

STRUCTURE RECOMMENDATIONS

W.B.S. NO. 50231 DESCRIPTION Mechanically Stabilized Earth Retaining Wall #3
 T.I.P. NO. U-5840
 COUNTY Henderson
 STATION 10+00.00 to 12+19.00
-W3-

	INITIALS	DATE
DESIGN	PDM	3/9/2018
CHECKED	DJC	3/9/2018
FINAL	DJC	3/9/2018



COMMENTS & NOTES

Note on Plans:

1. FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
2. USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARDSPECIFICATIONS FOR RETAINING WALL NO. 3.
3. WHEN USING AN MSE WALL SYSTEM WITH SRW UNITS FOR RETAINING WALL NO. 3, FREEZE-THAW DURABLE SRW UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS ARE REQUIRED.
4. AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO. 3.
5. A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 3.
6. A DRAIN IS REQUIRED FOR RETAINING WALL NO. 3.
7. DESIGN RETAINING WALL NO. 3 FOR THE FOLLOWING:
 - 1) H = DESIGN HEIGHT + EMBEDMENT.
 - 2) DESIGN LIFE = 75 YEARS
 - 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 2,000 PSF. THIS ASSUMES ANY FILL OR SOFT SOILS, IF ENCOUNTERED, WILL BE UNDERCUT AND REPLACED.
 - 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8 X H OR 6 FT, WHICHEVER IS LONGER

STRUCTURE RECOMMENDATION NOTES ON PLANS AND COMMENTS

PROJECT No.: U-5840 WALL NO: 3 COUNTY: Henderson
STATION: 10+00.00 to 12+19.00 -W3- DESCRIPTION: SR1547 FROM US 25 TO SR1551

5) REINFORCED ZONE AGGREGATE PARAMETERS:

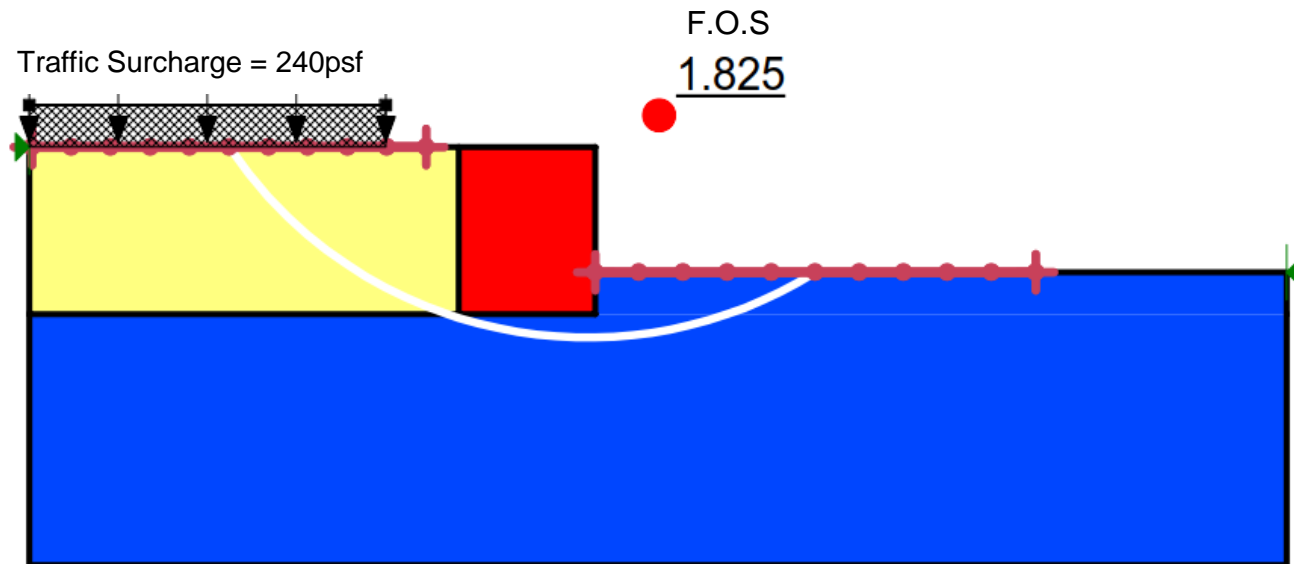
AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (Φ) DEGREES	COHESION (c) PSF
COURSE	110	38	0
FINE	115	34	0

*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (Φ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	120	28	0

8. DESIGN RETAINING WALL NO. 3 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
9. DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 3 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
10. IGNORE PASSIVE EARTH PRESSURES IN THE UPPER 18 INCHES.



LEGEND:

- = Backfill Soil ($\gamma=120$ pcf, $\Phi=30^\circ$, $c=0$)
- = Foundation Soil ($\gamma=120$ pcf, $\Phi=28^\circ$, $c=0$)

Project Manager: PDM	Project No. 71175059
Drawn by: PDM	Scale: AS SHOWN
Checked by: DJC	File Name: Wall 3
Approved by: DJC	Date: MARCH 2018

Terracon
2701 Westport Road
Charlotte, NC 28208

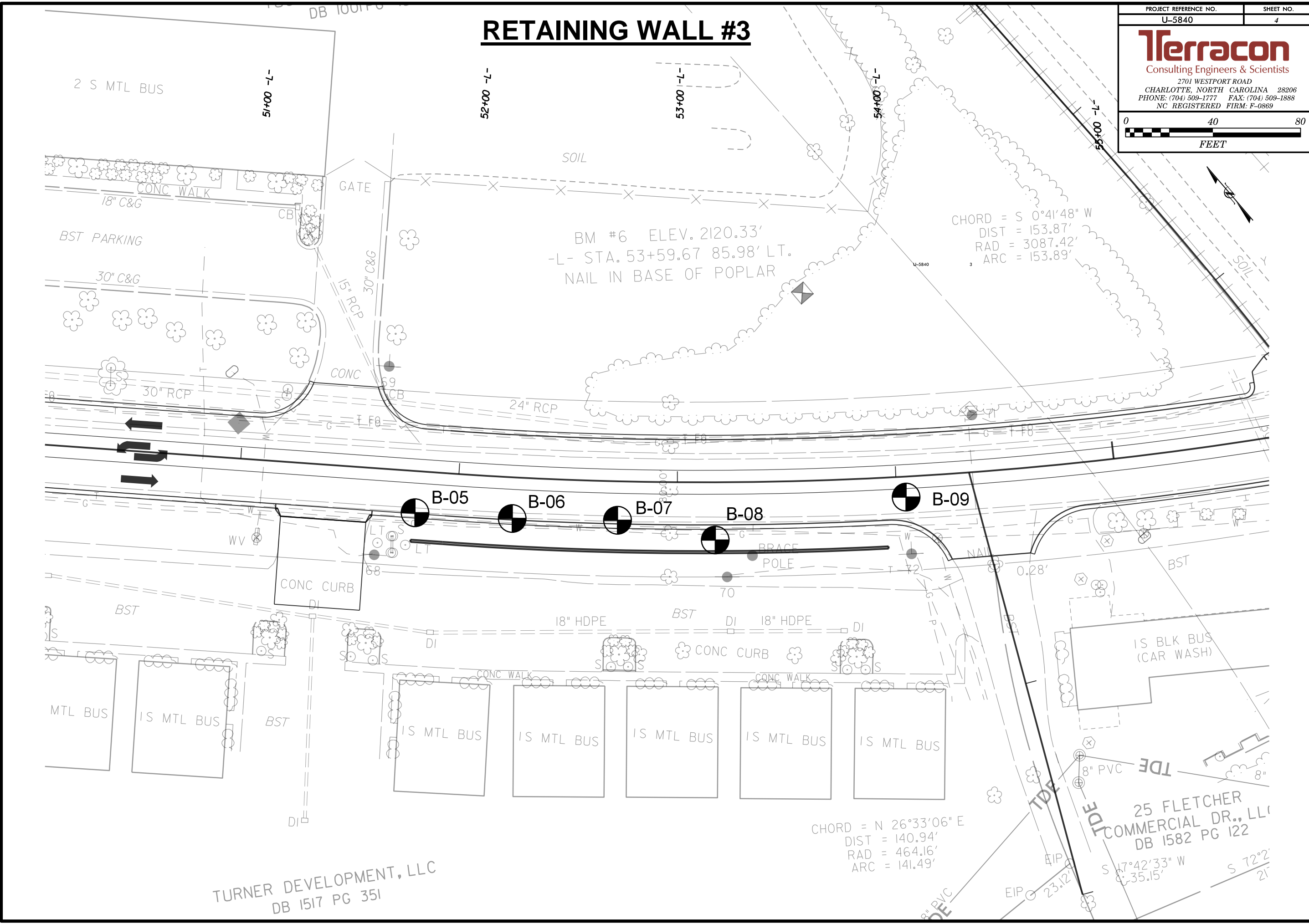
GLOBAL STABILITY ANALYSIS

Mechanically Stabilized Earth Retaining Wall #3
State Project No. U-5840
Henderson County, North Carolina

Page
3

RETAINING WALL #3

PROJECT REFERENCE NO. U-5840	SHEET NO. 4
Terracon	
Consulting Engineers & Scientists	
2701 WESTPORT ROAD CHARLOTTE, NORTH CAROLINA 28206 PHONE: (704) 509-1777 FAX: (704) 509-1888 NC REGISTERED FIRM: F-0869	
0 40 80 F E E T	



TURNER DEVELOPMENT, LLC
DB 1517 PG 351

CHORD = N 26°33'06" E
DIST = 140.94'
RAD = 464.16'
ARC = 141.49'

25 FLETCHER
COMMERCIAL DR., LL
DB 1582 PG 122

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50231			TIP U-5840			COUNTY HENDERSON			GEOLOGIST McCloud, P.D.							
SITE DESCRIPTION SR 1547 (Old Airport Road) from US 25 (Hendersonville Road) to SR 1551 (Mills Gap Road)									GROUND WTR (ft)							
BORING NO. B-07			STATION 10+95			OFFSET 15 ft LT			ALIGNMENT -W3-							
COLLAR ELEV. 2,119.6 ft			TOTAL DEPTH 15.0 ft			NORTHING 632,417			EASTING 959,452							
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER Odom, C.J.			START DATE 05/17/17			COMP. DATE 05/17/17			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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2120																
	2,118.6	1.0	2	4	5											
	2,116.1	3.5	3	4	5											
	2,113.6	6.0	3	4	7											
	2,111.1	8.5	8	13	16											
	2,106.1	13.5	9	15	24											
2105																

NCDOT BORE SINGLE 71175069 - U-5840 - HENDERSON COUNTY RETAINING WALLS.GPJ NC_DOT.GDT 6/16/17

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50231			TIP U-5840			COUNTY HENDERSON			GEOLOGIST McCloud, P.D.							
SITE DESCRIPTION SR 1547 (Old Airport Road) from US 25 (Hendersonville Road) to SR 1551 (Mills Gap Road)										GROUND WTR (ft)						
BORING NO. B-08			STATION 11+40			OFFSET 6 ft LT			ALIGNMENT -W3-							
COLLAR ELEV. 2,117.9 ft			TOTAL DEPTH 15.0 ft			NORTHING 632,381			EASTING 959,480							
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER Odom, C.J.			START DATE 05/17/17			COMP. DATE 05/17/17			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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2120																
	2,116.9	1.0	3	4	5	•	•	•	•	•				GROUND SURFACE	0.0	
2115	2,114.4	3.5	4	5	5	•	•	•	•	•	SS-37	M		4" Topsoil		
	2,111.9	6.0	6	6	6	•	•	•	•	•	SS-38	M		RESIDUAL		
2110	2,109.4	8.5	3	5	7	•	•	•	•	•	SS-39	M		Stiff, tan, SILT with sand (A-4)		
	2,109.4	8.5	3	5	7	•	•	•	•	•	SS-40	M		Stiff to very stiff, reddish tan, SILT with sand (A-4)	8.0	
2105	2,104.4	13.5	6	5	12	•	•	•	•	•	SS-41	M			15.0	
														Boring Terminated at Elevation 2,102.9 ft in Silt with Sand		

NCDOT BORE SINGLE 71175069 - U-5840 - HENDERSON COUNTY RETAINING WALLS.GPJ NC_DOT.GDT 6/16/17

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50231		TIP U-5840		COUNTY HENDERSON		GEOLOGIST McCloud, P.D.											
SITE DESCRIPTION SR 1547 (Old Airport Road) from US 25 (Hendersonville Road) to SR 1551 (Mills Gap Road)							GROUND WTR (ft)										
BORING NO. B-09		STATION 54+04		OFFSET 9 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 2,117.1 ft		TOTAL DEPTH 15.0 ft		NORTHING 632,339		EASTING 959,559											
DRILL RIG/HAMMER EFF./DATE HPC8513 CME-550 81% 06/06/2016				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Odom, C.J.		START DATE 05/17/17		COMP. DATE 05/17/17		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	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2120																	
	2,116.1	1.0													2,117.1	GROUND SURFACE	0.0
2115			5	9	7										2,116.0	8" Asphalt over 6" Stone Base	1.1
	2,113.6	3.5	3	4	4											ROADWAY EMBANKMENT	
	2,111.1	6.0	2	4	4											Medium stiff to very stiff, reddish tan and gray, SILT with sand (A-4)	
2110			2	4	4												
	2,108.6	8.5	3	2	3												
2105															2,105.1		12.0
	2,103.6	13.5	6	9	11											RESIDUAL	
															2,102.1	Stiff to very stiff, reddish tan, SILT with sand (A-4)	15.0
																Boring Terminated at Elevation 2,102.1 ft in Silt with Sand	

NCDOT BORE SINGLE 71175059 - U-5840 - HENDERSON COUNTY RETAINING WALLS.GPJ NC_DOT.GDT 6/16/17