RT	6.0-7.5	A-7-6(18)	55	27	9	23	17	51	93	89	69	34	N/A
SS-61	14+00	5' RT	8.5-10.0	A-2-5(0)	62	10	18	48	14	20	73	68	31	71	N/A
SS-62	15+00	5' RT	1.0-2.5	A-7-5(3)	46	14	13	29	23	35	67	63	43	25	N/A
SS-63	17+00	5' RT	1.0-2.5	A-7-6(10)	48	23	13	28	15	44	86	80	56	28	N/A
SS-64	17+00	5' RT	8.5-10.0	A-7-5(13)	56	18	6	39	36	19	100	98	67	81	N/A
SS-65	19+00	5' RT	1.0-2.5	A-2-5(0)	43	6	20	43	15	22	68	61	29	23	N/A
SS-66	21+00	5' RT	1.0-2.5	A-7-5(17)	66	26	6	34	10	50	91	89	62	33	N/A
SS-67	25+00	5' RT	1.0-2.5	A-7-5(27)	68	34	8	19	13	60	94	90	72	33	N/A