ECS SOUTHEAST, LLP
"Setting the Standard for Service"
Geotechnical • Construction Materials • Environmental • Facilities
NC Registered Engineering Firm F-1078
NC Registered Geologists Firm C-406
SC Registered Engineering Firm 3239

August 6, 2018

Mr. Joel Setzer, P.E.
Vaughn & Melton Consulting Engineers
40 Colonial Square
Sylva, North Carolina 28779

Reference:	Pavement Design Recommendations
WBS Element No.:	N/A
TIP No.:	R-5863
County:	Clay
Description:	US 64 Business / Hiawassee Street, Hayesville, NC
ECS Project No.:	08-12926

Dear Mr. Setzer:

ECS Southeast, LLP (ECS) has completed the asphalt pavement design for the above referenced project. This project was authorized and performed in general accordance with ECS Proposal No. 08-22160P dated June 15, 2018.

Based on the information provided, the repaving project is located along US 64 Business in Hayesville, Clay County, North Carolina. The project begins at the intersection of US 64/US 64 Business (Station 10+00) and continues approximately 5,500 feet northeast to Hiawassee Street (Station 65+00). Hiawassee Street will be repaved a distance of approximately 725 feet to the project termination limit at Main Street (Station 71+50). Based on our site reconnaissance, the project corridor is located in rural terrain with residential and light commercial properties.

ECS has not received preliminary plans or cross sections indicating proposed cut and fill depths; therefore, we have assumed that the widened areas will generally follow existing grades and cut and fill depths will be minimal, on the order of 3 feet or less. Based on our conversations, we understand that an asphalt overlay pavement design and a new full-depth asphalt pavement design is needed for the existing roadway and widened areas, respectively. Additionally, we also understand the roadway will incorporate a Curb & Gutter (C&G) section.

A detailed traffic forecast was not available at the time of our evaluation; however, based on the NCDOT Annual Average Daily Traffic (AADT) Mapping Application, average daily traffic for the area is 2,400 vehicles per day with heavy truck traffic consisting of 1% DUALS and 5% TTST. For our analysis, we assume an annual growth rate of 2%.

During the field exploration, six (6) asphalt cores were obtained. Based on the results of our pavement cores, the existing asphalt sections encountered during testing are shown in Table 1. From our field observations, the existing pavement appeared to be in fair to good condition with areas of minor longitudinal and transverse cracking, which appear to be typical for the age of the existing pavement.

Table 1: Existing Asphalt Pavement Section

Test Location	Approximate Stationing	Asphalt Thickness (inches)	Stone Base Thickness (inches)	Kessler In-Place CBR Value	Equivalent Structural Number Provided (SN)
C-1	19+00	11½	5	5	4.51
C-2	26+00	10	6	8	4.12
C-3	35+00	7¾	5	9	3.23
C-4	46+00	11½	4	9	4.39
C-5	55+00	10½	7	10	4.41
C-6	66+00	8¾	4	10	3.45

Full Depth Asphalt Evaluation

ECS has utilized the **North Carolina Department of Transportation's Pavement Design Procedure, AASHTO 1993 Method.** The recommendations presented herein assume that the production and placement of asphalt meet the requirements of current NCDOT standards. As with any pavement, the thickness of the pavement section is determined by many factors. Possibly the most important factor is the volume and type of traffic that the proposed pavement will experience. Should the loading conditions be different than what we have assumed, we should be given the opportunity to provide you with a revised pavement design, if necessary. Table 2 includes the pavement design parameters used in our evaluation for the new pavement section.

Table 2: Pavement Design Parameters

Design Parameters	Design Values
AADT – Vehicles Per Day	2,400
Duals (%)	1
TTST (%)	5
Lane Distribution Factor	1.0
Reliability (%)	85
California Bearing Ratio	8
Terminal Serviceability Index	2.5
Design Life (years)	30
Design 18-kip ESALS	691,200
Structural Number (SN) Required	**2.84**

For our evaluation, we used a California Bearing Ratio (CBR) value of 8, based on laboratory testing of the bulk sample obtained. Based on our calculations, a Structural Number (SN) of 2.84 is required. Refer to Table 3 for our full depth asphalt pavement design. Please note that a

combination of 7 inches of asphalt (surface + intermediate) is required for Curb & Gutter sections. A layer of asphalt base course is typically placed below the C&G.

Table 3: Proposed Full Depth Asphalt Pavement

Mix Type	Thickness (inches)	Structural Number
S 9.5B	3*	1.32
I 19.0C	4*	1.76
B 25.0C	4**	1.20
Structural Number Provided		**4.28**

** Required for the C&G section*
** Minimum thickness of based course required for unstabilized subgrade*

Asphalt Overlay Design

Based on our site reconnaissance, ECS observed the existing pavement for signs of distress, deterioration, and other pavement failures. In general, a majority of the pavement along the alignment appears to be in fair to good condition with minor (½-inch wide or less) longitudinal and transverse cracking, which appears to be typical for the age of this pavement.

As previously mentioned, coring of the existing pavement structure was performed at six (6) locations to determine the thickness of the existing pavement system in order to provide an analysis for an overlay that will be necessary to achieve the proper thickness (i.e. Structural Number) for the assumed traffic conditions. Please note that "Bulk Specific Gravity and Density of Compacted Bituminous Mixtures" (ASTM D-2726) and "Extraction of Bitumen From Bituminous Paving" (ASTM D-2172) were not performed on the asphalt cores for this study.

Based on the Kessler DCP testing performed at the core locations, in-place CBR values of the underlying subgrade typically ranged from 5 to 20+. For the purpose of our analysis, we used an average CBR value of 8 for the in-place existing subgrade soils. Table 4 includes the pavement design parameters used in our evaluation for the overlay design.

Table 4: Overlay Design Parameters

Design Parameters	Design Values
AADT – Vehicles Per Day	2,400
Duals (%)	1
TTST (%)	5
Lane Distribution Factor	1.0
Reliability (%)	85
In-Place California Bearing Ratio	8
Terminal Serviceability Index	2.5
Design Life (years)	10
Design 18-kip ESALS	230,400
Structural Number (SN) Required	**2.37**

Based on our calculations, a Structural Number of 2.37 is required. Since the existing asphalt pavement section has an equivalent Structural Number greater than what is required for our analysis, we recommend milling the upper 1½ inches prior to placement of the overlay. The 1½ inch overlay should consist of either S9.5B or S9.5C surface course.

Steps should be taken to correct any observed defective areas. Cracks and joints should be filled with a lean mixture of sand and liquid bituminous material. This mixture should be well tamped in-place, leveled with the pavement surface and any excess removed. Depressions should be leveled using bituminous patch mixtures. After repairs have been completed and prior to placement of the overlay, the surface should be swept clean of all dirt, dust and foreign material that may tend to break the bond between the overlay and the existing pavement. In addition, to minimize the potential for and to delay the appearance of reflective cracking, we recommend the contractor install a layer of Tensar Glasgrid (or approved equivalent) after sealing the cracks and prior to placement of the overlay.

ECS Southeast, LLP appreciates the opportunity to assist you during this phase of the project. If you have questions concerning this report, please contact our office at 704-525-5152.

Respectfully,

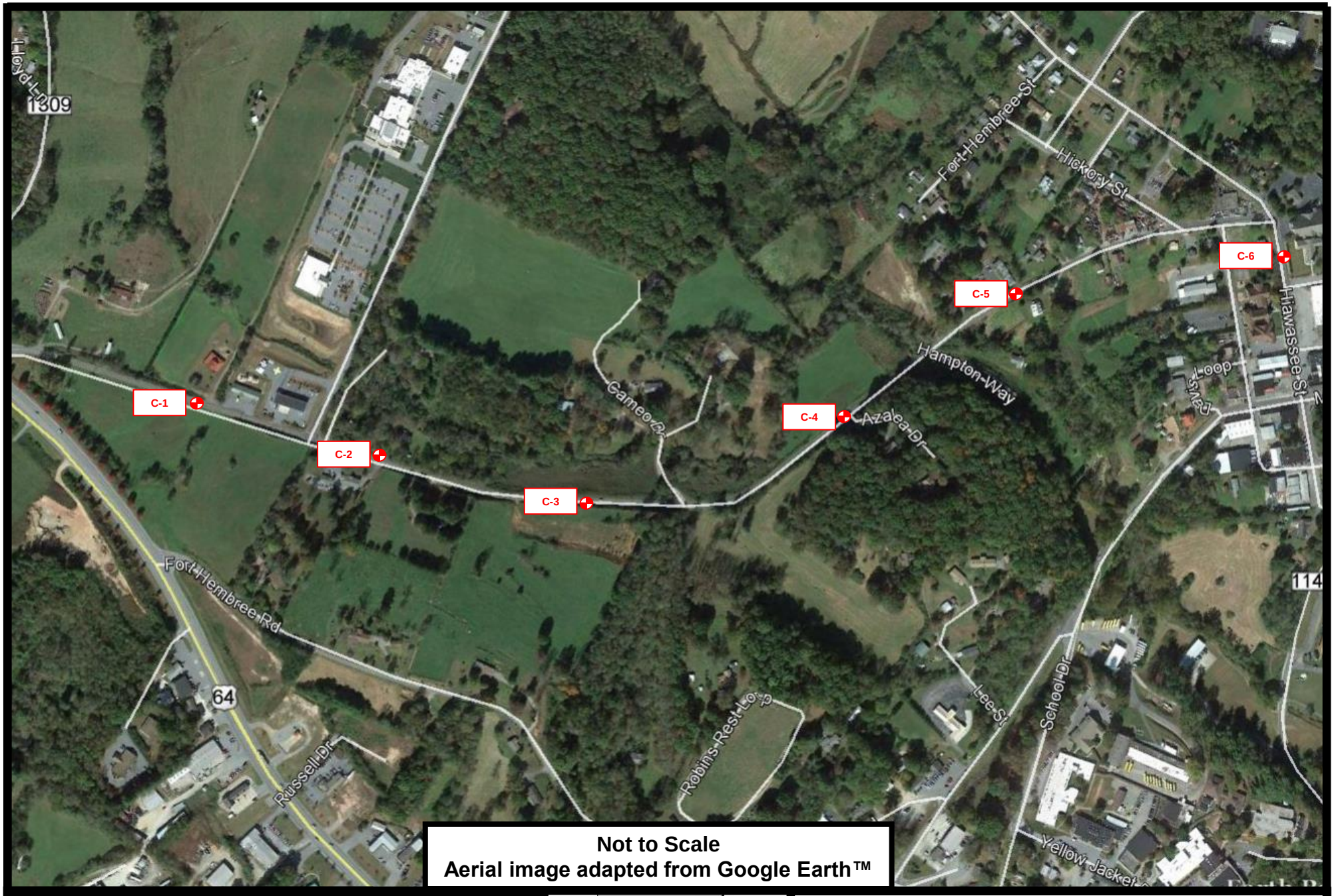
ECS SOUTHEAST, LLP

D. Matthew Brewer, P.E.
Senior Project Engineer

Michael J. Walko, P.E.
Principal Engineer
NC Registration No. 026917

8/6/18

Attachments: Boring Location Plan
Core Photos
Kessler DCP Logs
Laboratory Test Results



Not to Scale
Aerial image adapted from Google Earth™

LEGEND

Approximate Coring Locations

EXPLORATION LOCATION DIAGRAM

R-5863 US 64 Business
Hayesville, Clay County, North Carolina
ECS Project #08-12926

C-1 General surficial conditions

C-1 Core Sample

C-2 General surficial conditions

C-2 Core Sample

C-3 General surficial conditions

C-3 Core Sample

C-4 General surficial conditions

C-4 Core Sample

C-5 General surficial conditions

C-5 Core Sample

C-6 General surficial conditions

C-6 Core Sample

DCP TEST DATA

File Name:

Project: *US 64 Business*
Location: C-1

Date: 10-Jul-18
Soil Type(s): SM

Hammer
○ 10.1 lbs.
● 17.6 lbs.
○ Both hammers used

Soil Type
○ CH
○ CL
● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
10	33	1
10	73	1
10	144	1
10	253	1
10	350	1
10	715	1
5	760	1
5	791	1
5	842	1
5	934	1
5	1035	1
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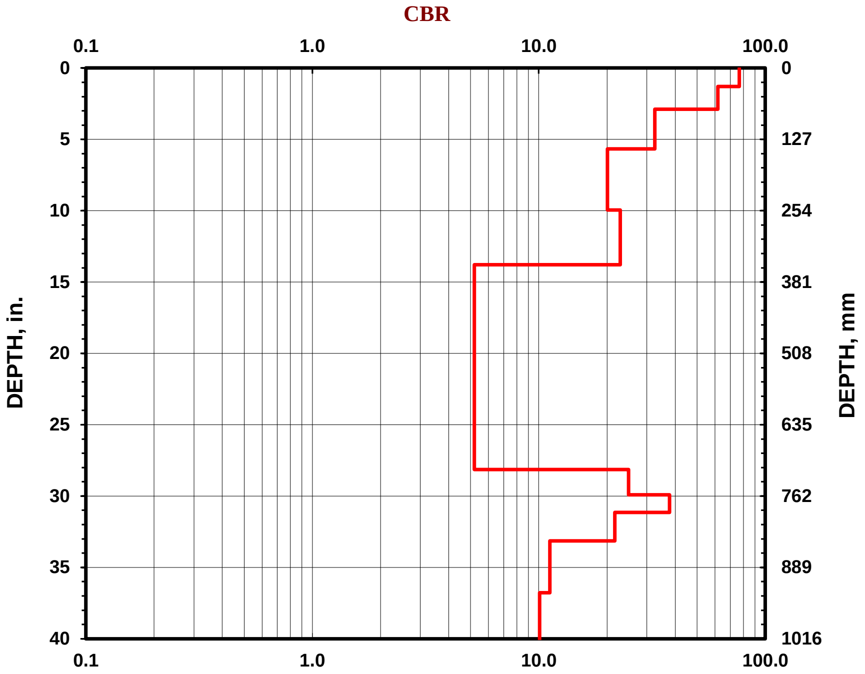

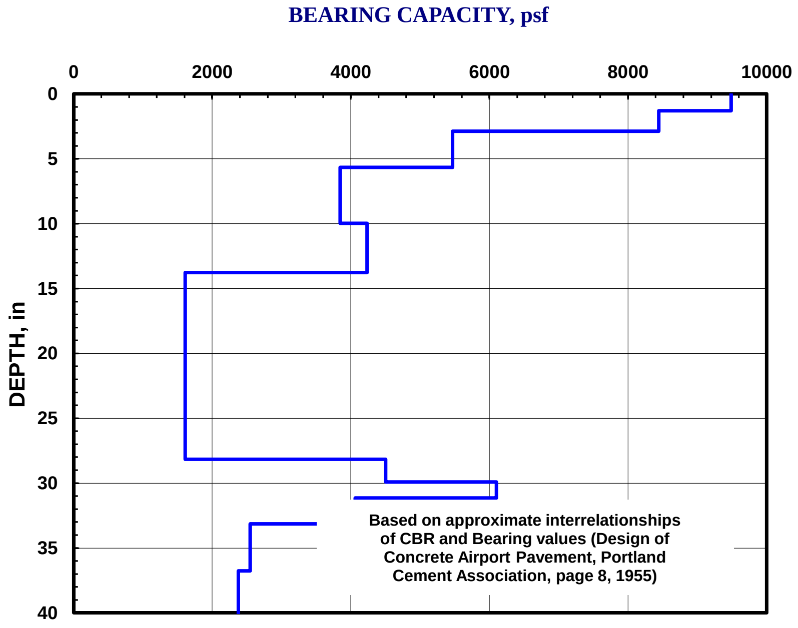

Based on approximate interrelationships of CBR and Bearing values (Design of Concrete Airport Pavement, Portland Cement Association, page 8, 1955)

DCP TEST DATA

File Name:

Project: *US 64 Business* **Date:** 10-Jul-18

Location: C-2 **Soil Type(s):** SM

Hammer
○ 10.1 lbs.
● 17.6 lbs.
○ Both hammers used

Soil Type
○ CH
○ CL
● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
5	51	1
5	173	1
5	294	1
5	360	1
5	466	1
10	536	1
10	723	1
10	933	1
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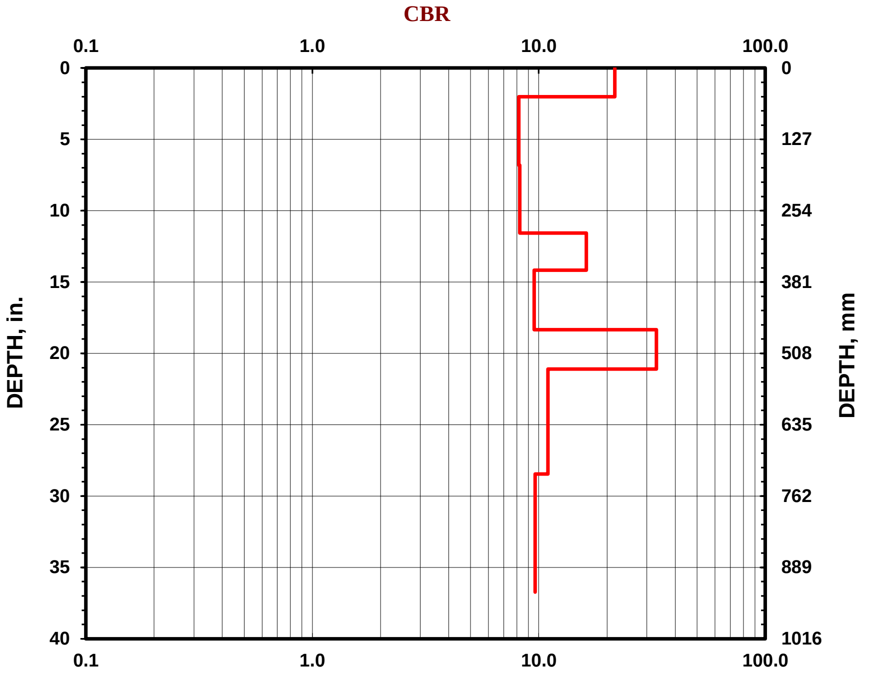

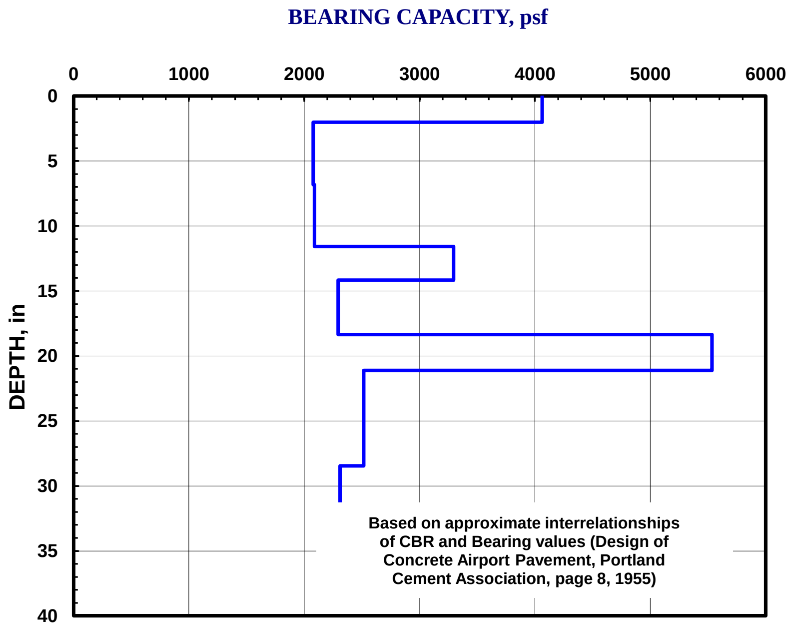

Based on approximate interrelationships of CBR and Bearing values (Design of Concrete Airport Pavement, Portland Cement Association, page 8, 1955)

DCP TEST DATA

File Name:

Project: *US 64 Business* **Date:** 10-Jul-18

Location: C-3 **Soil Type(s):** SM

Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
5	61	1
5	131	1
5	242	1
5	324	1
5	342	1
5	426	1
10	461	1
10	585	1
10	658	1
10	761	1
10	835	1
10	882	1
10	918	1
10	956	1
10	1018	1
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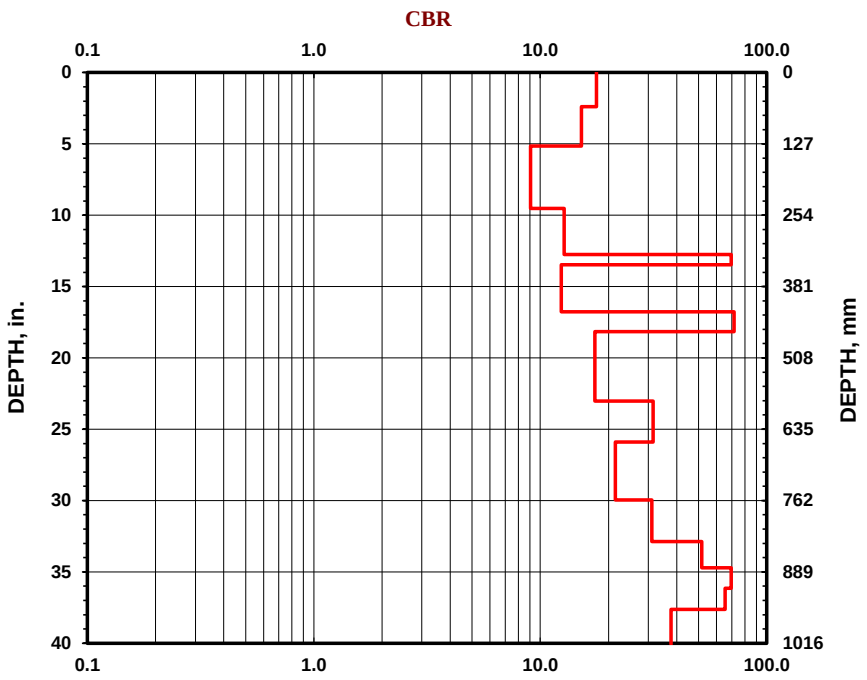

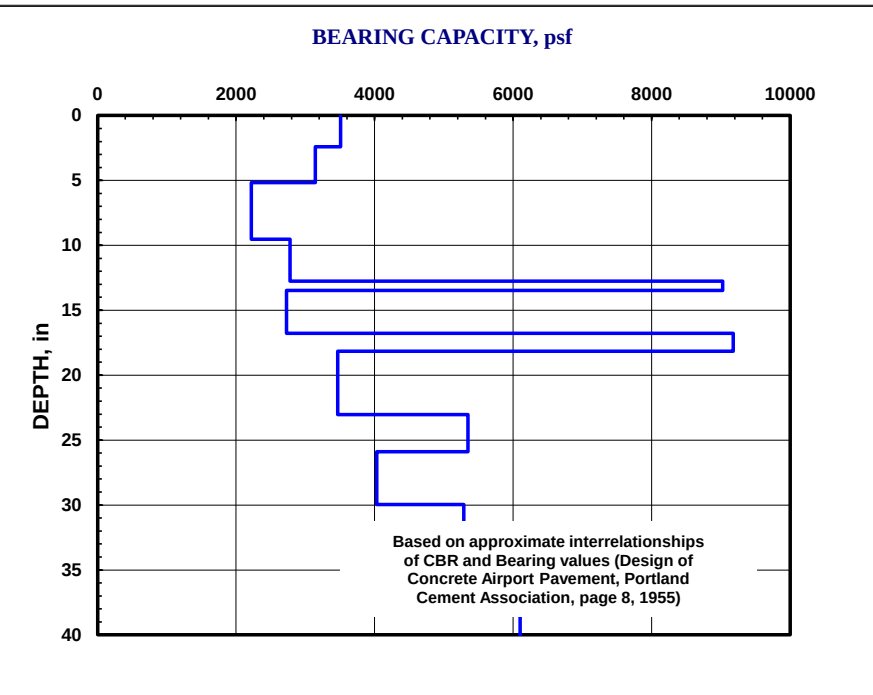

DCP TEST DATA

File Name:

Project: *US 64 Business* **Date:** 10-Jul-18

Location: C-4 **Soil Type(s):** CL

Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ◉ CL
- ○ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
5	21	1
5	110	1
5	157	1
5	190	1
5	301	1
5	362	1
5	480	1
5	569	1
5	625	1
5	677	1
5	742	1
5	815	1
5	871	1
5	987	1
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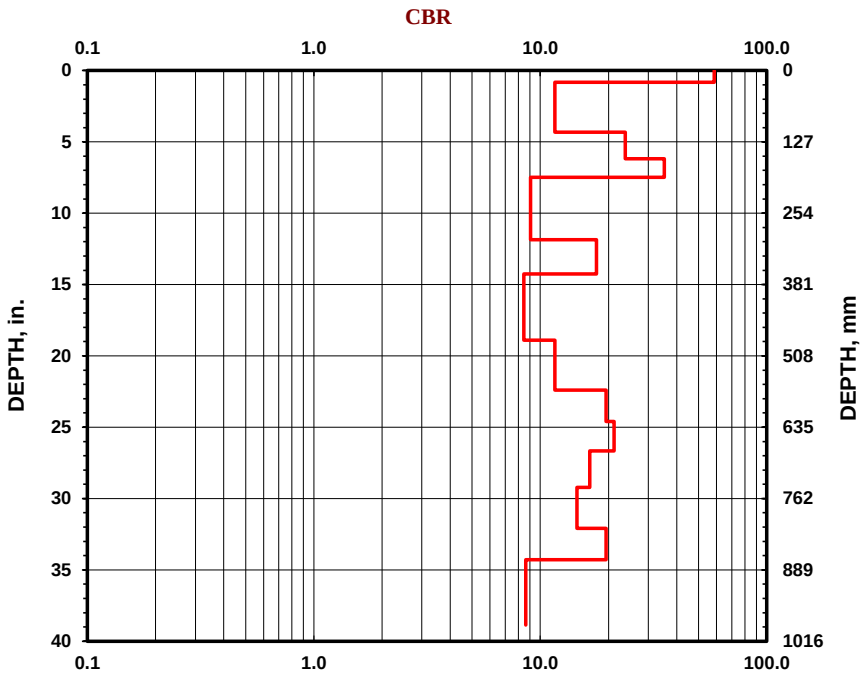

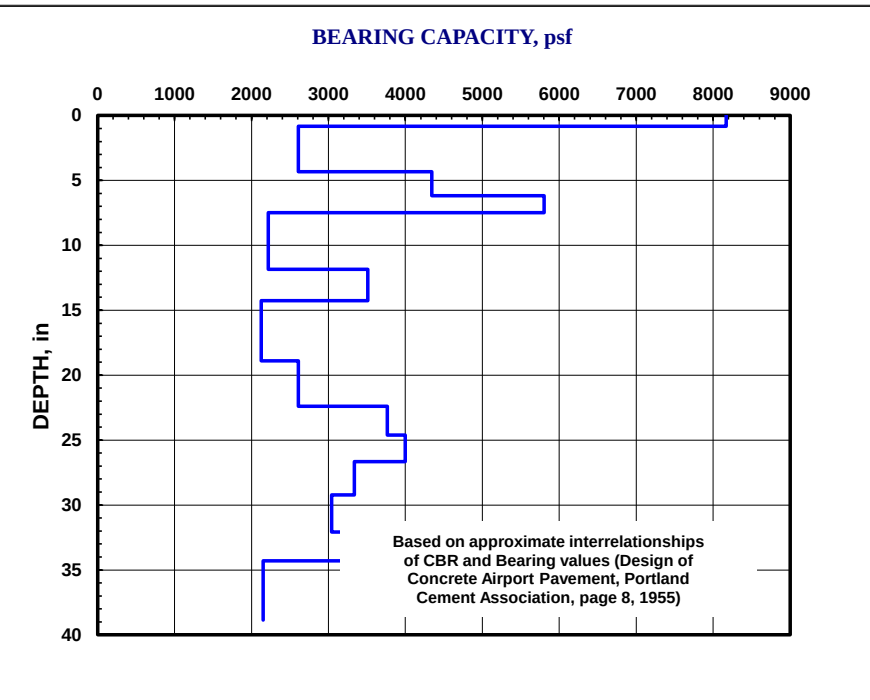

DCP TEST DATA

File Name:

Project: *US 64 Business*
Location: C-5

Date: 10-Jul-18
Soil Type(s): SM

Hammer
○ 10.1 lbs.
● 17.6 lbs.
○ Both hammers used

Soil Type
○ CH
○ CL
● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
2	30	1
5	88	1
5	140	1
5	242	1
5	311	1
5	361	1
5	403	1
5	468	1
10	558	1
10	680	1
10	781	1
10	840	1
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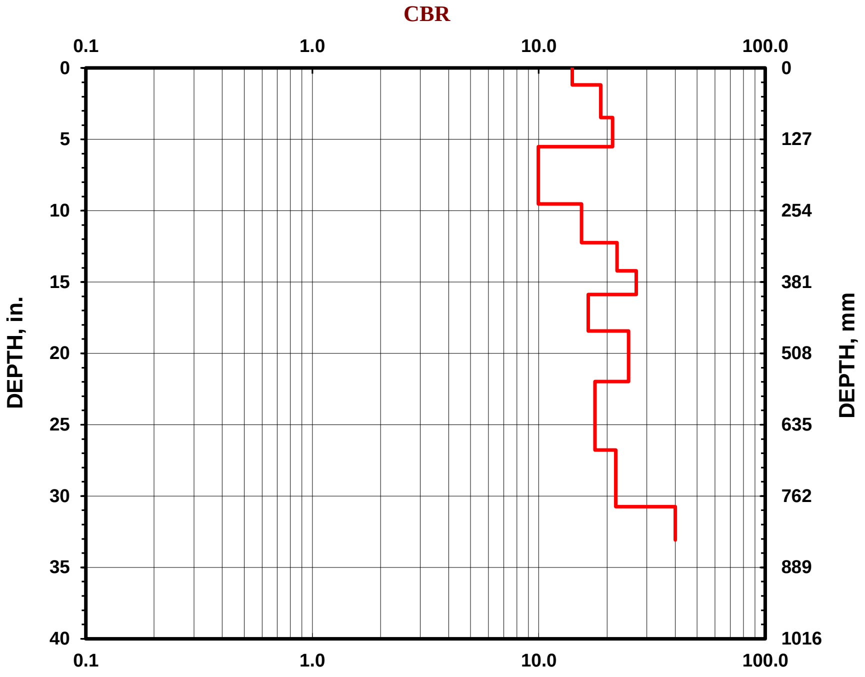

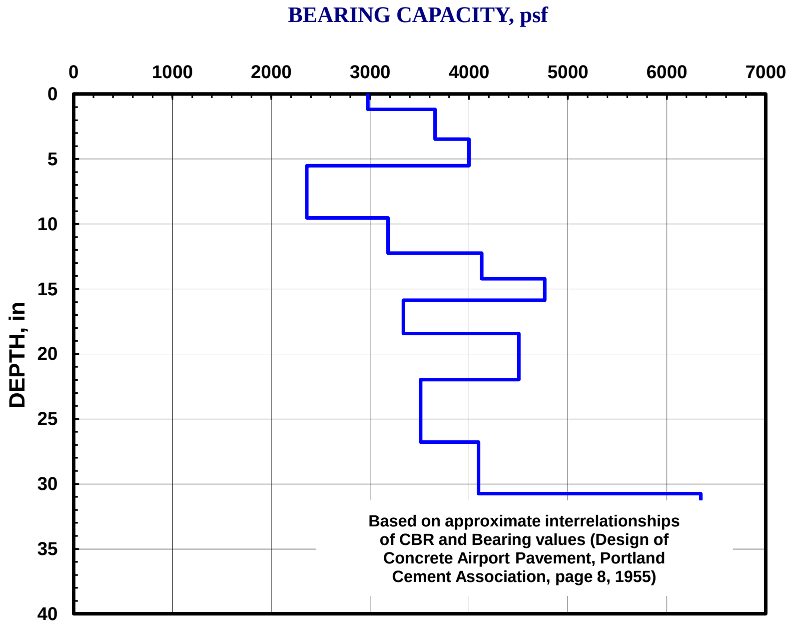

Based on approximate interrelationships of CBR and Bearing values (Design of Concrete Airport Pavement, Portland Cement Association, page 8, 1955)

DCP TEST DATA

File Name:

Project: *US 64 Business* **Date:** 10-Jul-18

Location: C-6 **Soil Type(s):** SM

Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
5	44	1
5	88	1
10	131	1
10	162	1
5	248	1
5	331	1
5	383	1
5	461	1
5	541	1
5	651	1
5	694	1
5	738	1
5	780	1
5	803	1
5	841	1
5	860	1
10	882	1
10	901	1
10	930	1
10	983	1
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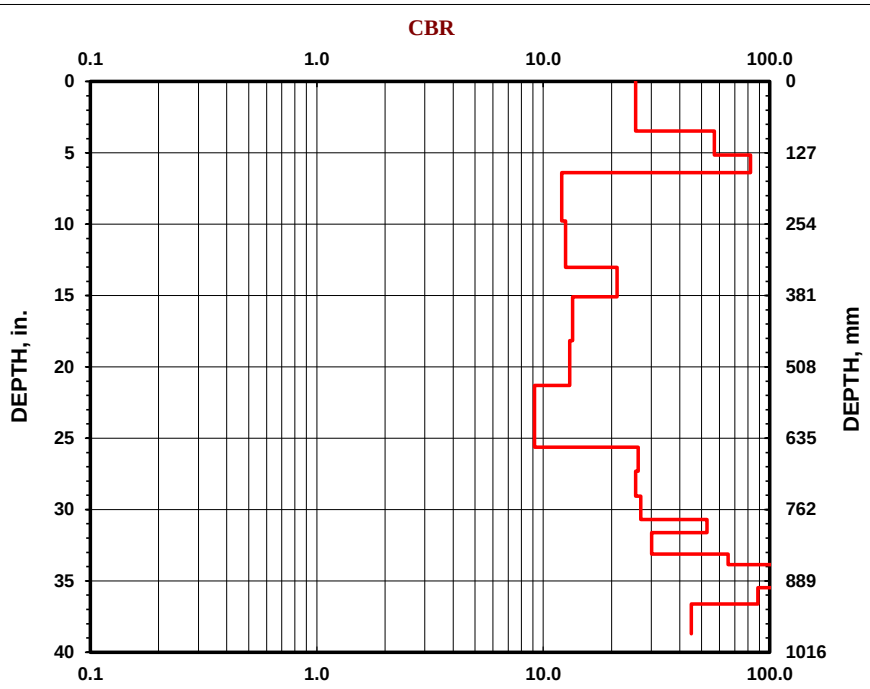
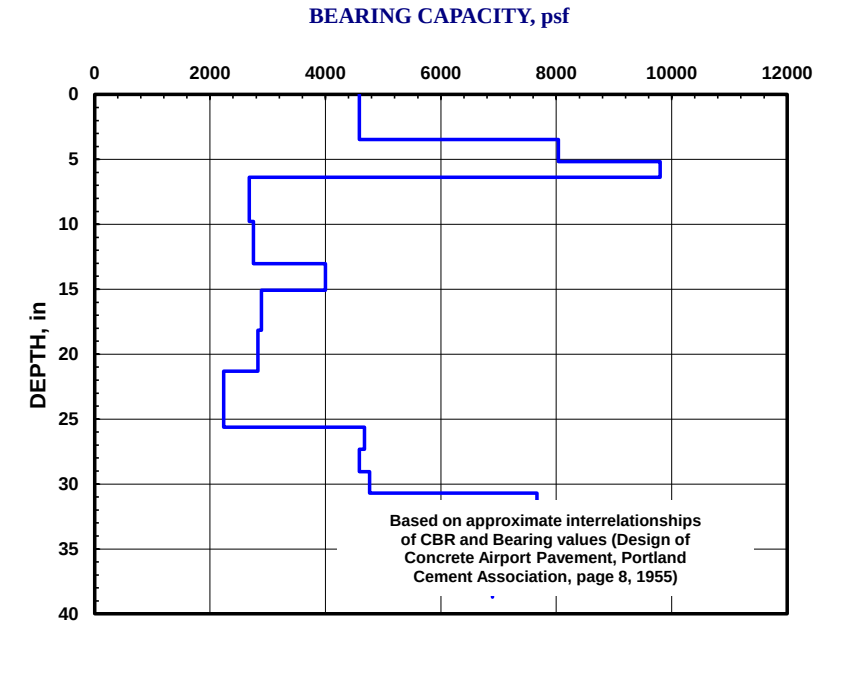




North Carolina Department of Transportation
Division of Highways
Materials and Test Unit
Soils Laboratory

SHEET __ OF __

T.I.P. ID NO.: R-5863
DESCRIPTION:

REPORT ON SAMPLES OF: SOIL FOR QUALITY

PROJECT:	R-5863	COUNTY:	Clay
DATE SAMPLED:	Jul-18	RECEIVED:	Jul-18
SAMPLED FROM:		REPORTED:	Jul-18
SUBMITTED BY:	S. Sawyer, PE	BY:	D. Kestner 135-01-0816 A. Roth 112-09-1003

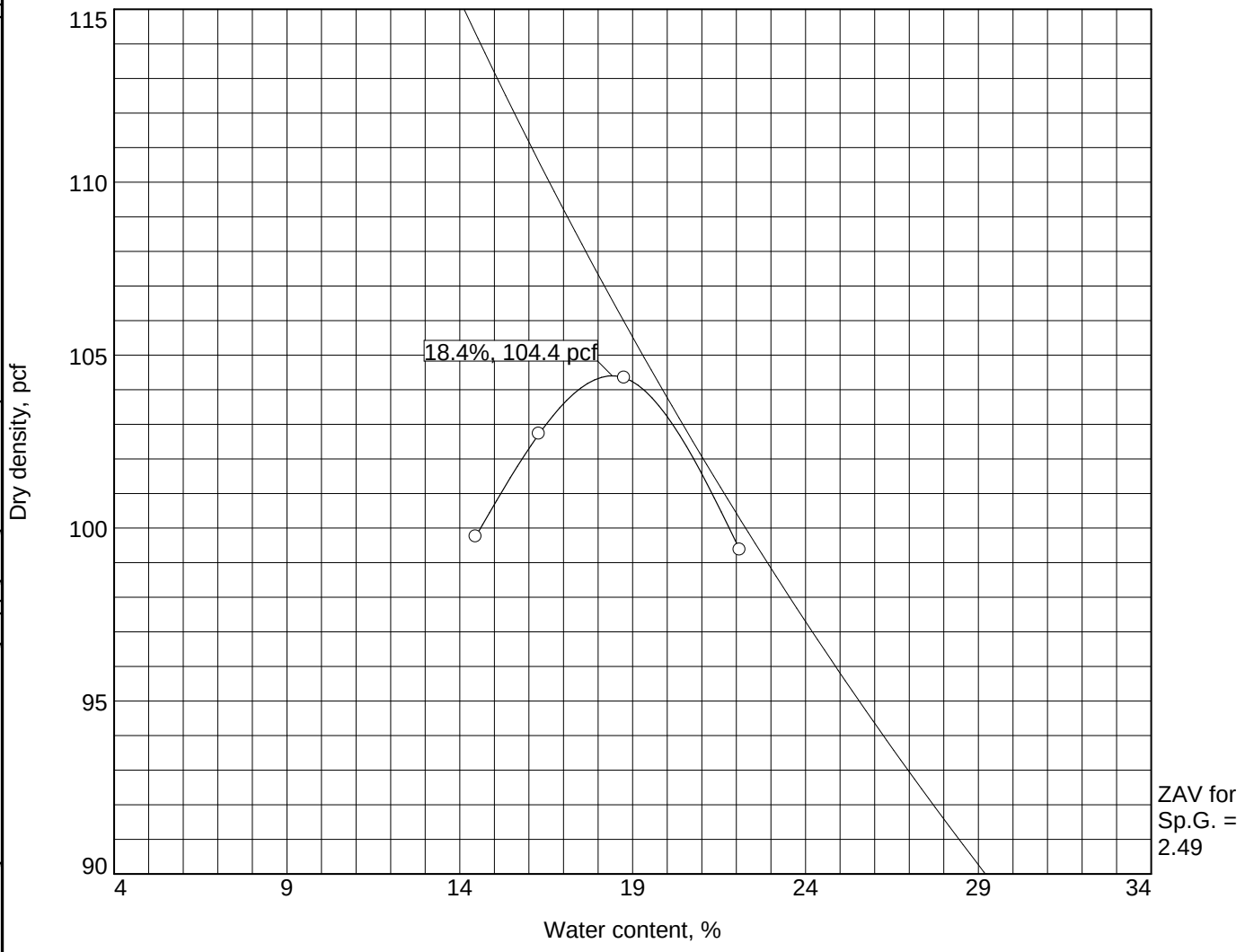
PROJ. SAMPLE NO.	C-3	C-4	C-5	CBR-1		
BORING NO.	S-1	S-2	S-1	Composite		
Retained #4 Sieve %	13.2	7.5	0.0	0.0		
Passing #10 Sieve %	71.0	91.3	99.8	100.0		
Passing #40 Sieve %	47.1	87.4	82.9	96.5		
Passing #200 Sieve %	26.0	61.0	25.5	39.7		

SOIL MORTAR - 100%						
Coarse Sand Ret - #60 %	43.6	10.7	37.4	15.4		
Fine Sand Ret - #270 %	25.1	26.7	44.0	55.0		
Silt 0.053 - 0.010 mm %	12.0	20.2	12.8	16.4		
Clay < 0.010 mm %	19.3	42.1	5.8	13.2		
L.L.	NP	35	NP	NP		
P.L.	NP	21	NP	NP		
P.I.	NP	14	NP	NP		
AASHTO Classification	A-2-4(0)	A-6(6)	A-2-4(0)	A-4(0)		
Station	35+00	46+00	55+00	N/A		
Offset	4' RT	2' LT	3' RT	N/A		
Depth (ft)	1.1	2.2	1.4	0.0		
to	2.1	3.2	2.4	5.0		
Moisture Content (%)	14.3	18.7	12.9	12.7		

NP=Not plastic

Michael J. Walko, P.E.
Soils Engineer

COMPACTION TEST REPORT



Test specification: AASHTO T 99-15 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
0.00-5.00		A-4(0)		2.49	NP	NP	0	40

TEST RESULTS

Maximum dry density = 104.4 pcf

Optimum moisture = 18.4 %

MATERIAL DESCRIPTION

Brown Fine to Coarse Sandy SILT (A-4)

Project No. 12926 **Client:** Vaughn & Melton

Project: R-5863 - Pavement Evaluation on US 64 Business

Date: 7/30/2018

○ **Source of Sample:** CBR-1 **Sample Number:** D4S-1

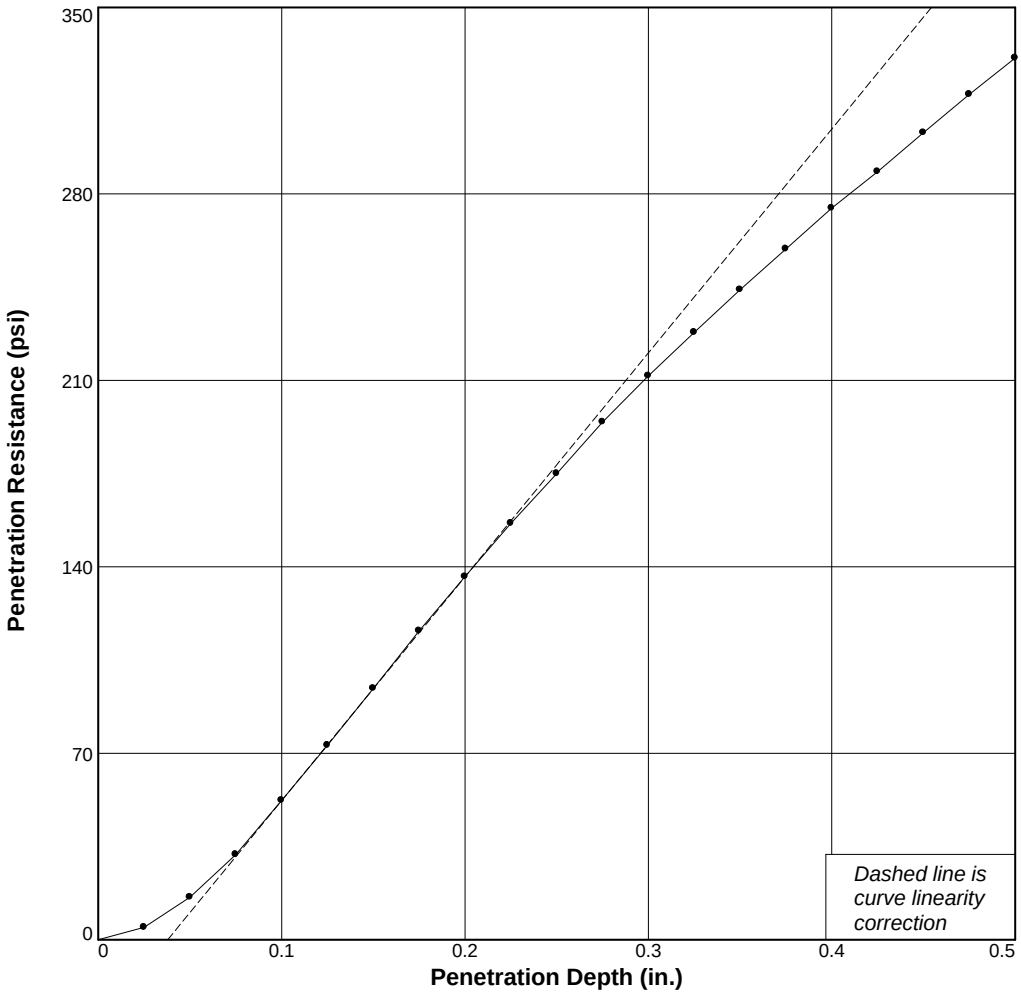
Remarks:

ECS SOUTHEAST, LLP
1812 Center Park Drive, Suite D
Charlotte, NC 28217
Phone: (704) 525-5152
Fax: (704) 357-0023

Figure

Tested By: AS

BEARING RATIO TEST REPORT
VTM-8 (2013)



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	104.9	100.5	18.6	104.2	99.8	19.1	8.4	11.1	0.038	10	0.7
2 △											
3 □											

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown Fine to Coarse Sandy SILT (A-4)		104.4	18.4	NP	NP

Project No: 12926

Project: R-5863 - Pavement Evaluation on US 64 Business

Source of Sample: CBR-1 **Depth:** 0.00-5.00

Sample Number: D4S-1

Date: 7/26/2018

ECS SOUTHEAST, LLP
1812 Center Park Drive, Suite D
Charlotte, NC 28217
Phone: (704) 525-5152
Fax: (704) 357-0023

Test Description/Remarks:

Figure _____

Tested By: AS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

August 7, 2023

MEMORANDUM TO: Kenneth (Mac) McDowell
Division Project Manager

ATTENTION: Jared Bond
Division Project Team Lead

FROM: John Pilipchuk, LG, PE
State Geotechnical Engineer

DS

DocuSigned by:
John L. Pilipchuk
52C44B94B8BE444...

STATE PROJECT: 47516.1.1 (R-5863)
COUNTY: CLAY
DESCRIPTION: US 64 Business from US 64 to SR 1307 (Main Street).

SUBJECT: Geotechnical Report – Design and Construction Recommendations

The Geotechnical Engineering Unit makes the following recommendations. A subsurface inventory will not be submitted.

I. Slope and Embankment Stability

A. *Slope Design*
Recommend all roadway slopes be constructed no steeper than 2:1 (H:V).

B. *Undercut*
Recommend 1000 cubic yards of Undercut be included in the contract as a contingency item to be used at the direction of the Engineer.

C. *Geotextile for Soil Stabilization*
Include 1000 square yards of Geotextile for Soil Stabilization in the contract as a contingency item to be used at the discretion of the Engineer.

II. Subgrade Stability

A. *Undercut for Subgrade Stability*
Recommend a contingency quantity of 1000 cubic yards of Undercut be included in the contract to be used at the discretion of the Engineer.

B. *Grade Point Undercut*
For inclusion in the contract we recommend 250 cubic yards of grade point Undercut to be used at the discretion of the Engineer.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH, NC 27699-1589

Telephone: (919) 707-6850
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

C. *Aggregate Subgrade*
Shallow Undercut
Include 500 cubic yards of 12" Shallow Undercut in the contract as a contingency item to be used at the discretion of the Engineer.

Geotextile for Subgrade Stabilization
Include a contingency quantity of 1500 square yards of geotextile for subgrade stabilization in the contract to be used at the discretion of the Engineer.

Class IV Subgrade Stabilization Material
Recommend a contingency quantity of 1000 tons of Class IV Select Material be included in the contract for use at the discretion of the Engineer.

D. *Subsurface Drainage- Subsurface Drains*
Recommend a contingency quantity of 500 linear feet of 6" perforated subdrain pipe per Roadway Standard Drawing 815.02 - Subsurface Drain be included in the contract to be used at the direction of the Engineer.

E. *Geotextile for Soil Stabilization*
Include a contingency quantity of 1000 square yards of geotextile for soil stabilization in the contract for use with items in section II.A. to be used at the discretion of the Engineer.

III. Borrow Specifications

A. *Shrinkage Factor*
Recommend a shrinkage factor of 15% for calculation earthwork quantities.

Swell Factor
Recommend a swell factor of 25% for calculation earthwork quantities.

B. *Select Granular Material*
A quantity of 2000 cubic yards of Select Granular Material should be included in the contract as a contingency to be used at the discretion of the Engineer in conjunction with section I.C. and II.E.

IV. Miscellaneous

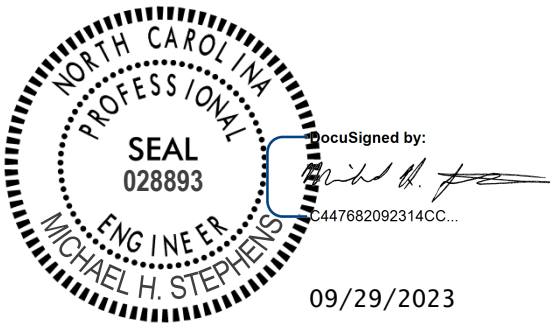
A. *Reduction of Unclassified Excavation*
The estimated loss of unclassified excavation due to clearing and grubbing is estimated at 2300 cubic yards.

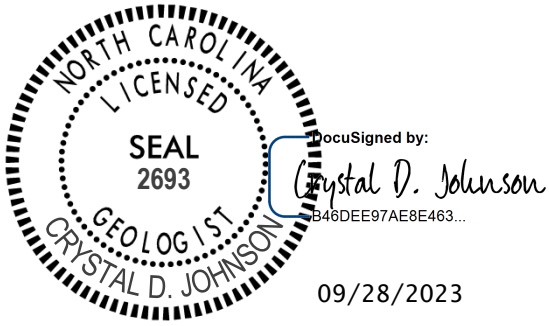
B. *Rock Blasting*
Crystalline rock may be present within 6 feet of proposed grade, at the following locations, and may require blasting. Blasting is contained in Section 220 of the Standard Specifications manual. Slope shall result in a cleaned stable slope face cleared of loose rock. Shall be considered incidental to the blasting.

Alignment	Stations (+/-)
-L-	27+00 to 28+00
-L-	47+50 to 48+50

The crystalline rock encountered on this project is shown on cross-sections submitted with the project inventory report.

Respectfully Submitted,





Michael H. Stephens, PE
Geotechnical Engineer

Crystal D. Johnson, PG
Geological Engineer

Document Not Considered Final Unless All Signatures Are Completed

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
Summary of Quantities

WBS Number: 47516.1.1 | County: CLAY | Project Engineer: MHS
TIP Number: R-5863 | Field Office / PEF: GEU-AFO | Project Geologist: CDJ
Description: US-64 BUSINESS FROM US-64 TO SR-1307 (MAIN ST)

Pay Item No.	Pay Item/ Quantity Adjustment	Spec Book Section No. or Special Provision (SP) Reference	Report Section	Alignment	Begin Station	End Station	Quantity	Units / %
0036000000-E	Undercut Excavation	225 - Roadway Excavation	I. B	Contingency	N/A	N/A	1,000	CY
0036000000-E	Undercut Excavation	225 - Roadway Excavation	II. A	Contingency	N/A	N/A	1,000	CY
0036000000-E	Undercut Excavation	225 - Roadway Excavation	II. B	Contingency	N/A	N/A	250	CY
						Total Quantity of Undercut Excavation =	**2,250**	**CY**
0195000000-E	Select Granular Material	265 - Select Granular Material	III. B	Contingency	N/A	N/A	2,000	CY
						Total Quantity of Select Granular Material =	**2,000**	**CY**
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	I. C	Contingency	N/A	N/A	1,000	SY
0196000000-E	Geotextile for Soil Stabilization	270 - Geotextile for Soil Stabilization	II. E	Contingency	N/A	N/A	1,000	SY
						Total Quantity of Geotextile for Soil Stabilization =	**2,000**	**SY**
1004500000-E	Geotextile for Subgrade Stabilization	505 - Aggregate Subgrade	II. C	Contingency	N/A	N/A	1,500	SY
						Total Quantity of Geotextile for Subgrade Stabilization =	**1,500**	**SY**
1099500000-E	Shallow Undercut	505 - Aggregate Subgrade	II. C	Contingency	N/A	N/A	500	CY
						Total Quantity of Shallow Undercut =	**500**	**CY**
1099700000-E	Class IV Subgrade Stabilization	505 - Aggregate Subgrade	II. C	Contingency	N/A	N/A	1,000	TON
						Total Quantity of Class IV Subgrade Stabilization =	**1,000**	**TON**
2044000000-E	6" Perforated Subdrain Pipe	815 - Subsurface Drainage	II. D	Contingency	N/A	N/A	500	LF
						Total Quantity of 6" Perforated Subdrain Pipe =	**500**	**LF**

These Items Only Impact Earthwork Totals								
N/A	Loss Due to Clearing & Grubbing	200 - Clearing and Grubbing	IV. A	N/A	N/A	N/A	2,300	CY
N/A	Rock Swell Factor	235 - Embankments	III. A	N/A	N/A	N/A	25	%
N/A	Shrinkage Factor	235 - Embankments	III. A	N/A	N/A	N/A	15	%

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

May 13, 2025

MEMORANDUM TO: Zachary Shuler, PE
Division Bridge Program Manager
NCDOT Division 14

Jared Bond, PE
Embedded Consultant Project Manager
NCDOT Division 14

FROM: Eric N. Williams, PE
Asst. State Geotechnical Engineer
Western Regional Office

DS SLL

DocuSigned by: Eric Williams A6B874F1197848B...

STATE PROJECT: 47516.1.1 (R-5863)
COUNTY: CLAY
DESCRIPTION: US 64 Business from US 64 to SR 1307 (Main Street).

SUBJECT: Temporary Shoring Recommendations

The Geotechnical Engineering Unit (GEU) has received the following proposed temporary shoring locations for the referenced project:

Shoring Location No.	Begin Station & Offset	End Station & Offset	Estimated Average Height	Estimated Maximum Height	Shoring Location Type
1	-L- 50+55±, 42' LT	-L- 51+66±, 47' RT	15.5'	16'	Structure

Shoring Location No. 1

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

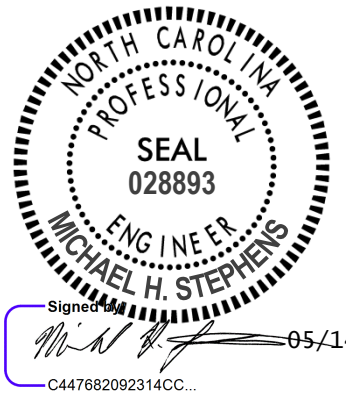
DESIGN TEMPORARY SHORING FROM STATION -L- 50+55±, 42' LT, TO STATION -L- 51+66±, 47' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 PCF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 PSF
GROUNDWATER ELEVATION = 1,822± FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION -L- 50+55±, 42' LT, TO STATION -L- 51+66±, 47' RT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -L- 50+55±, 42' LT, TO STATION -L- 51+66±, 47' RT WILL NOT PENETRATE BELOW ELEVATION 1,820± FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

The GEU recommends including the Temporary Shoring provision in the contract for the referenced project. Please contact Michael H. Stephens, PE at (980) 258-6404 if there are any questions concerning this memorandum.



Michael H. Stephens, P.E.
Geotechnical Design Engineer
NCDOT Geotechnical Engineering Unit – Western Region

cc: Colton Riddle (cmriddle@jmt.com)

Bond (RS&H), Jared M

From: Cox, Ashley B
Sent: Monday, June 9, 2025 4:40 PM
To: Bond (RS&H), Jared M
Subject: RE: R-5863 Special Provision for Contaminated Soil
Attachments: D_R-5863_GE_Special Provision _Contaminated Soil Disposal_20250609.pdf

Jared,
Please find the SP attached.

I estimated 250 tons. I don't think it will be anywhere near that, maybe closer to 25 tons.
Honestly, the difference in money is minimal.

If you have any additional questions, please let me know.
Thanks,

Ashley B Cox, Jr, LG
GeoEnvironmental Project Engineer
Divisions 1, 5, 8, 12, & 14
Geotechnical Engineering Unit
NC Department of Transportation

919-707-6872 office
919-604-0152 cell
abcox@ncdot.gov

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Raleigh, NC 27699-1589

1020 Birch Ridge Drive (Physical)
Raleigh, NC 27610

From: Bond (RS&H), Jared M <ext-jmbond@ncdot.gov>
Sent: Monday, June 9, 2025 2:44 PM
To: Cox, Ashley B <abcox@ncdot.gov>
Subject: RE: R-5863 Special Provision for Contaminated Soil

Ashley,
The PS&E package is due to Plans Checking tomorrow, so please go with the conservative quantity.

Thank you,

Jared Bond, PE
Embedded Project Manager
NCDOT Highway Division 14
253 Webster Rd
Sylva, NC 28779
O: (828) 331-5234

From: Cox, Ashley B <abcox@ncdot.gov>
Sent: Monday, June 9, 2025 2:41 PM
To: Bond (RS&H), Jared M <ext-jmbond@ncdot.gov>
Subject: RE: R-5863 Special Provision for Contaminated Soil

Good afternoon, Jared.
Yes sir, we will need/provide a Special Provision for the project.
My consultant was on Parcel 32 last week removing the three tanks.
They are on Parcel 34 removing four tanks.
I was going to wait until we received the lab results for the soil samples to determine a quantity for the SP.
Will most likely be next week before I have those lab results.

If you need the SP and quantity sooner rather than later, I can probably have that to you tomorrow with a conservative quantity.

Which would you prefer?

Ashley B Cox, Jr, LG
GeoEnvironmental Project Engineer
Divisions 1, 5, 8, 12, & 14
Geotechnical Engineering Unit
NC Department of Transportation

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Raleigh, NC 27699-1589

1020 Birch Ridge Drive (Physical)
Raleigh, NC 27610

From: Bond (RS&H), Jared M <ext-jmbond@ncdot.gov>
Sent: Monday, June 9, 2025 2:33 PM
To: Cox, Ashley B <abcox@ncdot.gov>
Subject: R-5863 Special Provision for Contaminated Soil

Ashley,
Will a special provision for contaminated soil be needed for R-5863?

Thank you,

Jared Bond, PE
Embedded Project Manager
NCDOT Highway Division 14
253 Webster Rd
Sylva, NC 28779
O: (828) 331-5234